UNIVERSITY OF SOUTHERN QUEENSLAND AUSTRALIA

EXPLORING CRITICAL FACTORS THAT ENABLE COOPETITION STRATEGY TO SUCCEED IN PRIVATE JORDANIAN UNIVERSITIES

A Thesis submitted by

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ABSTRACT

In the strategic management literature, hybrid relationships comprising competition and cooperation have been named "coopetition". Coopetition strategy means that organisations simultaneously cooperate and compete with each other. This strategy has been examined in different industries and contexts, and even though researchers have emphasised the increasing importance and benefits of coopetition for business today, there has been comparatively little attention paid to the critical factors that lead to sustainable and successful coopetition. In addition, there have been very few studies reporting on the strategy being used in the education sector in general, and there is a lack of theoretical and empirical studies reporting critical success factors for coopetition strategy in the private Jordanian universities context.

Therefore, the main objective of this research was to explore critical factors that enable coopetition strategy management to succeed at private Jordanian universities. To achieve this objective, a sequential mixed method research approach was used to explore success factors and those critical to successful coopetition relationships between private universities in Jordan. Based on a two-phase sequential mixed method approach, Phase 1, the qualitative phase of the study, collected data through semi-structured, in-depth interviews with 18 participants randomly selected from the Deans' Councils of nine private Jordanian universities. The qualitative data was then analysed in two processes. The first was a thematic analysis which was followed by a Leximancer analysis aimed at identifying themes and subthemes used to build the proposed conceptual framework that informed Phase 2, the quantitative phase. The Phase 2 questionnaire collected data from 303 participants at management level (such as members of Trustees' Councils, University Councils, Deans' Councils and College Councils) who could be considered decision makers and business managers at the universities. An exploratory factor analysis and confirmatory factor analysis were used to confirm the factors and subfactors in the proposed model of coopetition success factors for the private Jordanian universities. Then, structural equation modelling was used to test the hypothesis.

The findings of this research indicated that, of the 13 factors identified, eight were found to be critical for coopetition strategy success. These included management commitment, perception, top management support, strategic leadership, trust development, organisational learning, geographical proximity, and the Ministry of Higher Education. These critical factors were found to have a positive and significant influence on the indicators of success in coopetition strategy adoption by private Jordanian universities. The indicators included enhanced

productivity and effectiveness, social responsibility, improved services' quality, and decreased costs and increased profits.

The study offers theoretical and practical contributions. It addresses a theoretical gap in the existing literature related to the scarcity of coopetition success factor studies in the higher education sector and offers a new model. This model links critical factors for successful coopetition and the indicators of success for a coopetition strategy adopted by private universities in Jordan. In terms of the practical contributions, the findings of this research can be used to assist decision-making related to the management of a successful coopetition strategy which may improve the efficiency and effectiveness of university performance in the Jordanian higher education sector by managing a successful coopetition strategy model.

Keywords: Coopetition, Competition, Cooperation, Coopetition success factors, Coopetition success indicators, Managing successful coopetition strategy model.

CERTIFICATION OF THESIS

This thesis is entirely the work of **Zeyad Abdulazeez Al-Najaifi** except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

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ABBREVIATIONS

AGFI: Adjusted Goodness of Fit Index

AMOS: Analysis of Moment Structure

AVE: Average Variance Extracted

COS: Coopetition Strategy

CO: Coopetition

CORs: Coopetition Relationships

COSFs: Coopetition Success Factors

CSFs: Critical Success Factors

CR: Critical Ratio

COSIs: Coopetition Success Indicators

COP: Coopetition Performance

CR: Composite Reliability

CFA: Confirmatory Factor Analysis

CM: Communication Management

(CMIN/DF): Normed Chi-square/Degree of Freedom

CFI: Bentler's Comparative Fit Index

DF: Degree of Freedom

EFA: Exploratory Factor Analysis

FCH: Flexibility to Change

GP: Geographical Proximity

GOF: Goodness-of-Fit

GFI: Goodness-of-Fit Index

HESJ: Higher Education Sector in Jordan

HES: Higher Education Sector

HE: Higher Education

INS: Institutionalisation

INPs: Interview Participants

IFI: Incremental-Fit-Index

ICT: Information and Communication Technology

KMO: Kaiser-Meyer-Olkin

MHEJ: Ministry of Higher Education in Jordan

MHE: Ministry of Higher Education

MHEL: Ministry of Higher Education Laws

MM: Management Mindset

MC: Management Commitment

MP: Management Perception

MR: Management Relationship

MB: Mutual Benefit

MNCs: Multi-National Corporations

NFI: Normed Fit Index

OL: Organisational Learning

OLS: Ordinary Least Square

PJUs: Private Jordanian Universities

PUs: Private Universities

PNFI: Parsimony Normed Fit Index

PLS: Partial Least Square

RMSEA: Root Mean Square Error of Approximation

RMR: Root Mean Square Residual

RNI: Relative Non-Centrality Index

ROI: Return on Investment

ROE: Return on Equity

SL: Strategic Leadership

SMEs: Small and Medium Enterprises

SRC: Sharing Resources and Capabilities

SFs: Supporting Factors

SURs: Survey Respondents

SEM: Structure Equation Model

SMC: Squared Multiple Correlation

SRMR: Standardized Root Mean Residual

SPSS: Statistical Package for the Social Sciences

TMS: Top Management Support

TD: Trust Development

TLI: Tucker Lewis Fit Index

US: University Success

USIs: University Success Indicators

USQ: University of Southern Queensland

USA: United States of America

X²: Chi-Square Probability Level

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1   CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Coopetition strategy (COS) has received increasing attention in the academic literature, particularly in the broader business-to-business marketing literature (Ghobadi & D'Ambra 2012a; Ceptureanu et al. 2018; Crick 2020a). It is an evolving subject area in the field of strategic management (Dagnino & Rocco 2009; Czakon 2010; Niemczyk & Stańczyk 2014; Bengtsson & Raza 2016; Felzensztein et al. 2018; McGrath et al. 2019; Lascaux 2020). COS refers to the strategies used by organisations to cooperate and compete with each other simultaneously to create mutual value (Walley 2007; Garri 2020). Nalebuff and Brandenburger (1997) described COS as two or more competing organisations that cooperate with each other simultaneously to create a bigger business share in the market. In addition, Luo (2005) defined COS as the phenomena of integrating cooperation and competition strategy with each other simultaneously between competitors. Further, Ritala (2010) defined COS as a collaborative relationship between two or more independent economic actors simultaneously involved in product-market competition. Next, Gnyawali and Park (2011) described COS as a simultaneous pursuit of collaboration and competition between a pair of organisations. Bengtsson & Kock (2014) added that COS is an a paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions, regardless of whether their relationship is horizontal or vertical. Bouncken et al. (2015) added that COS is an inter-organisational relationship that combines cooperation and competition strategy with each other simultaneously that reflects interdependence among competitors. Dahl (2017) explained that COS is a paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions. Babu et al. (2020) support this view and argue that COS leads to an entanglement of payoffs for, and actions by, the players.

COS is important for organisations because it is related to innovation especially in high technology environments such as universities (Carayannis & Alexander 1999; Della Corte 2018; Navío-Marco et al. 2019). According to Bengtsson and Johansson (2014) and Cygler et al. (2018), COS can create new opportunities for organisations such as the stimulation of innovation by partners, development of technology,

obtaining complementary resources, entering new markets, and creating new products or services. Furthermore, successful COS has enabled organisations to expand and develop locally or internationally (Bengtsson & Kock 2000; Bigliardi et al. 2011; Shu et al. 2017).

Previous researchers have argued that successful COS is an essential strategy to improve organisational performance because it enables cooperation in some activities when organisations need to work with each other's, and competition when organisations are working alone simultaneously to increase their own profits and sustain their competitive advantages (San Martín-Rodríguez et al. 2005; Morris et al. 2007; Schmidt 2016; Feela 2020). Further, some researchers have argued that successful COS is crucial for the education sector because this sector needs intensive sharing of resources such as knowledge and infrastructure (Muijs & Rumyantseva 2014; Niemczyk & Stańczyk 2014; Dal-Soto & Monticelli 2017). This sharing may lead to enhanced organisational performance and promote sustainable competitive advantage. Thus, successful COS could be considered essential for organisations to create new markets, share new resources and obtain high-level technology; especially in the education sector (Niemczyk & Stańczyk 2014; Sułkowski et al. 2020).

Previous research in business has contributed to removing much of the ambiguity surrounding COS (Lado et al. 1997; Dagnino & Padula 2002; Zineldin 2004; Bengtsson & Kock 2014; Bengtsson & Raza 2016; Barney et al. 2017; Gnyawali & Charleton 2018; Czakon et al. 2020). In addition, researchers have supported the finding that coopetition success factors (COSFs) are important to improve organisational performance (Morris et al. 2007; Ritala 2012; Ritala & Hurmelinna 2013; Lindström & Polsa 2016; Perera et al. 2016; Pinasti et al. 2016). However, COSFs have not been highlighted and they are neglected or under researched in the higher education sector (HES) (Czachon & Kuś 2014; Muijs & Rumyantseva 2014; Niemczyk & Stańczyk 2014). Therefore, the focus of this study will be the exploration of COSFs in the HES to identify the factors critical to COS success.

1.2 Study Motivation and Justification

This research is motivated by the recent, rapid growth of COS in the business sector (Dagnino 2007; De Ngo & Okura 2008; Gnyawali et al. 2008; Bengtsson et al. 2010; Soppe et al. 2014). Researchers found that more than 50% of new cooperative

agreements are between competitors, indicating that COS is a strategy being used by organisations (Harbison & Pekar 1998; Luo 2007a). However, there is a lack of scholarly publications empirically examining COSFs (Ceptureanu et al. 2018a), particularly in the HES (Adnett & Davies 2003; Muijs & Rumyantseva 2014; Niemczyk & Stańczyk 2014).

Research has shown that several factors must be in place for COS to work. These factors include trust between competitors, benefits for each partner as well as for the network, leadership, long-term commitment, management support, synergy, capability, communication and common goals (Chin et al. 2008; Lindström & Polsa 2016; De Resende et al. 2018). One major challenge highlighted in the literature for almost all business sectors is the high cost of failure associated with COS management. The failure of competitors using this strategy is between 40% and 70% (Brouthers et al. 1997; Duysters et al. 1999; Sivadas & Dwyer 2000; Duysters & De Man 2003; Zineldin & Bredenlöw 2003; Gerwin 2004; Wittmann et al. 2009). Gonzalez (2001, p. 48) found that, although the 15 most successful alliances between competitors increased shareholder value by US$72 billion, the 15 least successful alliances between competitors decreased market capitalisation by US$43 billion.

The HES, in particular universities, is a unique sector that enables researchers to observe the cooperation and competition relationships simultaneously between competitors (Niemczyk & Stańczyk-Hugiet 2014). In addition, colleges and universities communicate within their environments through students, staff and teams of researchers, and this may increase universities' competitiveness and enhance the diffusion of their knowledge (Niemczyk & Stańczyk-Hugiet 2014). Furthermore, this translates into benefits for all parties and into a rise in the efficiency of the entire education sector (Muijs & Rumyantseva 2014).

The higher education sector in Jordan (HESJ) is a billion-dollar industry and, therefore, plays a vital role in Jordan's economy (Ministry of Higher Education 2017; 2021). According to other studies, the investment in HESJ is about 9.5% per year (Badran 2014). While private Jordanian universities (PJUs) are cooperating and competing with each other simultaneously and using COS (Ministry of Higher Education 2017; 2021), they could consider COSFs as a driver for successful COS to reduce costs, share knowledge, obtain complementary capabilities and achieve sustainable

competitive advantages (Bouncken et al. 2015; Limoubpratum et al. 2015; Hameed & Naveed 2019).

Previous studies that examine COSFs have paid little attention to the education sector (Cheng & Li 2002; Lam & Chin 2005; Morris et al. 2007; Perera et al. 2016; Ceptureanu et al. 2018a). According to studies and reports (Badran 2014; Ministry of Higher Education 2017;2021; Odeh 2017; Al-Jaghoub et al. 2019; Hatamleh & Darawsha 2019), competitors universities in Jordan need more cooperation along with competition with each other simultaneously to benefit from reducing costs, increasing knowledge sharing, improving quality, and understanding that COSFs have the potential to enable organizations to improve their performance (San Martín et al. 2005; Morris et al. 2007; Niemczyk & Stańczyk 2014). Therefore, these factors make further exploration of COSFs for PJUs a worthy activity.

1.3 Statement of the Problem in Context

Jordan has a rapidly increasing number of students in higher education (HE). Numbers increased from 28,439 in 1986–1987 to 103,092 in 1998–1999, and to 218,900 in 2000-2007 (Badran 2014; Ministry of Higher Education 2017; 2021). By 2015, numbers had risen to 313,500 students, which included 37,278 international students from more than 100 countries. In 2025, the number of students is expected to be 421,313 (Ministry of Higher Education 2017; 2021).

However, while the number of students is increasing, the authorities in the Ministry for Higher Education in Jordan (MHEJ) have made three changes that have impacted the viability of PJUs. First, they have reduced the level of funding to HES. For example, government funds and subsidies have been reduced from 59% of total revenue in 1987 to 36% of total revenue in 1997 (Albasheer 1998; Hammad & Al-Basheer 2000). Second, the MHEJ has allowed public universities to accept more students and increase their market share (Mah'd 2010). The third change is the introduction of The Parallel System (Mah'd 2010) which is an alternative system for students who seek HE in public universities but failed to achieve the necessary grades to qualify for university entrance (Mah'd 2010). This system allows such students to register in public universities but they are required to pay tuition fees comparable to those who are studying in private universities (PUs). These high tuition fees have reduced the deficit in public universities' budgets and increased their incomes (Mah'd

2010). However, the Parallel System has had a negative effect on PJUs and has reduced their share of students and funding. In addition, it has caused intensive student competition between Jordanian universities and increased the normal tuition fees at least three times since 2000 (Mah'd 2010).

These issues may motivate universities to look for other strategic choices, such as cooperation and competing with their competitors simultaneously that offer potential benefits, especially in reduced costs and risks.

1.4 Research Aim and Objectives

The aim of this research is *to explore factors that enable coopetition strategy to be successful in private Jordanian universities (PJUs)*. These factors will be used to inform the development of coopetition success factors model. To achieve this aim, the following research objectives have been identified:

1. To investigate the current organisational relationships which exist between PJUs.

1.1 To determine the coopetition strategy aspects, levels, and types between PJUs.

2. To explore factors that enable coopetition strategy to succeed in PJUs.

2.1 To explore the important factors for coopetition strategy in PJUs.

2.2 To determine universities' success indicators for the adoption of coopetition strategy in PJUs.

2.3 To investigate the relationships between coopetition success factors and university success indicators for the adoption of coopetition strategy to identify the critical success factors for sustaining coopetition strategy success between PJUs.

3. To develop a model for successful coopetition strategy among PJUs and confirm model suitability for sustaining coopetition strategy success between PJUs.

1.5 The Context of the Study

This section includes a brief description of Jordan, international HE, and HESJ.

1.5.1 Jordanian Hashemite Kingdom

The Hashemite Kingdom of Jordan is located in the middle of the Arab world in the Middle East (Sekulić 2014). Jordan is a relatively small country of 89,342 km2 with a

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population of about 10,203,134 in 2020, and over 30% of the population living below the poverty line (Zeitun 2006). It is a young country, becoming fully independent in 1946 after years of being under British mandate (SIDA 2011), and is bordered by Palestine, Israel, Syria, Iraq and Saudi Arabia (SIDA 2011; Sekulić 2014). The capital of Jordan is Amman, located in the northwest where 2,148,000 people are concentrated (UN 2019; Robins 2019). The majority of the population speaks Arabic as a first language. English is the second language and is taught at every level in the schools (United States Library of Congress 2006).

Jordan is a developing country with very limited resources. Its economy is described as open and service-oriented (Hutaibat 2005). It has a unique geographical position, stable political system, a highly-educated workforce, and a competitive labour force (United States Library of Congress 2006). The largest economic sectors in Jordan are the financial sector, especially the stock market, and service sectors, such as communication, health and education, which accounted for more than 70% of the gross domestic product in 2004 (United States Library of Congress 2006).

1.5.2 Higher Education International View

HE is an essential driver for an economy's national growth and development (Al-Lamki 2002). It aims to provide highly skilled graduates, develop human resources, transfer knowledge to the broader society, enhance research and development, create and produce future leaders, and promote economic activities (De Pillis & De Pillis 2001). Previous research, conducted internationally, has found that the HES has been dramatically influenced by globalisation and competition (Altbach 1998; El-Sheikh et al. 2012). Around the world, governments and their HE institutions (especially in developing countries) have faced major challenges in satisfying the fast growing demand for HE (Altbach 1998; Johnstone 1998; Johnstone et al. 1998; El-Sheikh et al. 2012). This demand has placed pressure on finances and many countries have been unable to provide the essential financial support for an expanding HES, and have been unable to effectively restructure their budgetary systems (Johnstone 1998; Johnstone et al. 1998; Thomas 2000; Mah'd 2010). As a result, governments in developing nations have started to shift the burden of university fees from government to students, their families, and to philanthropists (Trebilcock & Iacobucci 2003; Mah'd 2014).

1.5.3   Private Universities International Overview

Privatisation in education has become a major international trend (Quddus & Rashid 2000; Altbach & Knight 2007). Across the world, the HES has moved rapidly towards privatisation, supporting the objective of decreasing government funding. This trend has been noted in regions such as North America, East Asia, the Middle East, Latin America and Eastern Europe (Altbach 1998; Altbach & Knight 2007; Mah'd 2010).

Private universities (PUs) are important all over the world because they provide new opportunities and quality education to people irrespective of their high performance in examinations for admissions (Aithal 2018a). The shortage of HE institutions (especially in developing countries) compared to the countries' populations, push governments to encourage the establishment of PUs resulting in a rapid growth in their number (Aithal 2018a). This has been done by attracting private investors to share the responsibilities of providing PUs, as has happened in Jordan (Ministry of Higher Education 2021). Furthermore, some governments have failed to promote new universities or to subsidise the existing universities to cater for the ever increasing demand for HE (Aithal 2018a).

PUs are typically operated by non-government, non-profit organizations like a trust, or societies. Depending on the country, PUs may be subject to government rules, regulations and policies (Aithal 2018b). In many countries, most PUs are non-profit organizations contributing heavily to research and innovation (Aithal 2018b).

The establishment of PUs provides many advantages to HE systems. These include satisfying HE demand, more courses and specialisations, investment in education and training, financial and managerial independence, and employment creation for faculty and staff (Kharman 2005; El-Sheikh et al. 2012; Mah'd 2014; Mah'd 2014a).

According to Mah'd (2010), the largest number of PUs exists in Indonesia which represents 60% of HE sector, followed by India 50% (Aithal 2018a), U.S.A, and smaller private sector markets in Western Europe and Africa. Further, Aithal (2018a) and Kumar (2019) stated that Japan has 597 of private universities, Poland 321, Bangladesh 91, Pakistan 83, Germany 83, Malaysia 66, Turkey 66, Nigeria 60, Thailand 37, and Chile 31.

1.5.4 Higher Education Sector in Jordan

The Higher Education Sector in Jordan (HESJ) plays a significant role in developing service and industry sectors in Jordan at various levels and areas (Mah'd & Buckland 2009). In spite of the limited financial and human resources in the Kingdom, HE lies within the priorities of the State because of the role it plays in promoting the economic, social and knowledge levels of the Jordanian citizen (Mah'd 2010). During the last two decades, HESJ has experienced a significant growth in the number of graduates, expansion of HE institutions and universities, improvement in the management of the HES, enhancement of HE quality, and diversity of study programs according to international practice (El-Sheikh et al. 2012; Ministry of Higher Education 2021).

The landscape of the HESJ shifted dramatically towards privatisation at the beginning of the 1990s, with its reform beginning in 1989 (Temporary Law 19) when the government allowed private institutions or individuals to establish HEs (Mah'd 2010; Mah'd 2014). By encouraging the privatisation of HE, the government aimed to reduce government expenditure, raise competition, make universities more accountable, improve universities' competence and quality, satisfy parents' preferences, and enhance HE development (Kharman 2005; Mah'd 2010). Consequently, Jordanian universities have become more independent in managing administrative and financial matters through the issuance of the laws numbered: 43 for the year 2001, 20 and 23 for the year 2009, 17 and 18 for the year 2018, 17 and 18 for the year 2019 (Ministry of Higher Education & Scientific Resear 2021). All these laws have been aimed at enhancing the quality of the HESJ.

HESJ has a different ownership style which includes public and private, and different types of institutions (universities and colleges) (Mah'd 2010; Ministry of Higher Education 2017; 2021). The University of Jordan was the first public university (established in 1962), followed by the establishment of Al-Ahliyya Amman University in 1989 as the first PJU (Mah'd 2010; Ministry of Higher Education 2017; 2021). During his Majesty King Abdullah II's reign, many public universities and PUs were established, in addition to the foreign universities operating in Jordan. Jordan now has 10 public universities, 24 PUs, and 51 community colleges, in addition to the World Islamic Sciences and Education University (Ministry of Higher Education 2017; 2021). This growth in the number of universities has been accompanied by a significant increase in the number of students enrolled to study each year.

1.5.5 Private Jordanian Universities

The increasing number of high school graduates was a big challenge facing HESJ. For example, before the introduction of Private Jordanian Universities (PJUs), more than 50,000 students qualified for university admission each year, while public universities could absorb only around half of this number (Mah'd 2010; Mah'd 2014a; Ministry of Higher Education 2017; 2021). Thus, the number of general secondary school graduates in Jordan exceeded the capacity of public universities (Issa 2000; Mah'd 2010; Mah'd 2014a). The excess demand for places has resulted in students leaving Jordan to study abroad. This accounted for around half of all Jordanian students before 1990 (Burke & Al-Waked 2005; Mah'd 2010; Mah'd 2014a). This situation affected the Jordanian economy negatively, and caused social and financial problems for Jordanian families (Issa 2000; Burke & Al-Waked 2005).

PJUs have grown quickly, providing successful examples of innovation. They include 24 PJUs with the ability to absorb the surplus of Jordanian students and attract foreign students (Mah'd 2010; Ministry of Higher Education 2017; 2021). Non-government bodies such as families, private institutions, public shareholders and community organisation own PJUs (Mah'd 2010; Mah'd 2014a). Some of these universities are publicly listed on the Amman Stock Exchange (Mah'd 2010; El-Sheikh et al. 2012). All of these universities must be registered as commercial companies and implement the commercial companies' law, and they must meet the accreditation of the PUs laws (Mah'd 2010; El-Sheikh et al. 2012). In addition, PJUs are independent and have autonomous governance of their own financial and administrative issues (Mah'd 2010; El-Sheikh et al. 2012; Mah'd 2014a).

PJUs vary in the size and structure and program diversity (Mah'd 2010; El-Sheikh et al. 2012; Mah'd 2014a). According to the law of the Ministry of Higher Education (MHE), PJUs must have a structure to manage and supervise the universities, such as a Trustees' Council, Board of Directors, University Council, Deans' Council, and Department Council (Ministry of Higher Education 2021a; 2021b). Each council has specific roles, and responsibilities, and must participate in university management and strategic decision making (Ministry of Higher Education 2021a; 2021b). By law, the PJUs must have a president, vice presidents, deans and heads of departments who are appointed for a specific period of time which can be renewed (Mah'd 2010; Ministry of Higher Education 2021b). It is worth mentioning that all of these universities are

located under the authority of the MHE (Mah'd 2010; El-Sheikh et al. 2012). The MHEJ is in charge of the development of the universities in term of quality and excellence by applying MHE rules and instructions such as providing quality assurance (accreditation) to eligible universities, determining the admission policies of universities, providing legislation, and developing human resources and university management (Mah'd 2010; Nasser et al. 2011).

1.6 Research Questions

The focus question for this study was: *What are the critical factors that determine the success of coopetition strategy in private Jordanian universities (PJUs)?*

Drawing on the main research question, the study has formulated the following questions and sub-questions:

RQ1: What is the current organisational relationship between PJUs?

Sub1: What are the coopetition strategy aspects and levels exist between PJUs?

Sub2: What coopetition strategy type is used between PJUs?

RQ2: What are the factors that enable coopetition strategy to be successful in PJUs?

Sub1: What are the important factors for coopetition strategy success in PJUs?

Sub2: What are the university success indicators in adoption of coopetition strategy?

Sub3: What are the relationships between coopetition success factors and university success indicators in adoption coopetition strategy?

RQ3: What explanatory model of coopetition strategy success emerges from these findings?

1.7 Significance of the Research and its Contributions

This study researches the current coopetition (CO) practice in PJUs to identify COSFs that could have the capacity to improve a university's performance. As a result, the developed COSFs could be significant for PJU's and could be generalised to education sectors in similar environments and countries (Ruijun & Zhiman 2011; Ritala 2012; Ritala & Hurmelinna 2013). In addition, having identified COSFs in PJUs, a model of COSFs can be developed. The results of this study are considered significant for the

university sector because they provide management with a clear picture of COSFs based on the opinions of the top-level management and strategic decision makers at these universities.

This study is expected to make several contributions to the literature and practice. This study will contribute to the literature in two ways. First, it will address the current gap in the body of the knowledge regarding how organisations can manage successful COS in the education sector. Second, from an academic perspective, the COSFs model will help to guide future research and give clear guidance to researchers about the importance of COSFs that affect the successful adoption of COS.

It will contribute to COS practice by not only exploring COSFs in HES, but also by adding and developing a new model of COSFs and managing successful COS between PJUs. Further, it will have the potential to assist universities better understand and manage COS and how COSFs can be used to improve efficiency and performance through factors such as cost reductions, sharing knowledge, access to new resources and capabilities. Finally, the study is useful for those who are responsible for the management of successful COS in PJUs.

1.8 Thesis Outline

This thesis is comprised of seven chapters. The contents of each chapter is described below.

Chapter 1: Introduction

This chapter presents a brief overview on the research topic. It includes the background to the study, research motivation and justification, the research problem, and the research aim and objectives. It also provides the context of the study, which includes a brief description of Jordan, HESJ, PJUs, associated research questions, the significance of the research, and the main research contributions. It concludes with the thesis outline, which provides a brief description of the content of each chapter of this thesis.

Chapter 2: Literature Review

This chapter provides a review of the literature related to the context of COS's background, concepts, benefits and costs, levels and types. It presents also COSFs models and past studies in COSFs in different sectors. The review also discusses the

qualitative and quantitative indicators for performance, and past studies measuring the success of coopetition performance (COP). In addition, it outlines the relationship between COSFs and successful COP reported in previous research, states the gap in the literature, and develops the proposed conceptual framework.

Chapter 3: Research Methodology

This chapter outlines the research methodology used to gather and analyse data to answer the research problem. This chapter includes the research philosophy, approaches, and paradigm. It then discusses the research design based on a sequential mixed method approach, the qualitative and quantitative data collection stages and the analysis methods. Finally, it provides ethical considerations and a chapter summary.

Chapter 4: Qualitative Data Analysis

This chapter presents the data analysis and findings of the exploratory stage of the research. It is divided into seven main sections. The first section reports on the current relationships between PJUs. The second and third sections discuss the coopetition (CO) areas among universities. The fourth section identifies COS types for PJUs. It is followed by an exploration of the themes that may be influencing COS success and the identification of coopetition success indicators (COSIs) by using two processes of analysis (thematic and leximancer analysis). Finally, it provides operational definitions for the factors used in the proposed research model, develops the conceptual framework, and provides the hypothesis based on the exploratory stage.

Chapter 5: Quantitative Data Analysis

This chapter outlines the results of the quantitative data analysis. It starts with the results of a descriptive analysis of the survey respondents (SURs) and research constructs, followed by a measurement scale validation. Next, it tests measurement development of the proposed model using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) for the data collected, and validates a reliability test. It also describes the test of structural equation modelling (SEM), followed by an examination of the hypotheses' results and assesses the relationship strength in the proposed research model.

Chapter 6: Results Discussion

This chapter presents a summary of the research results, discusses the research outcomes, and fully addresses the two main research questions and the five research sub-questions to draw, ultimately, the final research model.

Chapter 7: Conclusion, Limitations, and Future Research

This chapter addresses the final research question by presenting the emerging frameworks for the COSFs model for PJUs. It also presents findings from the research objectives and the research's theoretical contributions. It provides a discussion on the practical contributions, which include the implications for PJUs leaders, managers, staff, and the HESJ. Finally, this chapter presents the research conclusion and includes a set of recommendations, research limitations and considerations for future research.

1.9 Chapter Summary

This chapter provides a brief overview of the research focus, research problem, researcher's motivation and research justification. Then it presents the main objectives of the research, research questions, and the significance of the study.

The following chapter aims to review the relevant COS literature, and explore COSFs, and coopetition success indicators (COSIs).

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Overview

The aim of this chapter is to conduct a comprehensive evaluation of the relevant literature relating to the coopetition strategy (COS) field. The chapter first presents the relevant theory and the theoretical framework for COS. The second section focuses on coopetition success factors (COSFs), successful coopetition performance (COP) in different sectors and the relationship between them as reported from previous research. The chapter then presents the gap in the literature, the initial proposed conceptual framework for this study and a chapter summary.

2.2 Inter-organisational Relationship Theory

In the last two decades, studies relating to inter-organisational relationship theory have increased (Oliver & Ebers 1998; Sobrero & Schrader 1998; Cousins 2002a). These studies have drawn attention to how organisational relationships occur in numerous types of cooperative arrangements such as strategic alliances, partnerships and joint ventures (Oliver 1990; Gulati 1998; Barringer & Harrison 2000). Theories on interaction and relationships between competitors focus on either cooperation or competition between them and not on the combinations of the two types of relationships in which competitors can be involved (Hunt 1997; Bengtsson & Kock 2000). Therefore, the terms competition and cooperation have been used both separately and together to describe the relations among organisations (M'Chirgui 2005).

Until the mid-1980s, inter-organisational relations were analysed mainly under the aegis of competition between organisations and were influenced by economic theories (Dal-Soto & Monticelli 2017). Traditionally, competitors believed that they could only compete with each other, but research using the network approach and strategic alliances have provided new understandings of the different types of relationships between organisations that are embedded in a climate of competition (Shearman et al. 1993; Nalebuff et al. 1996; Axelsson & Easton 2016). From the second half of the 1980s, studies on cooperation between organisations widened, and the interaction between cooperation and competition strategies was considered from the 1990s (Dal-Soto & Monticelli 2017).

As a result of initial research conducted into relationships between competitors in horizontal situations, empirical studies have offered new concepts related to the multidimensional ways which competitors interact with each other, both in cooperation and competition (Bengtsson & Kock 2000; Bengtsson et al. 2003). These studies have shown that competitors are involved in direct horizontal relationships with each other of many different forms (Bengtsson & Kock 2000; Makkonen 2008). According to other research studies, there are four types of relationships in which a company can be involved. These are coexistence, competition, cooperation, and coopetition (CO) (Easton & Araujo 1992; Bengtsson & Kock 1999, 2000; Bengtsson et al. 2003; Czakon 2010; Yami et al. 2010; Örne & Holmberg 2014; Czernek & Czakon 2016; Sahlan et al. 2019), see Figure 2.1.
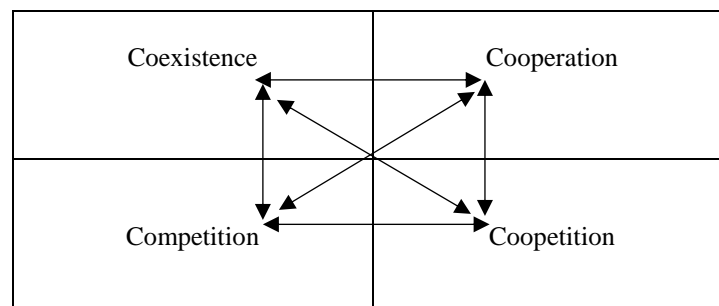
Figure 2.1: Types of relationships

Source: (Czakon 2010) p. 59

In reference to Figure 2.1 *coexistence* is a situation where two businesses have no direct relationship with or significant influence on each other (Robalo 2014). It represents the absence of interaction between the organisations which simply occupy the same space and time. As they do not interact in the same market, it is not possible for them to be in a competition or cooperation relationship (Czakon 2010). This form does not relate to this study.

Competition is the action of attempting or making efforts to gain what another is endeavouring to gain at the same time (Hwang & Chang 2015). It represents a relationship in which the organisations are far from sharing and, due to a dynamic situation that occurs between several players, act in the same market and fight for scarce resources to produce and sell similar products or services (Hunt 2007; Porter 1998; Pant & Yu 2018).

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However, by the mid-1990s, the traditional scenario of competition had become obsolete due to some limitations (Palmer 2001; Batt & Purchase 2004). For example, competition had failed to recognise the extent to which the competition of one economic unit tended to affect the economic position of others and, consequently, overall industrial structure (Oliver 2004; Padula & Dagnino 2007; Osarenkhoe 2010a). In addition, it ignored the imperfections of the competitive relationship in the long-run that could lead to the monopolistic position of an organisation within an industry, instead of a state of perfect competition (Hunt & Morgan 1995; Bengtsson et al. 2010; Osarenkhoe 2010a). Further, a number of studies conducted in past decades have reported on these limitations (Porter 1991; Bengtsson & Kock 2000; Quintana & Benavides 2004; Luo 2007a; Peng & Bourne 2009; Bullinger et al. 2010; Park 2011; Galkina & Lundgren 2017; Monticelli et al. 2018; Pant & Yu 2018; Sellitto & Luchese 2018).

Accordingly, scholars have paid increasing attention to ***cooperation***, (Child et al. 2005; Thorgren et al. 2009). This form represents a relationship in which the goal of the involved organisations is the shared benefits and individual growth through the sharing of complementarity resources, capabilities and knowledge (Fawcett 1991; Dagnino & Padula 2002; Blomqvist et al. 2005). Cooperation occurs when organisations attempt to reach their goals through reciprocal agreement instead of competition, thus creating a win–win scenario (Palmer 2001; Batt & Purchase 2004; Jarillo 2013). However, as with the competitive approach, the co-operative perspective is incomplete and has several limitations (Uzzi 1997; Peng & Bourne 2009). For example, the lack of confidence between participants, a strategic mismatch between firms with different goals, opportunistic actions, inadequate benefits to partners, or the lack of recognition of competitive forces in a co-operative relationship limit the benefits of a co-operative strategy (Frank 1988; Bengtsson & Kock 2000; Tiessen & Linton 2000; Bengtsson et al. 2010; Jarillo 2013). Furthermore, cooperation may generate strategic inflexibility due to the reciprocal commitments of idiosyncratic and specialized resources in the cooperative efforts (Bresser & Harl 1986; Volberda 1996). Further, a number of studies have reported on these limitations (Volberda 1996; Uzzi 1997; Dyer & Singh 1998; Padula & Dagnino 2007; Peng & Bourne 2009; Rebecca 2013; Pant & Yu 2016).

Even though competition and cooperation can be powerful in describing relationships between organisations, they cannot fully explain all inter-organisational relationships due the lack of confidence between participants, opportunistic actions or inadequate benefits to partners (Padula & Dagnino 2007; Bengtsson et al. 2010; Yami 2010). Therefore, a new organizational relationship has emerged (Bengtsson & Kock 2014), that is CO, which combines the virtues of both competition and collaboration (Lado et al. 1997; Clarke et al. 2003; Ritala 2012; Gnyawali et al. 2016). CO allows organisations to engage simultaneously in cooperation and competition (see Appendix A1 Table1 for more details about the differences between CO, cooperation and competition).

CO is viewed as a strategy that enables businesses to deal with a dynamic and complex business environment, uncertainties driven by the rising levels of global competition, the emergence of new markets and rapid technological changes (Bengtsson & Kock 2000; Bengtsson et al. 2010; Deitz et al. 2010; Park et al. 2014).

2.3 Coopetition Strategy Theoretical Framework

2.3.1 Background

The word "coopetition" is a combination of "cooperation" and "competition" and is intended to name a complex relationship of organisational interdependence between competitors where both of these phenomena coexist (Cruijssen et al. 2007; Dagnino 2007; Chen 2008; Gnyawali & Park 2009; Osarenkhoe 2010b). Some researchers argue that the origin of the CO construct dates from the game-theoretical approach regarding real-world mixed-motive games in economics research (Mariani 2007). However, most scholars agree that Raymond John Noorda, CEO of the American multinational software and services company, coined the term 'CO' and used it in the business environment of the 1980s-1990s (Bagshaw & Bagshaw 2001; Dagnino & Padula 2002; Luo et al. 2006; Dagnino 2007; Luo 2007a; Ritala 2010; Stein 2010; Zhang & Frazier 2011; Katsanakis & Kossyva 2012) calling for simultaneous cooperation and competition between firms (Zhang & Frazier 2011). However, the term remained but was not used until Brandenburger and Nalebuff (1996) explicated the new concept of alliances between competitors. After their book Coopetition was published, scholars and managers began to recognise the existence of this new kind of inter-firm relationship (Bouncken et al. 2015).

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Even so, CO is a recent concept in the business world, and has emerged due to increasing globalisation, rapid technological innovation, rapidly changing customer requirements, decreasing the intensive competition to get more resources in business environment, and more rapid product obsolescence (Limoubpratum et al. 2015). Further, CO has been gained support due to the increasing competitiveness and regulations pertaining to sustainable development goals set by many governments. In addition, independent organisations have been forced to recognise the value of networks, cooperation and joint operations in their effort to meet new market environment demands and challenges (Bigliardi et al. 2011; Lilien & Grewal 2012; McKinnon et al. 2015). CO allows organisations to improve their performance by gaining complementarity resources from partners (Whipple & Frankel 2000).

Therefore, organisations have been encouraged to change their cultural approach from win-lose to win-win competition by recognising the value of cooperation with competitors as a starting point for reducing non-value-adding activities and improving performance. Accordingly, research on the phenomenon of CO has also increased and has become a new research stream for inter-organisation relationships and alliances, though scholars have defined and approached CO in different ways (Bouncken et al. 2015; Gast et al. 2015).

2.3.2 Coopetition Strategy Definitions

Coopetition strategy (COS) is defined in multiple ways however, all definitions share the basic attribute of cooperating and competing with one another, but differ depending on how focused or broad are (Yami et al. 2010). Coy (2006), described COS as "sleeping with the enemy" (p. 96), which means the act of collaboration with business competitors in the hope of mutually beneficial results. Abdallah (2011) and Park (2011) noted that most scholars who capture the concept of COS base their understanding on the three most cited seminal works (Nalebuff et al. 1996; Lado et al. 1997; Bengtsson & Kock 2000). According to (Park 2011; Pellegrin et al. 2013; Bouncken et al. 2015; Gast et al. 2015; Limoubpratum 2015; Raza 2017), two main views exist to define COS, namely a broad view (Nalebuff et al. 1996; Afuah 2004; Bouncken et al. 2015) and a narrow view (Bengtsson & Kock 2000; Von Friedrichs 2003; Gnyawali et al. 2006; Gueguen 2009).

For a broad view, Brandenburger and Nalebuff (1995, p.60) defined COS as a "combination of cooperation and competition. It means that two or more competing organizations cooperate to create a bigger business pie and simultaneously compete for bigger pieces". Lado et al. (1997, p.12) defined COS as "a strategy which organisations use to achieve a dynamic balance between competitive and collaborative strategies". However, Ross and Robertson (2007, p.109) defined COS in another way: "It refers to the condition in which two or more competitors cooperate for increase a piece of 'pie' in the marketplace and then compete for the greatest share of that 'pie'". Bouncken et al. (2015, p591) use the following definition for COS: [it is] …"a strategic and dynamic process in which economic actors jointly create value through cooperative interaction, while they simultaneously compete to capture part of that value".

In contrast to the broad approach, the other take is the narrow view approach. Bengtsson and Kock (2000) defined COS as *"the dyadic and paradoxical relationship that emerges when two organisations cooperate in some activities, such as in a strategic alliance, and at the same time compete with each other in other activities"* (p.412), while Zineldin (2004) defined COS as "a business condition in which independent groups cooperate with one another and coordinate their activities, thereby they are collaborating to achieve mutual goals, but at the same time compete with each other as well as with other organisations" (p.780). (Porto et al. 2018) defined COS as "cooperation activities between neighbouring competitors located in the same region" (p.611). For more coopetition strategy definitions, see Appendix A2 Table 2).

Thus, after a close examination of the literature, and for the purpose of this study, the narrow view approach as defined by (Bengtsson & Kock 2000) has been adopted as it provides a more comprehensive definition of a COS.

2.3.3   Coopetition Strategy Characteristics

CO juxtaposes two opposite logics of cooperative and competitive interactions between organisations (Raza 2017). The cooperative logic stresses working closely with each other, sharing information and resources, and creating mutually beneficial results (Dagnino & Padula 2002; Raza 2017). On the other hand, competitive logic emphasizes keeping distance, protecting information, and maximizing individual gains even if they come at a partner's expense (Lewis 2000; Chen 2008). Further, regarding

the contradicting natures of competition and collaboration, CO incorporates both of them simultaneously and make them interdependent opposites (Smith & Lewis 2011; Dagnino 2009). Therefore, and based on their apparent opposition and interdependence, scholars suggest that competition and cooperation are among the most noted paradoxical organizational phenomena (Bengtsson & Kock 2000; Coy 2006; Di Guardo & Galvagno 2007; Schmiele & Sofka 2007; Chen 2008). According to Smith & Lewis (2011), CO is a paradox because it juxtaposes the contradictory interrelated elements of cooperation and competition that exist simultaneously and persist over time.

CO is also a complex and challenging phenomenon to pursue. Scholars suggest that the contradictory elements of cooperation and competition seem logical in isolation, but appear irrational, inconsistent, and even absurd when considered simultaneously (Lewis 2000). Particularly, dealing with a situation in which both the cooperative and the competitive interactions are intense. For instance, a strong and balanced paradox is likely to pose heightened challenges for managers. Moreover, it is also challenging to balance a weak paradox cooperation or competition dominated. The inherent risk in such imbalanced alliances is that they are more prone to dissolve prematurely (Das & Teng 2000; Fang et al. 2011). Therefore, managers need to address both sides of the paradoxical demands and struggle to strike a balance between both. Such situations, however, also seem to be difficult and complicated to handle (Lewis 2000; Smith 2014).

Coopetition also is a win-win strategy, however the results are changeable and ambiguous (Dagnino & Padula 2002; Dagnino 2009), and dependent on the actions of the elements involved. The combination of those contradicting concepts make coopetition very dynamic and unstable as it is shaped by the constant action and reaction of the interdependent organisations involved (Castaldo & Dagnino 2009). Moreover, the number of the organisations involved, the industry they operate in, which part of their business they cooperate or compete and many internal/external factors make it impossible to generalize about whether competition or cooperation weighs more heavily in a coopetitive relationship (Aladag 2013). According to Luo (2005), these contradicting elements are dynamic, the dominance of one over another constantly change with regard to the changes in the external environment and the organisation's needs (Bengtsson & Kock 2000).

2.3.4 Coopetition Benefits and Costs

Organisations are involved in COS to obtain many benefits. It may lead to an increase in creation and innovation abilities, a reduction in the transactional cost of investment, sharing risk, promoting new products and services, and maintaining a high level of consumer satisfaction (Dittrich & Duysters 2007; Luo 2007b; Gueguen 2009; Ritala et al. 2009; Gnyawali & Park 2011). COS may also lead to a high level research and development activities, access to superior technology, and an increased profit for all participants in the alliance (Zineldin 2004; Walley 2007). In addition, COS enhances the synergistic effects, specialisation, and advantages of scale for all partners (Bigliardi et al. 2011) and can be positively related to the growth of an organisation, its competitiveness, and its ability to deal with a changing business environment (Pellegrin et al. 2013; Cygler & Sroka 2016). Furthermore, COS helps organisations improve their activities, market offers, and market competition to sustain their competitive advantage and improve their performance and market attractiveness (Levy et al. 2003; Ganguli 2007; Ritala & Hurmelinna 2009; Pellegrin et al. 2013). It allows organisations to exchange common interests, share knowledge, experience and expertise, access to new resources, and capabilities of external partners (Gnyawali et al. 2008; Ritala & Hurmelinna 2009; Yami 2010; Akdoğan & Cingšz 2012; Ritala 2012; Petter et al. 2017). Finally, COS can increase the effectiveness and efficiency of the involved companies and generate a win–win-situation with lower overall costs (Chin et al. 2008; Bouncken et al. 2015).

However, COS could be described as a dangerous or risky strategy (Gnyawali & Park 2009; Pellegrin et al. 2013). For example, it involves several sources of conflict due to the complex and interdependent nature of the coopetition relationship (COR), the clash between the cooperation and competition interactions, and a difference in aims and interests which can create actual costs to the partners (Bonel & Rocco 2007; Gnyawali et al. 2008; Ritala & Hurmelinna 2009; Yami 2010; Fernandez et al. 2014). Also, COS could increase the level of tension between partners and maximise the chance of unsuccessful relations between competitors, and may even increase the risk of project failure (Tidström 2014). COS may bring uncertainty, provide reasons for caution, and increase the risk of exposing confidential material on organisation-specific knowledge (Bengtsson & Kock 2000; Bouncken & Kraus 2013; Ritala & Hurmelinna 2013). Furthermore, COS can result in a negative influence on the involved organisations

such as loss of control, flexibility and freedom among the co-opting partners (Levy et al. 2003; Baumard 2009; Bouncken & Kraus 2013). Finally, a threat of opportunism and knowledge leakage can impede the development of radical innovations and can harm the overall performance and competitiveness of co-opting firms (Cassiman et al. 2009).

Therefore, COS needs to be managed carefully as it is fraught with difficulties such as opportunism, misunderstandings, and unintended knowledge spill-overs and internal tensions. Each of these can hamper the positive impact of COS on performance and innovation and increase the negative influence of the involved organisations (Bouncken et al. 2015).

2.3.5 Coopetition Areas

There are different areas where firms cooperate with other firms such as in R&D, manufacturing, purchase, sales, distribution, training and marketing. Many researchers have provided evidence of the importance of cooperation with competitors in all mentioned areas (Palcic et al. 2008) (see Table 2.2). Table 2.2 shows that scholars have provided CO areas in different sectors such as industry (Kamarudin & Sajilan 2013; Cygler & Sroka 2017; Cygler et al. 2018), aviation (Klimas 2014; Gerner 2018), ICT (Rusko et al. 2016; Pellegrin et al. 2018), education (Badran 2014; Dal-Soto & Monticelli 2017), and tourism (Hilaly 2015) sectors.

Table 2-1: Coopetition areas in different sectors

Authors	Coopetition areas	Context
1. (Cygler et al. 2018)	R&D, supply, production or services, sales or distribution, marketing, logistic, finance, IT, human resources.	Industry sector
2. (Cygler & Sroka 2017)	Finance and marketing, sales and production, human resources and logistics, information technology, purchasing inputs, R&D.	
3. (Cygler & Dębkowska 2015)	R&D, input supply, production/services, sales/distribution, marketing, logistics, finance, computer information systems, human relations	
4. (Rusko 2011)	Competition or output activities (research and development, purchasing and the processing of raw materials), cooperation or input activities (distribution, services, product development and marketing), coopetition activities (raw material, seme-finished products, products, marketing)	
5. (Lewis 2009)	Sales forces jointly promote, jointly service customers, create new products together, share shipping costs, ship closer to customers, share warehousing costs, share information on competitors, share technical expertise, share information on customers, inform of events impacting on other companies, help out with products at short notice, assist with important unexpected problems	

Authors	Coopetition areas	Context
6. (Kamarudin & Sajilan 2013)	Sharing facilities, sharing talent pool, collaborating on projects, finance, marketing and administration	
7. (Palcic et al. 2008)	R&D area with universities and other research institutions, R&D area with other firms, manufacturing area, purchasing area, service area/sales area /distribution area, education and training area	
8. (Klimas 2014)	Cooperating in testing, research on aircraft turbines, research on aerospace propulsion, multifunction moto glider. Competing in new composite technologies, energy saving turbines drive boxes, light and ultra-light gliders, pilot trainings	Aviation sector
	Cooperating in electric power-engine control systems, shafts for aircraft engines, low-pressure turbines and power transmission, engine components–blades and turbines. Competing in helicopters, engine components–gears, turbofan power plant systems, blades and turbines, liquid fuels	
Authors	**Coopetition areas**	**Context**
9. (Gerner 2018)	R&D, input supply, production and services, sales and distribution, marketing, logistics, finance, computer information systems, and human relations	
10. (Dal-Soto & Monticelli 2017)	Administrative activities (e.g. student loan programs, student financing funds, sharing managerial experiences and administrative procedures), academic actions (e.g. post-graduation courses, a continuing education program for teachers, joint research)	Education sector
11. (Badran 2014)	Collaborative teaching, research projects, courses, conferences, seminars, symposia, exchange of publications and other materials of common interest	
12. (Santoro & Chakrabarti 2002)	Research support (e.g. upgrade laboratories, provide fellowships to students, provide seed money for new projects), cooperative research (e.g. contract research with investigators, consulting by faculty, and certain group arrangements for addressing industry problems) knowledge transfer (e.g. ongoing formal and informal personal interactions, cooperative education, curriculum development), technology transfer (e.g. research and industry expertise, technological consulting)	Industry-university cooperation
13. (Polt et al. 2001)	Collaborative research, contract research and technology-related consulting, staff mobility between firms and public science institutions, cooperation in the education of graduate students, vocational training for employees, use of intellectual property rights by public scientific organizations, spin-offs, informal contacts and personal networks.	
14. (Davey et al. 2011)	Curriculum development, lifelong learning, student mobility, academic mobility, commercialization of R&D results, collaboration in R&D, entrepreneurship, and governance.	
15. (Seppo & Lilles 2012)	Curriculum development, lifelong learning, student mobility, academic mobility, commercialization of R&D, collaboration in R&D, entrepreneurship, governance.	
16. (Jensen et al. 2009)	Networks (number of collaborative and contract research projects); continuing professional development (number of university-industry laboratory researcher exchanges); consultancy (number and value of consultancy contracts); collaborative research (number and value of joint ventures); contract research (number and value of contract research projects); licensing (number of invention disclosures); spin-offs (number of spin-offs formed); teaching (number of student graduation by course type).	
17. (Lindström & Polsa 2016)	Input or cooperative activities (e.g. logistic, production, R&D); output or competing activities (e.g. sales, marketing, and branding).	ICT sector

18. (Rusko et al. 2016)	Open data services, advertising and image marketing activities, data processing, hosting and related activities to web portals, wellness industry, computer programming activities, landscape service activities, manufacturing of metal products, remediation activities and other waste management services, manufacture of computers and peripheral equipment	
19. (Pellegrin et al. 2018)	Cooperation activities (e.g. R&D, production, sharing, knowledge and costs); competition activities (e.g. selling, distribution commercial / market, distribution channels, communication)	
20. (Rusko 2012)	Upstream activities (e.g. cooperation in purchasing and production of raw material, competition in market activities); midstream activities (e.g. cooperation in the production of semi-finished products, competition in the midstream parts of the supply chain); downstream activities (e.g. cooperation in marketing, competition in other downstream parts of the supply chain).	Supply chain framework
Authors	**Coopetition areas**	**Context**
21. (Hilaly 2015)	Marketing, product development and competency, operation process.	Tourism sector

- In the **industry sector**, Kamarudin and Sajilan (2013) stated that CO areas in the Malaysian animation industry included sharing facilities, sharing the talent pool, collaborating on a project, finance, marketing and administration. Cygler et al. (2018) indicated that cooperation areas comprised R&D, supply, production or services, sales or distribution, marketing, logistic, finance, IT, and human resources (see Table 2.2).

- In the **aviation sector**, Gerner (2018) identified R&D, inputs' supply, production and services, sales and distribution, marketing, logistics, finance, computer information systems, and human relations as an important CO areas between organisations (see Table 2.2)

- In the ICT sector, Lindström and Polsa (2016) stated that cooperative activities (e.g. logistics, production and R&D) and competing activities (e.g. sales, marketing and branding) are the main CO activities in ICT businesses in Finland (see Table 2.2)

- In the **education sector**, Dal-Soto and Monticelli (2017) presented administrative activities (e.g. student loan programs, student financing fund, sharing managerial experiences and administrative procedures), academic actions (e.g. post-graduate courses, a continuing education program for teachers, joint research) as CO areas in the education sector in Brazil (see Table 2.2)

- In the **tourism sector**, Hilaly (2015) offered cooperation activities with competitors between tourism firms in Egypt such as cooperation in marketing, product development and competency, and operational processes (see Table 2.2).

2.3.6 Coopetition Levels

The COS literature has revealed different classifications of levels between two or more competitors. A COS level is the unit of analysis for cooperative relationships between competitors which may occur in individual, intra-organisational, inter- organisational and network levels of analysis (Luo et al. 2006; Peng & Bourne 2009; Bengtsson et al. 2010; Yami et al. 2010; Bengtsson et al. 2013; Raza et al. 2014; Bengtsson et al. 2016; Dorn et al. 2016; Buttschardt 2017). The inter-organisational level is the most prominent level of COS; occurring between two or more competitors (Bengtsson & Kock 2000; Quintana & Benavides 2004; Bouncken & Kraus 2013). The intra-organisational level occurs within organisations or between business units (Tsai 2002; Luo 2005; Luo et al. 2006; Walley 2007; Makkonen 2008; Ritala et al. 2009a). The individual level occurs between people (Enkel et al. 2009), whereas the network level means multiple CORs in one or several areas (Dagnino & Padula 2002; Luo 2005; Gnyawali et al. 2006; Pellegrin et al. 2013).

The second classification of COS levels is based on the nature of coopetitors and creating value, including micro, meso and macro levels (Dagnino & Padula 2002; Niemczyk & Stańczyk 2014). The micro level occurs for functions and divisions or workers within organization (intra-organisational coopetition) (Tsai 2002; Luo 2005; Loch et al. 2006; Luo et al. 2006; Ghobadi & D'Ambra 2013). The meso level is focused on relationships between organisations connected vertically or horizontally in the value net (inter-organisational CO) (Simoni & Caiazza 2012; Kim et al. 2013; Ritala & Hurmelinna 2013; Chen 2014; Raza et al. 2014; Ritala & Huizingh 2014; Rai 2016). The meso includes a dyad (two relationships) or network relationship (a collection of organisations engaged in a structure of relationships at the same time) (Ross & Robertson 2007; Huang & Yu 2011; Bouncken & Fredrich 2012; Pellegrin et al. 2013; Park et al. 2014; Yami & Nemeh 2014). Finally, the macro level refers to CO happening between competitors organisations across industries (Gnyawali & Madhavan 2001; Oliver 2004; M'Chirgui 2005a; M'Chirgui 2005; Gnyawali et al.

2006; Rusko 2011; Tidström 2014). Table 2.3 illustrates COS levels in selective studies and different sectors.

In this study, the researcher has focused on the inter-organisational level (meso) horizontally among PJUs. Focussing at this level meets the main objective of this study which is to explore factors that affect the COS success for PJUs.

Table 2-2: Coopetition levels

Authors	Coopetition levels	Focus
1. (Raza et al. 2014)	Individual, organisational and inter-organisational	Manufacturing sector
2. (Yami et al. 2010)	Individual, organizational, dyadic and inter-organizational and network levels	Theoretical study
3. (Bengtsson & Raza 2016)	Dyadic, triadic, intra-organisational and network	Systematic literature review
4. (Dagnino & Padula 2002)	Macro, micro and meso	Theoretical study
5. (De Resende et al. 2018)	Company and network	Gastronomic industry
6. (Devece et al. 2019)	Inter-firm, intra-firm, dyadic, network and inter-network levels	Systematic literature review
7. (Dorn et al. 2016)	Intra-firm level, inter-firm level and network level	Systematic literature review
8. (Czakon et al. 2020)	Network, inter-firm level, dyad level, firm level and individual	Tourism sector
9. (Basole et al. 2015)	High, low and moderate	ICT ecosystem
10. (Gnyawali & Park 2009)	industry, dyadic and firm level	Technological innovation sector
11. (Knein et al. 2020)	Cross-functional coopetition, inter-firm coopetition and internal coopetition	Cross-cultural studies
12. (Klimas 2014)	Industry, firm and network	Aviation Industry
13. (Schnitzer et al. 2018)	Collective level and individual level	Tourism sector
14. (Volschenk 2016)	Macro, meso and micro levels	Wine industry
15. (Schmidt 2016)	Dyadic, Network, inter-firm and intra-firm	Theoretical study
16. (Jacobs 2015)	Individual, intra-organisational, inter-organisational and inter-network	High-tech firm
17. (Ceptureanu et al. 2018)	Individual level, organisational level and inter-organisational level	Oil and gas distribution sector
18. (Bouncken et al. 2015)	Inter-firm/organization level, individual level, intra-organizational level and network level	Systematic literature review
19. (Altendorfer 2019)	Individual level, organisational level and inter-firm/network level	Theoretical study
20. (Fernandez et al. 2014)	organizational, intra-organizational and inter-individual	Manufacturing satellites
21. (Park 2015)	High, medium and low	Smart phone industry
22. (Coudounaris 2018)	Individual (person) level, intra-firm/organization level, inter-firm level and network level	E-Invoicing service providers
23. (Eriksson 2008b)	High, medium and low	Manufacturing pharmaceuticals
24. (Czakon & Rogalski 2014)	Network level, firm level, inter-organizational level, dyadic level simplex or complex, industry level, individual level and collective level	Systematic literature review

25. (Czakon et al. 2014)	Industry level, dyadic level, organisational level, intra-firm level or inter-individual level, multiple level and inter-organisational level	Theoretical study
26. (Rafi et al. 2020)	Intra and inter-organisational level, group level and multiple levels	Fashion industry
27. (Niemczyk & Stańczyk 2014)	Micro, macro and meso	Education sector
28. (Buttschardt 2017)	Inter-organisational, individual, intrafirm, inter-firm, project and network levels	IT projects

2.3.7 Types of Coopetition Behaviour

COS is a multidimensional and multifaceted concept that needs clear classification in order to distinguish between different CO situations and behaviour (Dagnino & Padula 2002; Luo 2007a). The literature on COS shows that there are different types of COS modes using various criteria (Abdallah 2011; Bigliardi et al. 2011) such as the degree of cooperation and competition, the direction and nature of relationship, and the direction and location of relationships (see Table 2.4). This study is developed to illustrate selective studies for CO typology. The criteria used for COS behaviour classification, while different in language, can be grouped into three main areas (see Table 2.4). The three main groups are:

Group 1: Based on the criteria of CO direction with coopetive agreement in value added chains (Pellegrin et al. 2013), nature of interdependence (Dowling et al. 1996), location of relationship (Carayannis & Alexander 2004), nature and scope of relationship (Golnam et al. 2014), for classification COS (see Table 2.4). For example, (Pellegrin et al. 2013) made a distinction between vertical collaboration (CO with vertical cooperation and entry in the partner market) and horizontal cooperation (CO with horizontal cooperation and cooperation with rivals).

Group 2: Based on the criteria of a number of rival firms with single or several level of value chain (Dagnino 2009), diversity of involvement (Luo 2007b), intensity of CO (Gnyawali et al. 2008) (see Table 2.4). For instance, (Dagnino 2009) identified four types of COS: Type 1 simple dyadic CO (single level of value chain with two firms) (i.e., strategic consortia as R&D consortia). Type 2 simple network CO (single level of value chain with more than two firms) (i.e., a number of firm dyads in the automobile industry who cooperate on car R&D and/or production and compete in car distribution). Type 3 complex dyadic CO (several levels of value chain with two firms) (i.e., buyer-supplier relationships known as parallel sourcing). Type 4 complex

network CO (several levels of value chain with more than two firms) (i.e., industrial districts, firm clusters and multilateral agreements).

Group 3: The largest group using common criteria based on the level or the degree of CO between competitors (the degree of cooperation and competition) (Lado et al. 1997; Bengtsson & Kock 2000; Luo 2004; Lamberg & Ojala 2006; Luo 2005, 2007a; Chin et al. 2008; Bengtsson, et al. 2010; Park 2011; Raza et al. 2014), see Table 2.4. This group also used the criteria of degree of CO with product portfolio (Crick et al. 2020), the level of engagement (Reinartz & Berkmann 2018) and upstream or downstream moves (Rusko 2011), see Table 2.4.

Park (2011) provides a typology for the degrees of CO in the semiconductor industry. This typology reflects four cells according to the levels of CO: Type A cooperation-dominant coopetition (strong cooperation, weak competition), Type B balanced strong coopetition (strong cooperation and competition), Type C weak coopetition (weak cooperation and competition), and Type D competition-dominant coopetition (weak cooperation, strong competition).

Table 2-3: Types of coopetition behaviour

Authors	Group number	Criteria	Types	Descriptions	Focus
1.(Dowling et al. 1996)	Group 1	Direction and nature of relationship	Arms length exchange	Vertical relationships and competition interdependence	Buyer, supplier, and partner relationships
			Traditional competitive markets	Horizontal relationship and competition interdependence	
			Vertical multifaceted relationships	Vertical relationships and coopetition interdependence	
			Horizontal multifaceted relationships	Horizontal relationship and coopetition interdependence	
			Alliances between buyers and suppliers	Vertical relationships and cooperation interdependence	
			Alliances between non competitors	Horizontal relationship and cooperation interdependence	
2.(Pellegrin et al. 2013)	Group 1	Direction and nature of relationship	Vertical collaboration	Vertical cooperation and entry in the partner market	ICT industry
			Horizontal cooperation	Horizontal cooperation and cooperation with rivals	
3.(Carayannis & Alexander 2004)	Group 1	Direction and location of relationships	Competitive	Domestic, horizontal and firm to firm	Semiconductor industry
			Pre-competitive	Domestic, horizontal, firm to firm; domestic, vertical, consortium to consortium	
			Coopetive	Domestic, horizontal, firm-to-firm; domestic, vertical, consortium-to-consortium; international, horizontal, consortium to firm.	
			Coopetive	Domestic, horizontal, firm-to-firm; domestic, vertical, consortium-to-consortium; international, horizontal, firm to firm; international vertical firm to consortium; international horizontal consortium to consortium	
4.(Golnam et al. 2014)	Group 1	Nature and scope of relationship	Leveraging value networks	Capability bundling between competitors across different value networks	Global ICT sector
			Co-creation value networks	Capability building between competitors across different value networks	
			Leveraging value network	Capability bundling between competitors within the same value network	
			Co-creation value network	Capability building between competitors utilising shared structures and processes within the same value network	
5.(Hannachi & Coléno 2012)	Group 1	Nature, direction and mechanism of relationships	Direct informal coopetition	Coopetition based on tacit agreement and social rules	French agri-food industry
			Indirect formalised coopetition	Coopetition relying on a third party and formal agreements	
			Induced coopetition	Coopetition based on a legitimatised third party to construct trust and generate collective actions	

			Mixed coopetition	Passive and active collaboration - active competition	
			Active coopetition	Active collaboration - active competition	
			Horizontal cooperation	Coopetition with horizontal cooperation and cooperation with rivals	
Authors	**Group number**	**Criteria**	**Types**	**Descriptions**	**Focus**
6.(Czakon & Rogalski 2014)	Group1	Nature of relationship (passive/active behaviours)	Passive coopetition	Passive collaboration, passive competition	Energy sector
			Mixed coopetition: collaborative and passive interactions dominated	Passive and active collaboration, passive competition	
			Mixed coopetition: active-passive (theoretical)	Active collaboration, passive competition	
			Mixed coopetition: competitive and passive interactions dominated	Passive collaboration, passive and active competition	
			Flexible coopetition	Passive and active collaboration, passive and active competition	
			Mixed coopetition: competitive and active interactions dominated	Active collaboration, passive and active competition	
			Mixed coopetition: passive-active	Passive collaboration, active competition	
			Mixed coopetition: collaborative and active interactions dominated	Passive and active collaboration, active competition	
			Active coopetition	Active collaboration, active competition	
7.(Yoon et al. 2017)	Group 1	Nature of relationship with target markets	Joint venture with another large company	Captive market of large corporations with domestic market such as US advanced market	IT services sector
			Collaboration with SME	Open market with domestic market such as the public and financial markets	
			Offshore in developing countries	Captive market with global market such as Chinese and Indian markets	
			Partnership with major local firms	Open market with global market	
8.(Czakon 2018)	Group 1	Nature of relationship in networks	Deliberate	Designed by a leading actor and consensual design by equal actors	Banking sector
			Emerging	Induced by partner's behaviours, reaction to competitors' behaviours, induced by the regulator's decision	
9.(Mariani 2007)	Group 1	Coopetition power and degree	Imposed cooperation	Forced coopetition when coopetition is initiated by policy makers (institutional intervention)	Consortium of Opera Houses

Authors	Group number	Criteria	Types	Descriptions	Focus
			Induced coopetition	Emergent/deliberate coopetition when coopetition emerges as voluntary action	
10. (Dagnino 2009)	Group 2	Numbers of firms and level of value chain	Simple dyadic coopetition	Single level of value chain with two firms	Typology of coopetition
			Simple network coopetition	Single level of value chain with more than two firms	
			Complex dyadic coopetition	Several levels of value chain with two firms	
			Complex network coopetition	Several levels of value chain with more than two firms	
11. (Luo 2007b)	Group 2	Diversity of coopetition	Dispersing situation	Large involvement in the foreign market with a small number of global rivals	Business sector (electronic, processed foods and pharmaceuticals)
			Networking situation	Large involvement in the foreign market with a large number of global rivals	
			Concentrating situation	Small involvement in the foreign market with a small number of global rivals	
			Connecting situation	Small involvement in the foreign market with a large number of global rivals	
12. (Gnyawali et al. 2008)	Group 2	Intensity of coopetition and numbers of firms	Very intensive dyadic coopetition	Strong coopetition between two rivals working in the same domain	High technology sector
			Less intensive dyadic coopetition	Low coopetition between two rivals working in the same industry	
			Very intensive network coopetition	Strong coopetition between several rivals working in the same domain	
			Less intensive network coopetition	Low coopetition between several rivals who collaborate with each other in order to compete with rival pairs or groups	
13. (Lado et al. 1997)	Group 3	The degree of coopetition	Collaborative behaviour	High cooperation and low competition	Rent-seeking behaviours
			Competitive behavior	Low cooperation and high competition	
			Monopolistic behavior	Low cooperation and low competition	
			Syncretic behavior	High cooperation and high competition	
14. (Zinn & Parasuraman 1997)	Group 3	The degree of coopetition scope and intensity	Integrated alliances	Broad scope and high intensity	Logistics-based strategic alliances
			Extensive alliances	Broad scope and low intensity	
			Focused alliances	Narrow scope and intensity	
			Limited alliances	Narrow scope and low intensity	
15. (Bengtsson & Kock 2000)	Group 3		Cooperation-dominated relationship	Coopetive relationships consisting of more cooperation than competition	Industry sector

Authors	Group number	Criteria	Types	Descriptions	Focus
		The dominant relationship in coopetition	Competition-dominated relationship	Competition relationships consisting of more competition than cooperation	
			Equal relationships	Cooperation and competition are equally distributed	
16. (Luo 2007a)	Group 3	The degree of coopetition	Contending	Strong competition, weak cooperation	Coopetition with major global rivals
			Isolating	Weak competition, weak cooperation	
			Partnering	Strong cooperation, weak competition	
			Adapting	Strong competition, strong cooperation	
17. (Luo 2004)	Group 3	Degree of coopetition	Contender	High competition and low cooperation	Multinational corporation and host government
			Integrator	High competition and high cooperation	
			Estranger	Low competition and low cooperation	
			Partner	Low competition and high cooperation	
18. (Luo 2005)	Group 3	Degree of coopetition	Aggressive demander	High competition and low cooperation	Multinational enterprise
			Network Capitan	High competition and low cooperation	
			Silent implementer	Low competition and low cooperation	
			Ardent contributor	Low competition and high cooperation	
19. (Lamberg et al. 2006)	Group 3	Degree of coopetition	Downstream rivalry	Competition dominated relationship	Forestry industry sector
			Intensive rivalry	High competition and high cooperation	
			High Independency	Low competition and low cooperation	
			Upstream rivalry	Cooperation dominated relationship	
20. (Park 2011)	Group 3	Degree of coopetition	Type A	Cooperation-dominant coopetition (strong cooperation, weak competition)	Semiconductor industry
			Type B	Balanced strong coopetition (strong cooperation and competition)	
			Type C	Weak coopetition (weak cooperation and competition)	
			Type D	Competition-dominant coopetition (weak cooperation, strong competition)	
21. (Bengtsson et al. 2010)	Group 3	Degree of coopetition	Over-embedding	Strong cooperation and weak competition	Arena of coopetition dynamics
			Distancing	Strong cooperation and strong competition	
			Colluding	Weak cooperation and weak competition	
			Confronting	Strong competition and weak cooperation	
22. (Rusko 2011)	Group 3		Dyadic upstream	Cooperation dominated relationship and coopetition strongly with rivals	Finnish forest industry

			Dyadic mid-stream	Equal relationship and coopetition with strong rivals	
		Degree of coopetition with upstream or downstream moves	Dyadic downstream	Competition dominated relationship and coopetition with rivals	
			Multifaceted upstream	Cooperation dominated relationship and coopetition with a government	
			Multifaceted mid-stream	Equal relationship and coopetition with a government	
			Multifaceted downstream	Competition dominated relationship and coopetition with a government	
			Internal upstream	Cooperation dominated relationship and coopetition with partners	
			Internal mid-stream	Equal relationship and coopetition with partners	
			Internal downstream	Competition dominated relationship and coopetition with partners	
			Intra-firm upstream	Cooperation dominated relationship and coopetition within a company	
			Intra-firm mid-stream	Equal relationship and coopetition within a company	
			Intra-firm downstream	Competition dominated relationship and coopetition within a company	
Authors	**Group number**	**Criteria**	**Types**	**Descriptions**	**Focus**
23. (Reinartz & Berkmann 2018)	Group 3	Degree of cooperation with the level of engagement	Tactical engagement	High cooperativeness and low assertiveness	Business market
			Strategic engagement	High cooperativeness and high assertiveness	
			Disengagement	High cooperativeness and low assertiveness	
			Assertive engagement	Low cooperativeness and high assertiveness	
24. (Crick el at. 2020)	Group 3	Degree of coopetition with product portfolio	Product focus	Narrow product portfolio with low coopetition	Industry Wine sector
			Community services	Narrow services portfolio with high coopetition	
			Services focus	Augmented services portfolio with low coopetition	
			Team player	Augmented product portfolio with high coopetition	
25. (Raza et al. 2014)	Group 3	Degree of coopetition	Weak coopetition	Low competition and low cooperation	Manufacturing sector
			Competition dominates	High competition and low cooperation	
			Cooperation dominates	Low competition and high cooperation	
			Strong coopetition	High competition and high cooperation	
26. (Chin et al. 2008)	Group 3	Degree of coopetition	Type1: Mono player	Low competition, low cooperation	Industry sector
			Type 2: Contender	High competition, low cooperation	
			Type 3: Partner	Low competition, high cooperation	

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Authors	Group number	Criteria	Types	Descriptions	Focus
			Type 4: Adapter	High competition, high cooperation	
27. (Schiavone & Simoni 2011)	Group 3	Degree of coopetition experience	Conservative approach	Low level of prior experience	R&D in industrial organisation
			Coopetive approach	Medium level of prior experience	
			Conservative approach	High levels of experience	
28. (Zacharia et al. 2019)	Group 3	Degree of coopetition (market risk and size)	Leave market to competitors	High market risk and low market size	Automotive, apparel and IT industries
			Fight with competitors	Low market risk and low market size	
			Cooperate with competitors	High market risk and high market size	
			Ignore competitors	Low market risk and high market size	

Further, based on the Group 3 criteria (the degree of coopetition), Luo (2004) presented a typology for the degrees of coopetition between individual multi-national corporations (MNCs). This typology reflects four types of political tactics that MNCs can pursue according to the levels of coopetition which include contender (high competition, low cooperation), estranger (low competition, low cooperation), partner (high cooperation, low competition), and integrator (high competition, high cooperation). In the same vein, based on the Group 3 criteria (the degree of coopetition) Chin et al. (2008) developed the Luo (2004) model to four new CO typologies: Mono player, Contender, Adapter, and Partner (see Figure 2.2). For the purposes of this study, the researcher adopted (Chin et al. 2008) CO typology. Two reasons form the basis for selecting this model:

1. It is a adopted by several scholars and applied in different sectors such as the industry and services sectors to identify COS types (Chin et al. 2008; Verstrepen et al. 2009; Abdallah 2011; Bigliardi et al. 2011; Park 2011; Rusko 2011; Liu et al. 2014; Perera et al. 2016). Therefore, it is valid and reliable, and it could be applicable in education sector

2. It helps the study to determine different strategic responses in different CO situations, and provides a valuable approach for understanding the intensity of CO in order to describe the varying degrees of collaboration and competition between a pair of rivals (Park 2011).

The model identifies four types of COS strategy, regarding the level of competition and cooperation adopted by the actors involved this model (Chin et al. 2008, pp 339-340), (see Figure 2.2).

High Competition Low	**Type 2: Contender** (High competition, Low cooperation)	**Type 4: Adapter** (High competition, High cooperation)
	Type 1: Mono player (Low competition, Low) cooperation)	**Type 3: Partner** (Low competition, High cooperation)
	Low Cooperation High	

Figure 2.2: The model of different COS types (modes)

Source: (Chin et al. 2008, p. 439)

In reference to Figure 2.2:

Type 1: Mono player is an organisation that does not interact significantly with competitors; maintaining both a low level of competition and cooperation with another leading player. It is characterised by a substantial independence from other players, thus acting or reacting virtually independently in the markets in which it participates. Organisations have unimportant exchange relationships with little or no interdependence. These may often be sporadic, such as the purchase of nonessential operational and office supplies. Obviously, due to the increasing integration of the world economy and the increasing collaboration among organisations, the number of figures that can be classified as mono players has declined in numerous industries.

Type 2: Contender is an organization characterized by high competition and low cooperation levels with another major player with whom it competes for market power, competitive position and market share in critical markets. This kind of COS usually characterises an oligopolistic market, that is a market characterised by several players that retain most of the market share, as well as a market where products and resources are similar, and market commonality are all high.

Type 3: Partner is an organisation that maintains a high degree of cooperation and a low degree of competition with other organisations in search of joint synergies created by complementarity resources and capabilities. High cooperation means that both sides share common goals, values and interests, depend heavily on each other, and commit to the focal relationship, while low competition implies that they have little disagreement about the strategic approach to serving a particular end market. The relationships derived from such a COS often lead to sustained competitive advantage.

Type 4: Adapters are organisations that depend on one another to achieve respective goals, maintaining a high degree of cooperation as well as a high degree of competition. Besides engaging in intense competition, these organisations cooperate extensively in joint market expansion, information exchange and combined sales promotion. As a result, the networks will grow annually by a steady percentage. Although the partners have substantial incongruence in their individual approaches to serving the same end market, they continue to cooperate because of their mutual interdependence and relationship-specific investments. Thus, competition and cooperation may take place across different contexts.

2.4   Coopetition Success Factors

COS is affected by many factors, some which could be critical to COS success. Hardcastle et al. (2005) defined critical success factors (CSFs) as "those few key areas of activity in which favourable results are absolutely necessary for a manager to reach goals" (p 460). Therefore, there are some key components which play a critical role in gaining success for organisations and affect the result of an organisation's performance (Alshaher 2015; Küçükoğlu & Pınar 2015). Within the context of business networks, CSFs imply that the set of existing potentialities in the process of reaching a goal, based on premises that, when favourable, assure a positive result, and when not favourable, will lead to dissatisfaction (Besser & Miller 2011; Ng & Kee 2012; Singh & Shrivastava 2013; Lin 2016).

(Bratton et al. 2000; Golicic et al. 2003) claim that COS is critical for successful partnership because it requires a higher level of magnitude and closeness in terms of sharing risk, knowledge, information and profit. Chin et al. (2008) argue that the consideration of coopetition success factors (COSFs) is crucial to determine COS success in different sectors. This is because COSFs are important as they help decision-makers focus their attention on critical processes, understood as those that are capable of defining and guiding the direction and orientation that the management must follow to optimise the decision-making processes (Chen & Karami 2010; Tavassoli & Tsagdis 2010; Dasanayaka 2012; de Resende et al. 2018). Moreover, COSFs have a strong influence on coopetition performance (COP), competitiveness and COR success in business networks (de Resende et al. 2018). In addition, COSFs permit practitioners to understand their relative importance and develop improvement plans in cases where they lack sufficient resources to deal with all factors simultaneously. After comprehensive and intensive review of the literature, this study has developed Table 2.5 to illustrate selective studies for COSFs in different contexts.

Table 2.5 shows that scholars have explored COSFs in different sectors and contexts such as industry (Chin et al. 2008; Thomason et al. 2013), construction (Chan et al. 2003; Akintoye & Main 2007), tourism (Chim & Canino 2017), ICT (Lindström & Polsa 2016), SMEs (Hoffmann & Schlosser 2001), agriculture (Mazzarol et al. 2013), and health (Casey 2008) sectors.

Table 2-4: Coopetition success factors in different contexts

Author	Main Factors	Context
(Bengtsson & Kock 2000)	Heterogeneity in resources, closeness of an activity to the customer, competitors' position and the connectedness between them, and conflict and consensus about organizational goals	Industry sector
(Whipple & Frankel 2000)	Partner attractiveness and selection, project type, trust, complementarity resources, commitment and financial payoff	
(Hoffmann & Schlosser 2001)	Joint value creation, clear and realistic objectives, top management support, contribution of specific strengths, trust between the partners, precise definition of rights and duties, contributing specific strengths, establishing required resources, speedy implementation and fast results	
(O'Donnell et al. 2002)	Nature of the industry, the level of competition, size and age of the competing firms, association in the industry, the level of professionalism within the industry and trust amongst firms, personal characteristics and close physical proximity	
(Sherer 2003)	Important factors (e.g. chief executive officer support, sharing capabilities, dedication to work with others, intermediary) and critical factors (participant character, confidence, external relationships, information technology)	
(Park & Kim 2020)	Innovative leaders, and balance between cooperation and competition (tension and conflict)	
(Lam & Chin 2005)	Relationship management, conflict-handling system, new product development, process management and communication	
(Kale & Singh 2007)	Articulation of alliances, codification of alliances, sharing of alliances, internalisation of alliances	
(Chin et al. 2008)	Management commitment, relationship development, communication management	
(Besser & Miller 2011)	Variation in the industry, location, size, age and education of member businesses, trust and resource exchanges	
(Gnyawali & Park 2011)	Coopetive mind-set of management, coopetive experience within the firms, complementarity resources and capabilities.	
(Ruijun & Zhiman 2011)	Management commitment, relationship development and communication management	
(Min et al. 2005)	Strategic intent, internal alignments towards the collaborative arrangement, relationship orientation, relationship-specific investment, and information and resource sharing	
(Garri 2020)	Partner selection (expected contribution to added value, previous achievements experience, location proximity, profile of the company), balance (fairness, equal spread of risk, guarantee equal benefit), resources sharing (rational use, management of common resources, sharing knowledge and experience), strategic positioning (differentiation strategy, strong players) and control (establish control mechanisms)	
(Thomason et al. 2013)	Trust, commitment and mutual benefits	
(Alves 2013)	Management commitment, relationship development and communication management	
(Tidström 2014)	Tension	
(Dadfar et al. 2014)	Trust, establishing information and coordination system, provide required resources, partner alliance experience, team spirit, agreement on fundamental values, developed cooperation culture and commitment of top management	
(Petter et al. 2017)	Trust and commitment, synergy, exchange of experience and learning, culture, sharing and equity, managing conflict and incompatibilities, competitive cooperation, control and	

Author	Main Factors	Context
	standardization, adaptability and alignment, inter-dependence and heteronomy, governance, and strategy and management	
(de Resende et al. 2018)	Trust and commitment, complementarity and reciprocity, exchange of experience and learning, culture, sharing and equity, managing conflict and incompatibilities, competitive cooperation, control and standardization, adaptability and alignment, inter-dependence and heteronomy, governance, and strategy and management	
(Winkler 2019)	Management commitment, relationship development and communication management.	
(Czakon et al. 2020a)	Number of partners, governance type, market conditions and knowledge management	
(Timmer 2019)	Complementarity resources, corporate culture, intangible assets, management of coopetive balance & tensions, knowledge management, mutual trust, innovation willingness and capabilities, and aligned vision and objective	
(Kroik & Świda 2018)	Complementarity of resources, convergence of parties, convergence of corporate strategies, convergence of organisational cultures, reputation, symmetry of sizes between parties, and adjustment of organisational structures	
(Kraus et al. 2018)	Collaboration attractiveness, trust, complementarity perception, dissimilar/ heterogeneous resources, coopetition activities and company familiarity	
(Ceptureanu et al. 2018a)	Trust, outcomes tension, congruence, governance, inter-dependence and equity	
(Ceptureanu et al. 2018)	Value creation level, coopetive relations based on trust, benefits, coopetive tension, increased opportunism, and increased stability	
(Pinasti et al. 2016)	Leadership of coopetition management, lack of resources, communication management, relationship development, the level of dependency in coopetition networks, trust, commitment and mutual benefit	
(Akintoye & Main 2007)	Commitment of adequate resources from partners, equity of relationships, recognition of the importance of non-financial benefits and clarity of objectives	Construction sector
(Akintoye et al. 2000)	Reliability of supply, top management support, mutual interest and frequent meetings	
(Jacobson & Choi 2008)	Specific plan/vision, commitment, open communication and trust, willingness to compromise/collaborate, respect, community outreach, political support, expert advice and review, risk awareness, and clear roles and responsibilities.	
(Chan et al. 2003)	Misunderstanding of partnering concept, relationship problems, cultural barriers, uneven commitment, communication problems, lack of continuous improvement, inefficient problem solving, insufficient efforts to keep partnering going, and discrete relationship	
(Cheng & Li 2002)	Mutual trust, effective communication, commitment from senior management, clear understanding, acting consistent with objectives, dedicated team, commitment to continuous improvement, flexibility to change, commitment to quality, formation at design stage, long-term perspective and good cultural fit	
(Cheng et al. 2000)	Critical management skills (adequate resources, management support, mutual trust, long-term commitment, coordination, creativity), and critical contextual characteristic (effective communication, conflict resolution)	
(Zhang 2005)	Favourable investment environment, economic viability, reliable concessionaire consortium with strong technical strength, sound	

Author	Main Factors	Context
	financial package, and appropriate risk allocation via reliable contractual arrangements	
(Chan et al. 2010)	Stable macroeconomic environment, shared responsibility between public and private sectors, transparent and efficient procurement process, stable political and social environment, and judicious government control	
(Meng et al. 2011)	Project profitability, asset quality, fair risk allocation, competitive tendering, internal coordination within government, employment of professional advisers, corporate governance, and governmental supervision	
(Hwang et al. 2013)	Well organized public agency, appropriate risk allocation and sharing, strong private consortium, transparency in procurement process, clearly defined responsibilities and roles, clarification of contract documents, favourable legal framework, and shared authority between public and private sector	
(Gao et al. 2021)	Management commitment (management leadership, organisation variables, long-term commitment), mutual integration and communication management (mutual trust, knowledge and risk sharing, information support, conflict management system), internal variables (technology and resources, corporate influence, firm's capability), external variables (political environment, industry variables, economic performance).	
(Chim & Canino 2017)	Managerial dimension (business leadership, business model, management background), strategic dimension (appropriation and absorption knowledge, benefits, ties to market force), behaviour dimension (mutual trust, opportunism, social relationships), contextual dimension (co-location, resources dependence, heterogeneity of network).	Tourism sector
(Czakon et al. 2020)	Strategic rationale (perceived benefits, strategic fit) and coopetition mindset (cooperative orientation, trust in partners, experience in coopetition)	
(Alves & Meneses 2015)	Prior personal ties, prior successful association, shared business network, similar status, similar positioning, shared vision, ease of communication, complementarity, strategic fit, managerial capabilities, vicinity, reciprocal relationship, compatible goals, reputation and image, trust, compatible culture, commensurate risk, commitment, established customer base, established supply chain and technology	
(Chim & Canino 2018)	Co-location (e.g. concentration level, diversity level, complementarity level), associationism (e.g. partnering level, strength of association, awareness of collaborative advantages), competition (e.g. internal competition, external competition, intra sectorial competition), cooperation (e.g. cooperation for innovation, mutual trust, mutual collaboration), strategic management (e.g. joint marketing programs, innovation programs, value co-creation programs), co-entrepreneurship (e.g. central coordination, governance investment level, awareness of shred management) and co-production (e.g. tourism density, tourism average spending, employment rates in tourism)	
(Hilaly 2015)	Trust (condition to implement, sharing resources, sharing information), commitment (readiness to mutual adaptation, internal processes communication approaches, approaches to resource allocation), mutual benefits (get into bigger markets, acquire bigger share, get more valuable information)	
(Titmas 2012)	Internal factors (e.g. management and ownership, building trust relationships, setting clear goals and objectives, communication skills amongst leadership) and external factors (geographic proximity, economic climate, role of third party)	

(Krathu et al. 2015)	Relationship orientation with partners (e.g. relationship quality), relational or social capital (e.g. trust, shared vision and connectedness), relational norms (e.g. communication, cooperation and integration), atmosphere (e.g. conflict, cooperation and integration, power and connectedness), and other factors (e.g. compatibility, commitment, top management support, relationship learning, contract, investment, complementarity and opportunism)	ITC and technology sector
Author	**Main Factors**	**Context**
(Lindström & Polsa 2016)	Activeness, commitment to cooperation, strategic fit, geographical distance, personal resources and participation	
(Buttschardt 2017)	Supplier management (supplier association, supplier consultancy, learning group, contractual agreement), supplier selection (mixed supplier team), communication management (collaborative software, project manager capabilities), relationship development (development of trust, knowledge sharing, personal relationship) and management commitment (management leadership, long-term commitment, similar interests)	
(Chen & Karami 2010)	Trust, communication and reciprocity, top leader commitment, well-documented agreements, sufficient cooperative resources and protecting core technology	
(Hameed & Naveed 2019)	Trust and dependency	
(Walley 2007)	Organizational resources, capabilities, competences and management perception to coopetition	Systematic literature review for coopetition factors
(Kohtamäki et al. 2018)	Environmental characteristics (e.g. environmental uncertainty, environmental hostility), organizational characteristics (e.g. strategic orientation, top management commitment, incentives, leadership, readiness for collaboration, organizational culture, information technology, employee satisfaction, access to resources) and relational characteristics (relationship governance, mutual dependence, partner complementarity, cultural distance).	
(Bengtsson & Raza 2016)	External drivers (characteristics/technological demands, influential stakeholders), relationship-specific drivers (partner characteristics, relationship characteristics) and internal drivers (internal goals/capabilities, prospective strategies, perceived vulnerability)	
(Petter et al. 2014)	Trust and commitment, complementarity and reciprocity, exchange of experience and learning, culture, sharing and equity, managing conflict and incompatibilities, competitive cooperation, control and standardization, adaptability and alignment, inter-dependence and heteronomy, governance, strategy and management, production and innovation competence, and financial and human resources	
(Bengtsson et al. 2010)	High degrees of complementarities, trust, and tie strength between partners	Theoretical study
(Osarenkhoe 2010a)	Managerial leadership and development of trust	
(Schmidt 2016)	Internal factors: top management efforts (e.g. effective project setup, adequate resources, and investment), mid-management (operative alignment, close involvement, tension management), project (information control, supportive IT), inter-personal (trust, knowledge absorption); External factors: project level (staff competences, recognition), firm level (leadership and culture mindset, firm magnitude, project importance) and dyadic level (geographic proximity, fit, intensity of competition).	
(Nuojua et al. 2011)	Anticipated benefits, motivation for R&D, resource compatibility, reciprocal interdependence, weak competitiveness and geographic proximity	
(Cummings & Holmberg 2012)	Learning-related factors (desired attributes in potential alliance partners that enhance learning outcomes), partnering-related factors	

| | (relational factors that can enhance or inhibit how the alliance unfolds and therefore affect its outcomes), and risk-related factors (factors that arise from the interdependent nature of alliances which are often neglected in practice) | |

Author	Main Factors	Context
(Zineldin 2004)	Individual willingness, motivation, strategic fit, interdependence, cultural fit, organisational arrangements and institutionalisation, integration and integrity, trust, commitment, and mutual benefits	
(Le Roy et al. 2018)	Trust development, tension management, sharing information and knowledge, avoiding opportunism, sharing resources, mutual benefits and effects, developing coopetive mindset, separation and integration in coopetition activities, formal and informal coordinating, formal and informal control mechanisms, and conflict management system	
(Santolaya et al. 2017)	Coopetive mindset capability (sensing and scanning capability, partner selection capability, manager entrepreneurial capability), coopetition ambidexterity capability (managerial ambidexterity, inter-organisational learning capability, value creation and appropriation capability)	
(Vandeburg et al. 2000)	Inter-personal dynamics (trust, communication, commitment, managers' relationships)	Agricultural and farms sector
(Mazzarol et al. 2013)	Willing to cooperate, need for external resources, environmental uncertainty, desire to shape external environment, commitment to the cooperation, and strong sense of community identity based on trust	
(Casey 2008)	Trust and valuing partner, leadership and managing change, partnership framework, communication and interaction, equity and involvement in decision-making, and power and the role of partnership coordinator	Health sector
(San Martín et al. 2005)	Interactional determinants (willingness to collaborate, trust in each other, mutual respect, communication), organizational determinants (human resource management capabilities, strong leadership)	
(Pesämaa et al. 2013)	Level of inter-organisational commitment, enhancing trust, inter-personal commitment, and encouraging reciprocity in the short term	Small business sector
(Bastida et al. 2017)	Relational capital (trust, shared vision), relationship governance (commitment), relationship learning, and partner selection process (partner selection planning, candidate's shortlist development)	Social economy sector
(Ng et al. 2012a)	Technical support and innovation, stable and favourable economic environment, sound financial package, favourable social environment, supportive political and legal framework, and supportive project team and management actions	Infrastructure projects for public and private consortia
(Peng et al. 2012)	Market commonality, resources similarity and coopetition dynamics	Supermarket network
(Prashant & Harbir 2009)	Alliance formation and partner selection (partner complementarity, partner compatibility, partner commitment), alliances governance and design (equity sharing or ownership, contractual provisions, relational governance), post-formation alliances management (use of coordination mechanisms, and development of trust and relational management, conflict resolution and escalation)	Alliances between firms and not-profit organizations
(Tyndall 2017)	Planning and formation phase (champion, compatibility, complementarity, commitment), design and operations phase (leadership, governance and decision-making, structures and processes, accountability plans, open and clear communication), post-formation management and review phase (mechanisms for coordination and conflict resolution, regular review and feedback, impact and outcomes, future prospects of the partnerships), external	TAFE institutions

environment, building and sustaining trust, and institutional capability building	

- In the **industry sector**, many researchers have provided empirical studies for COSFs such as (Dadfar et al. 2014; Petter et al. 2017; de Resende et al. 2018; Kroik & Świda 2018; Timmer 2019; Winkler 2019; Czakon et al. 2020a; Garri 2020; Park & Kim 2020), see Table 2.5. For example, (Petter et al. 2017) argued that factors such as trust and commitment, synergy, exchange of experience and learning, culture, sharing and equity, managing conflict and incompatibilities, competitive cooperation, control and standardization, adaptability and alignment, inter-dependence and heteronomy, are important factors for COS success in manufacturers of designed furniture

- In the **construction sector** scholars have presented empirical studies (Zhang 2005; Jacobson & Choi 2008; Chan et al. 2010; Meng et al. 2011; Hwang et al. 2013; Gao et al. 2021), see Table 2.5. For example, (Gao et al. 2021) identified COSFs in international construction alliances projects. They stated that factors such as management commitment (management leadership, organisation variables, long-term commitment), mutual integration and communication management (mutual trust, knowledge and risk sharing, conflict management system), internal variables (technology and resources, corporate influence, firm's capability), and external variables (political environment, industry variables, economic performance) are essential for alliance success

- In the **tourisim sector** some scholars offer empirical studies such as (Titmas 2012; Alves & Meneses 2015; Hilaly 2015; Chim & Canino 2018; Czakon et al. 2020), see Table 2.5. (Czakon et al. 2020) proposed that strategic rationale (perceived benefits, strategic fit), and CO mindset (cooperative orientation, trust in partners, experience in coopetition) are critical for establishing successful CORs in the tourism sector

- In the **ICT and technology sectors**, scholars have explored CO between competitors (Krathu et al. 2015; Lindström & Polsa 2016; Buttschardt 2017; Hameed & Naveed 2019), see Table 2.5. (Lindström & Polsa 2016) confirmed that activeness, commitment to cooperation, strategic fit, geographical distance,

personal resources and participation are the most influential factors for COS success in the ICT sector.

However, researchers have investigated less fully the factors that lead to a successful COS in the HES. According to Lindström and Polsa (2016) COSFs become increasingly important to obtaining sustainable competitive advantages and improve organisational performance. Although these factors occurred in different contexts, such as industries and services sectors, they can possibly be instructive for the initial exploration of COSFs (Ruijun & Zhiman 2011) in higher education sectors, and for PJUs to increase the chances of successful and sustain the success of CORs among PJUs. Therefore, PJUs need to identify the COSFs.

2.5   Coopetition Performance

A firm's performance is multidimensional in nature and scholars have expressed the need to use multiple measures to achieve performance (Bouncken & Fredrich 2012). Performance has been used as an indicator of COS success in many studies (Kale et al. 2002; Lambe et al. 2002; Silva 2006; Sun & Zhang 2011; Bengtsson & Raza 2016; Schmidt 2016; de Resende et al. 2018). To determine the performance level of a COR, it is necessary to first identify the essential performance indicators or desired outcomes (Ferreira et al. 2012). Performance indicators can vary according to the particular relationship or firm in focus (Ferreira et al. 2012). After a comprehensive and intensive review of the literature, this study developed Table 2.6 capturing studies illustrating coopetition success indicators (COSIs) for performance or outcomes in different contexts.

Table 2.6 shows that the studies can be grouped into three main categories to classify COP or outcomes measurements. Category 1: Objective indicators, Category 2: Subjective indicators and Category 3: a combination of the two subjective and objectives indicators.

Table 2-5: Coopetition success indicators in different sectors

Authors	Category	Indicators	Context
(Belderbos et al. 2004)	Category 1: Objective indicators	Labour productivity growth (value added) and innovative sales productivity (sales added)	Dutch innovating firms
(Luo 2002b)		Joint venture performance: sales level (total domestic and export sales/total assets) and return on investment (ROI: profit/total investment)	Joint ventures between Chinese and US corporations
(Crick et al. 2021)		Business performance: market share growth relative to competition effectiveness, acquiring new customers, increasing sales to current customers, growth in sales revenue, profitability, business unit profitability, return on investment (ROI), return on sales (ROS) and reaching financial goals	Tourism and hospitality sector in New Zealand
(Cardoni et al. 2020)		Alliance's financial performance: Growth in total assets, growth in total revenue and growth in EBITDA margin	Italian alliances for small and medium enterprises
(Argente et al. 2013)		Financial performance: perception of sales, sales growth, cash flow, gross and net profit margin, return on sales and return on investment	Joint venture between Spanish and Moroccan SMEs
(Pangarkar & Wu 2013)		Performance rating in terms of sales growth, profit growth and market share relative to competitors	Internet sector in Singapore
(Murray & Kotabe 2005)		Alliance's performance: improved efficiency (reduce costs, reduce risks, reduce competition level) and improved competitiveness (stronger competitive position, able to perform the partner firms' function in the long run)	Fortune 500 companies in US
(Bouncken & Fredrich 2012)		Competitive success (sales volume, market share, return on investment), radical innovation and incremental innovation (current product range with regard to technology, customer value, performance)	German IT firms
(Pearce 2001)	Category 2: Subjective indicators	Overall performance, achieving long-term goals, investment more than expectations, and satisfied with the degree of goal achievement	US corporate joint ventures
(Chang et al. 2010)		New knowledge and techniques gained through innovative thinking capacity, information sharing, communication capability and problem solving	Recreational farms in Taiwan.
(Zeng et al. 2010)		Innovation performance: proportion of annual turnover of new products, new products index and modified products index	Manufacturing SMEs in China
(Ritala et al. 2015)		Innovation performance: products and services to the customers, production methods and processes, management practices, and marketing practices	Finnish technology industries
(Bengtsson & Sölvell 2004)		Innovative performance: product development (technical construction of the product has been fundamentally changed in recent years) and process development (efficiency has been extensively improved in the same period)	Swedish manufacturing industries

Authors	Category	Indicators	Context
(Downe et al. 2012)		Collaborative outcomes: perceived value derived from the collaboration, perceived overall success of the collaboration, investment of resources in assets specific to the collaborative relationship, and commitment of the purchaser firm to continue the relationship	Malaysian service industry
Authors	**Category**	**Indicators**	**Context**
(Wah & Meng 2011)	Category 2: Subjective indicators	Met the objectives of collaboration, satisfied with the financial performance of the collaboration, and satisfied with the overall performance of the collaboration	Singapore SMEs in China
(Kraus et al. 2019)		Coopetition outcomes: innovation-related outcomes (enhanced innovation abilities through creativity, product innovation, learning processes) and strategy-related outcomes (improved market reach, logistics, mutual marketing)	SMEs in craft beer breweries industry
(Zollo et al. 2002)		Satisfaction with the knowledge accumulated from participating in the collaborative agreement, alliance created new opportunities and expectations for the firm, and alliance satisfied the partnering firm's initial objectives	Biotech and pharmaceutical sectors in US
(Cheng et al. 2000)	Category 3: Mixed indicators	Subjective measures (e.g. perceived satisfaction of partners expectations, compatible goals) and objective measures (cost effectiveness, quality, schedule, scope of work, profit, construction process, litigation, tender efficiency)	Construction sector
(Ritala 2018)		Market performance: resource efficiency (e.g. productivity, cost efficiency, improved resource utilization), market growth and development (e.g. growth of sales, geographic market expansion, sales growth rate), new market creation (e.g. set-up of technological infrastructure, creation of customer appeal, new product launches), and competitive dynamics (volume of competitive actions, market reactions to competitors' shares, increase in joint competitiveness)	Theoretical study
(Gnyawali & Park 2009)		Consequences of coopetition: benefits (economies of scale, reduction of uncertainty and risk, speed in product development), costs (technological risks, management challenge, loss of control)	Industry sector
(Wemmer et al. 2016)		Organisational performance: financial stability (attaining desired growth, securing desired market share), membership development (achieving member satisfaction, providing value for members, keeping current members, attracting new members)	Non-profit sports clubs in Germany
(Chow & Yau et al. 2010)		Joint venture performance: sales and profitability, product and service, human resources, cost, and organisation and management	Joint venture corporations in China
(Pearce & Hatfield 2002)		Joint venture performance: partner goal achievement (product or technology development/expansion, market or product expansion, market entry, profits, acquisition of technical knowledge/skills, revenues, economies of scale or production efficiency, spread financial risk, manage competition, increase available capital, vertical integration, overcome government barriers)	Manufacturing joint ventures for U.S. firms
(Schmoltzi & Wallenburg 2011)		Cooperation performance: relationship duration (failure rate, cooperation success, stability) and cooperation effectiveness (achieved primary goals, competitive advantage, core competencies of the parent firm, satisfied with the cooperation's overall performance)	Logistics service in Germany

Authors	Category	Indicators	Context
(Garri 2020)	Category 3: Mixed indicators	Coopetition outcomes: diffusion of knowledge (e.g. information exchange, innovation), financial benefit (e.g. mitigation financial risk, improved sales/profits), overall performance (e.g. improved efficiency, productivity), access and development (e.g. business network development, access to customer network), network development (development of social network), resources (access, availability) and industry development (e.g. improved quality, industry growth)	UK alpaca industry
(Muthusamy & Dass 2021)		Alliance's performance: productive relationship, worthwhile relationship, fair and equitable benefits and returns, contributed to profits, and contributed to achieving market share or competitive advantage	US corporation in industry sector
(Yajid 2020b)		Alliance's performance: objective satisfaction (satisfied with organization's operation, satisfied with achievement of goals, satisfied with the whole alliance's operation) and subjective satisfaction (satisfied with the experience of learning, firm's sales are growing, firm's market share has increased, satisfied with the overall alliance's performance)	Alliances in Malaysia industry sector
(Yajid 2020a)	Category 3: Mixed indicators	Alliance's performance: subjective satisfaction (e.g. satisfied with organization's operation, satisfied with goal achievement, satisfied with the whole alliance's operation), objective satisfaction (satisfied with the experience of learning, satisfied with the overall alliance's performance, growing in sales and market share)	Industrial and services sectors
(Talebi et al. 2015)		Alliance's performance: financial measures (sales growth, ROI, ROE, operating profit margin), alliance stability (longevity of alliances, contract changes, survival) and subjective measures (goal fulfilment, partners' overall satisfaction)	Auto parts manufacturing industry
(Flatten et al. 2011)		Alliance's success (new product development, innovation development met objectives, sales and profits benefits from new product development, development efforts more successful than competitors, development achieved good market penetration) and firm performance (growth in sales, ROI, operating profit margin, ROE, customer retention)	Manufacturing and service sectors in Germany
(Christoffersen et al. 2014)		Alliance's performance: accounting measures (e.g. asset growth, sales growth, sales/asset, return on assets), cumulative abnormal return (CAR) (e.g. shareholders' assessment for improving or reducing partnership value), stability measures (e.g. markets, changes in equity distribution, contract changes, dissolutions, duration) and subjective measures (e.g. satisfaction or goal fulfilment)	Systematic literature review for strategic alliance performance
(Shahmehr et al. 2015)		Business performance: sales performance (sales volume, sales growth, new product sales), financial performance (profitability as a percentage of sales, ROI, profit growth) and customer performance (customer satisfaction, customer retention)	IT industry in Iran
(Foerster et al. 2019)		Outcomes of coopetition: innovation-related outcomes (improve innovation performance, enables creativity), knowledge sharing (value creation and acquisition), firm performance-related outcomes (sales, market position, competitive behavior), relationship outcomes (development of trust amongst partners, duration of collaboration, coopetive goal achievement, level of resource commitment, maintenance of the relationship).	Manufacturing-VET sector

Authors	Category	Indicators	Context
(Hani & Dagnino 2020)		Firm performance (return on total assets, profitability, ROI, growth in sales, satisfied overall performance, achieved goals) and innovation performance (firm total granted patents by year)	Industries in global networks
Authors	**Category**	**Indicators**	**Context**
(Feela 2020)	Category 3: Mixed indicators	Firm performance: financial performance (profitability, growth, sales, competitive position, market value), strategic performance (customer satisfaction, employee satisfaction, environmental performance, social performance)	SMEs in South Africa
(Zacharia et al. 2009)		Business performance (e.g. overall improved organizational performance, better asset utilization, stronger competitive position, improved profitability), relationship outcomes (e.g. respect skills and capabilities, improved level of honesty, sharing information, effective working relationship) and operational outcomes (e.g. lower costs, improved quality, better customer service, improved value to customers)	Manufacturing, service, wholesale/distributor, and retailer firms
(Ariño 2003)		Financial measures (share prices and market values), operational measures (duration, termination, stability) and effectiveness measures (fulfillment of strategic goals, common and private goals, initial and emergent goals)	Alliances between Spanish and European firms in industry and service sectors
(Krathu et al. 2015)		Financial performance (profitability, cost, return on assets), operational performance (quality, efficiency, effectiveness, adaptation, responsiveness, productivity, delivery, reliability, failure), satisfaction performance (difference between what customers expect and actually receive or satisfaction) and relationship satisfaction (decision-making participation, information sharing, coordination, relationships quality, successful or unsuccessful events, connectedness assistance, commitments)	Systematic literature review
(Robson et al. 2008)		Alliance's performance: effectiveness (achieved goals, time and effort spent, productive enough), efficiency (resources are deployed efficiently, resource utilization is cost-effective, effective in converting resources) and responsiveness (adapt quickly to change, make adjustment to cope with change, modified structure and strategies, make adjustment required)	Alliances among US, European, Far Eastern and UK firms
(Shen et al. 2019)		Coopetive performance: satisfied with overall performance, established long-term objectives according to schedule, satisfied with cooperation actions, pleasant cooperation relationship, expanded market through cooperation, and strengthened enterprise's competitive advantage through cooperation	China's manufacturing industry
(Luvison & de Man 2015)		Alliance's performance: characterized by strong and harmonious relationship, achieved primary objective(s), competitive position greatly enhanced due to the alliance, success in learning some critical skill(s) or capabilities, and overall performance assessment based on satisfactory/successful OR unsatisfactory/failure	Industry sector in US
(Yin et al. 2011)		Efficiency (decision-making efficiency, problem solving, personal motivation), effectiveness (delivering to the brief, personally responsible/work ownership, understand design rationale), collaboration (clear team goal/ objectives, information sharing, communication quality), management skill (decision making, define/fully understand role/s and responsibilities, build high morale within team) and innovation (competitive advantage, select the right creativity, concept to implementation, products lead to future opportunities)	Design industrialists in UK

Authors	Category	Indicators	Context
(Swoboda et al. 2011)		Alliance's success: access to new markets, safeguarding/extending existing markets, cost advantages, utilization of capacity, experience abroad, synergies, achievement of time savings/advantages, reaction to competition, avoiding restrictions on investment, and overall satisfaction with alliance's financial and non-financial performance	Alliances of SEMs in manufacturing sectors of Europe
Authors	**Category**	**Indicators**	**Context**
(Şengün & Wasti 2011)	Category 3: Mixed indicators	Performance outcomes: transaction cost (e.g. understands needs of business, gathers information necessary), cooperation (e.g. the activities are well-coordinated, mutual respect), conflict resolution (e.g. disagreements are solved by working together, compromise), satisfaction (e.g. satisfied with products and services, satisfied with dealings) and risk-taking tendency (e.g. make agreements with social insurance institutions or military institutions)	Private pharmacies–drugs warehouses in Turkey
(Schumacher 2006)		Performance: cooperation objectives (e.g. increase production or distribution volumes, utilization of market knowledge and business contacts, access to new distribution channels, sharing of experience and knowledge transfer, joint R&D), profitable objectives and overall performance	German SEMs in industry and service sectors
(Raza 2019)		Performance: produces expected results, generates revenues that meet or exceed expectations, enables high-quality solution-based technologies, resources and/or expertise, reduces time for launching products, services, or solutions, adds to core competence and/or competitive advantage, and generates new customers, products or projects	High-technology industries in Sweden
(Ziggers & Den 2007)		Alliance's performance: decreasing production costs, increasing market power, obtaining access to new market, development of new technology, blocking competition, meeting government requirements, initiating product development, improving financial position, obtaining new knowledge and skills, improving competitive position, quality management and reducing risks	Dutch alliance in agribusiness and food industry
(Cai 2017)		Efficiency (e.g. earning profits, achieving better results, achieving efficiency in business), effectiveness (e.g. achieving customer satisfaction, providing value for customers, attaining desired growth, and securing desired market share), adaptiveness (adapting business strategy adequately to changes in the business environment, changes in competitors' business strategies, changing needs of customers, reacting quickly to new market threats)	UK companies in high-tech industries (e.g. aerospace, automotive, biotechnology)
(Jalali 2019)		Net contribution from this cooperation this year, the result of cooperation in firm growth, the result of cooperation in market growth, the result of cooperation in new product development, the result of cooperation in new competencies creation, and the result of cooperation in new market entrances	Alliances between Iranian and European firms in commerce, industry and agriculture sectors
(Jalali 2020)		The net contribution from this cooperation this year, the result of cooperation in firm growth, the result of cooperation in market growth, the result of cooperation in new product development, the result of cooperation in new competencies creation, the result of cooperation in new market entrances.	Alliances between Middle Eastern and Russian firms in petroleum and agricultural products

Authors	Category	Indicators	Context
(Peng et al. 2007)	Category 3: Mixed indicators	Coopetive performance: cost/efficiency (average purchasing price, average labour cost, employee productivity), quality (rate of qualification in service and capability, product return rate, number of consumer complaints), choice/convenience (number of suppliers, number of purchasing items, product shortage rate) and sales volume (number of customer visits, gross sales profit, sales growth rate)	Supermarket industry in Taiwan
(Lunnan & Haugland 2008)		Abrupt termination (termination before end of intended cooperation period), short-term performance, and long-term performance (goal fulfillment, net contribution from the alliance, firm growth, market growth, new products, new competencies, new market entrances)	Alliances between engineering industries in Norwegian

- In the **first group,** scholars used objective indicators to measure CO outcomes (Luo 2002b; Argente et al. 2013; Pangarkar & Wu 2013; Cardoni et al. 2020; Crick et al. 2021), see Table 2.6. The objective performance set includes accounting or financial measures of performance such as sales, profits, market share, survival rates, duration rates or instability rates, growth rates, competitiveness and strategic positions (Silva 2006; Adams & Downey 2008; Atalay et al. 2017; Ferreira & Franco 2017; Seo 2020). (Crick et al. 2021) claimed that market share growth relative to competition effectiveness, acquiring new customers, increasing sales to current customers, growth in sales revenue, profitability, business unit profitability, ROI, return on sales and reaching financial goals are used as objective indicators to measure performance in small tourism and hospitality organisations in New Zealand

- In the **second group,** scholars used subjective indicators to measure coopetition performance (COP) (Zollo et al. 2002; Chang et al. 2010; Wah & Meng 2011; Yin et al. 2011; Kraus et al. 2019), see Table 2.6). Subjective measures include indicators such as level of satisfaction with alliance performance and perceptions of the partner's satisfaction level (Wall et al. 2004; Silva 2006; Fernandes et al. 2017; Zoghi & Arslan 2017). (Zollo et al. 2002) stated that COS outcomes are measured by satisfaction with the knowledge accumulated from participating in the collaborative agreement, alliance creating new opportunities and expectations for the firm, and alliance satisfied the partnering firm's initial objectives for US biotech and pharmaceutical sector firms engaged in strategic alliances

- In the **third group**, the majourity of scholars have preferred to combine objective and subjective measurements (Ziggers & Den 2007; Zacharia et al. 2009; Krathu et al. 2015; Shahmehr et al. 2015; Talebi et al. 2015; Wemmer et al. 2016; Cai 2017; Feela 2020; Hani & Dagnino 2020), see Table 2.6. The combination measurements of performance (subjective and objective measures) include indicators such as financial indicators, reputation enhancement/protection, relationship maintenance and perceptual measures (Silva 2006; Lee 2007; Zhang & Harvie 2010; Christoffersen et al. 2014; Talebi et al. 2015; Santoso 2018). For example, (Talebi et al. 2015) argued that SME alliance performance contains three main measurements: accounting measures, alliance stability and subjective

measures. Accounting or financial measures comprise sales growth, ROI, return on equity and operating profit margin. Stability is measured by longevity of alliances, contract changes and survival. The subjective measures are required in terms of goal fulfilment and partners' overall satisfaction. More, (Krathu et al. 2015) divided performance into financial performance (profitability, cost and return on assets), operational performance (quality, efficiency, effectiveness, adaptation, responsiveness, productivity, delivery, reliability and failure), satisfaction performance (the difference between what customers expect and what customer receive) and relationship satisfaction (decision-making participation, information sharing, coordination, relationships quality, successful or unsuccessful events, connectedness assistance and commitments).

2.6 The Relationship between Coopetition Success Factors and Coopetition Performance

The aim behind this part of the study was to provide an outline around earlier research of COSFs and success COP. There are a number of studies attempting to provide the best understanding of the significance of COSFs in success COS. These studies mostly attempt to enhance the reader's comprehension and knowledge about COSFs in different sectors.

COS is a normative theory, which promises superior performance to firms that adopt this strategy (Le Roy & Czakon 2016). However, the review of the literature which provided evidence of relationships between COSFs and successful COP or outcomes revealed some empirical testing. After a comprehensive and intensive literature review, Table 2.7 was developed recording selective empirical studies that showed the relationship between COSFs and success indicators for COP or outcomes in different contexts. Each study in Table 2.7 was assessed according to the following criteria: COSFs and coopetition success indicators (COSIs), methods for data collection and analysis, findings and impact of relations, sectors and countries. Those criteria gave the researcher a clear understanding of the examined constructs and applied a suitable methodology while examining our model.

2.6.1 Coopetition Success Factors and Coopetition Success Indicators

The literature shows a variety of COSFs used in previous studies. For example, researchers focused on COSFs by contemplating factors such as mutual benefits, trust

and commitment (Krishnan et al. 2006; Morris et al. 2007; Pansiri 2008; Bouncken & Fredrich 2012; Perera et al. 2016; Hameed & Naveed 2019; Yuan et al. 2019; Iqbal & Hameed 2020; Raza & Kostis 2020; Muthusamy & Dass 2021). Other research focused on other factors such as organisational learning, sharing resources and capabilities, and common goals (Jiang & Li 2008; Zacharia et al. 2009; Bouncken & Kraus 2013; Pangarkar & Wu 2013; Estrada et al. 2016; Wemmer et al. 2016; Ali & Khalid 2017; Bendig et al. 2018; Bouncken et al. 2018; Crick 2018, 2019a; Fernandes et al. 2019; Crick & Crick 2020a, 2020c).

Some studies concentrate on shared values and culture (Nielsen 2007; Silva et al. 2012; Della & Aria 2016; Shu et al. 2017; Sepuru et al. 2021), paradoxical tension (Crick & Crick 2020c; Raza 2020) and management support (Avital & Singh 2007; Yuan et al. 2019). Several researchers attempted to study COSFs through a cooperative mindset (Crick 2018), leadership (Yuan et al. 2019; Sepuru et al. 2021) and conflict (Demirbag & Mirza 2000; Shakeri & Radfar 2017; Crick & Crick 2020c). Others directed their research towards identifying factors such as communication (Zollo et al. 2002; Chen et al. 2020), geographical proximity (Yoon et al. 2017; Crick et al. 2020; Crick & Crick 2021a), and governance (Zollo et al. 2002; Czakon et al. 2020a). Finally, some researchers viewed opportunistic behaviour (Silva et al. 2012; Shakeri & Radfar 2017; Raza & Kostis 2020) and coopetition experience (Luo 2002b; Zollo et al. 2002; Nielsen 2007; Silva et al. 2012; Pangarkar & Wu 2013; Robert et al. 2018) as common COSFs.

For COSIs, although some previous studies in Table 2.7 used qualitative indicators to measure COS success (Zollo et al. 2002; Bouncken & Fredrich 2012; Kim et al. 2013; Park et al. 2014a; Fernandes et al. 2019; Hameed & Naveed 2019; Chen et al. 2020; Iqbal & Hameed 2020), others utilised quantitative indicators (Luo 2002b; Morris et al. 2007; Jiang & Li 2008; Ritala et al. 2008; Pangarkar & Wu 2013; Le Roy & Sanou 2014; Pekovic et al. 2020; Crick & Crick 2021a). Some other researchers mixed qualitative and quantitative indicators (Ritala 2012; Nakos et al. 2014; Shakeri & Radfar 2017; Yoon et al. 2017; Bendig et al. 2018; Crick 2019a; Yuan et al. 2019; Zacharia et al. 2019).

2.6.2 Methods for Data Collection and Analysis

A quantitative method (survey) is found to be as the most used approach in the previous studies of COSFs (Ali & Khalid 2017; Bendig et al. 2018; Fernandes et al. 2019; Hameed & Naveed 2019; Chen et al. 2020; Czakon et al. 2020a; Pekovic et al. 2020; Raza & Kostis 2020; Crick & Crick 2021b; Muthusamy & Dass 2021), see Table 2.7. Although the majority used questionnaire surveys, some studies used a qualitative approach (Crick 2018; Tanriverdi & Küçükyilmaz 2018; Zacharia et al. 2019; Sepuru et al. 2021), others studies combined the two approaches and used mixed methods approaches (Yuan et al. 2019; Crick et al. 2020; Crick & Crick 2020a; Hasan et al. 2020). Regarding analysis, factor analysis techniques were used to confirm the discriminant and convergent validities of the instruments. Some researchers used Exploratory Factor Analysis (EFA) as the principal component method to find the loading for each item within the same construct (Pansiri 2008; Le Roy & Sanou 2014; Della & Aria 2016; Chen et al. 2020; Crick 2020b; Muthusamy & Dass 2021). Other researchers used Confirmatory Factor Analysis (CFA), using one of the multivariate analysis packages for the discriminant validity of the constructs (Luo et al. 2007; Silva et al. 2012; Kim et al. 2013; Pangarkar & Wu 2013; Nakos et al. 2014; Shu et al. 2017). Other researchers mixed EFA and CFA in their studies (Luo et al. 2006; Morris et al. 2007; Crick 2019a; Yuan et al. 2019; Crick et al. 2020; Crick & Crick 2020a, 2020c, 2021a).

For hypothesis testing, some quantitative studies used the Structural Equation Modelling (SEM) (Luo et al. 2006; Jiang & Li 2008; Zacharia et al. 2009; Silva et al. 2012; Wemmer et al. 2016; Ali & Khalid 2017; Czakon et al. 2020a; Hasan et al. 2020; Raza 2020; Raza & Kostis 2020). They employed different statistical packages to analyse SEM such as Partial Least Square (PLS) (Ali & Khalid 2017; Hameed & Naveed 2019; Raza 2020; Raza & Kostis 2020), Moment Structure (AMOS) (Jiang & Li 2008; Zacharia et al. 2009; Silva et al. 2012; Chen et al. 2020), and Linear Structural Relations (LISREL) (Krishnan et al. 2006; Luo et al. 2006; Morris et al. 2007; Kim et al. 2013; Shakeri & Radfar 2017; Crick 2019a; Crick et al. 2020; Crick 2020b; Crick & Crick 2020a, 2020c, 2021a, 2021b). Although SEM has been widely used, other studies employed regression analysis using the Statistical Package for the Social Sciences (SPSS) for testing their hypothesis (Demirbag & Mirza 2000; Luo 2002b; Zollo et al. 2002; Oum et al. 2004; Lavie 2007; Nielsen 2007; Lunnan & Haugland

2008; Ritala 2012; Kim et al. 2013; Pangarkar & Wu 2013; Park et al. 2014a; Bendig et al. 2018; Pekovic et al. 2020; Muthusamy & Dass 2021).

2.6.3 Findings and Impact of Relations

The studies in Table 2.7 were grouped according to impact – positive relationship, negative relationship, and mixed effects.

Positive relationship between COSFs and performance were found by (Avital & Singh 2007; Morris et al. 2007; Zacharia et al. 2009; Della & Aria 2016; Estrada et al. 2016; Perera et al. 2016; Zacharia et al. 2019; Crick et al. 2020; Iqbal & Hameed 2020; Raza 2020; Muthusamy & Dass 2021; Sepuru et al. 2021), see Table 2.7. For example, Morris et al. (2007) examined the relationships between coopetition dimensions (trust, mutual benefits and commitment) and firm performance (profit, sales growth and competitive position) based on a survey of 647 small firms in Turkey's industrial sector. The study used EFA and FCA as the two main statistical tools to analyse the data. The study demonstrated that there is a strong and positive relationship between mutual benefits, trust and commitment to performance (see Table 2.7).

Negative relationship between COS and performance (Ritala et al. 2008; Yuan et al. 2019; Crick & Crick 2020a), see Table 2.7. For example, Ritala et al. (2008) examined the effect of strategic alliances (competitive and cooperative relationships) between key competitors on the performance of a single firm (ROA and company sale) in the global ICT sector. The study used a survey to collect the data from 56 companies and tested the hypothesis by correlation and regression analysis and found that a relatively high number of alliances within a group of competing firms contributes negatively to performance (see Table 2.7).

Mixed effects of COS on performance, both negative and positive. A number of studies used both survey and archival data (Luo et al. 2007; Nieto & Santamaría 2007; Bouncken & Kraus 2013; Shakeri & Radfar 2017; Robert et al. 2018; Chen et al. 2020; Crick 2020b; Crick & Crick 2020c; Czakon et al. 2020a). Luo et al. (2007) examined the impact of cooperative alliances (competitor's alliances, and competitor's orientation strategies and objectives) on financial performance (firm profitability, e.g. return on equity). CFA and regression were used to analyse the data from 228 respondents in two high-tech industries (electronics, pharmaceuticals), and low-tech industries (machinery, chemicals, paper and forestry). The study found that company

alliances with competitors has a curvilinear influence on return on equity - first a negative, then a positive association. In addition, competitors' orientation can strengthen or weaken this curvilinear effect (see Table 2.7).

2.6.4 Sectors and Countries

COSFs has been investigated intensively in the context of industries sector through investigating the relationship between COSFs and success COP e.g. (Le Roy & Sanou 2014; Estrada et al. 2016; Shakeri & Radfar 2017; Bendig et al. 2018; Bouncken et al. 2018; Iqbal & Hameed 2020; Crick & Crick 2021b; Muthusamy & Dass 2021). However, some of the studies discussed COSFs in High technology sector e.g. (Luo et al. 2007; Bouncken & Fredrich 2012; Hameed & Naveed 2019; Raza & Kostis 2020). Other studies has been investigated COSFs in IT sector (Ritala et al. 2008; Bouncken & Kraus 2013; Yoon et al. 2017), two studies investigated in banking sector (Perera et al. 2016; Hasan et al. 2020), two studied in Airline sector (Oum et al. 2004; Tanriverdi & Küçükyilmaz 2018), and two studied in tourism sector (Pansiri 2008; Della & Aria 2016).

Most studies that examined COSFs were conducted in developed countries such as USA (Lavie 2007; Kim & Parkhe 2009; Iyer 2014; Muthusamy & Dass 2021), China (Luo 2002b; Kim et al. 2013; Wu 2014; Shu et al. 2017; Yuan et al. 2019), Europe (Jing & Avery 2016; Zacharia et al. 2009; Della & Aria 2016; Klimas & Czakon 2018; Pekovic et al. 2020; Raza & Kostis 2020). On the other hand, a few studies have been conducted in developing countries such as Sir Lanka (Perera et al. 2016), Malaysia (Hameed & Naveed 2019; Iqbal & Hameed 2020), and Iran (Shakeri & Radfar 2017; Hasan et al. 2020); thus this field of research needs more investigation in the contexts of developing countries such as in Jordan.

Table 2-6: The relationship between coopetition success factors and coopetition success performance (outcomes).

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
(Morris et al. 2007)	Mutual benefits, trust and commitment	Profit, sales growth and competitive position	Quantitative: 647 mail surveys, EFA, CFA LISREL 8.2, correlation analysis	Mutual benefits, trust and commitment have a positive effect on firm performance.	Positive	Turkish industry sector
(Ritala 2012)	Coopetition alignment, market uncertainty, network externalities and competition intensity	Innovation performance and market performance	Quantitative: 209 surveys, regression analysis	Coopetition alignment has a positive effect on firm's innovation performance and market performance directly and in conditions of high market uncertainty, high network externalities and low competition intensity.	Positive	Finnish market sector
(Kim et al. 2013)	Cooperative, competitive and synergetic dimensions	Joint benefits with supplier and sourcing flexibility	Quantitative: 503 surveys, CFA, LISREL 8; least-squares regression analysis, correlation analysis	Cooperative and synergetic dimensions have a positive impact on joint benefits with supplier. Synergetic and competitive dimensions have a positive impact on sourcing flexibility.	Positive	Distribution sector in China
(Luo et al. 2006)	Cross-functional cooperative intensity and ability, cross-functional competition and market learning	Financial performance and customer performance	Quantitative: 163 surveys, CFA, SEM, LISREL 8.8	Cross-functional coopetition has a direct impact on customer and financial performance and indirect impact through market learning mechanism.	Positive	High technology sectors
(Oum et al. 2004)	Horizontal alliances (numbers of alliances, level of cooperation)	Productivity and profitability	Content analysis to 30 international airlines: financial data, annual reports, correlation and regression	Horizontal alliance has a significant and positive impact on productivity but not on profitability. Alliance in high-level of cooperation has a significant and positive effect on both productivity and profitability.	Positive	Airline sector
(Bouncken & Fredrich 2012)	Managerial antecedents (alliances strategy, alliances function),	Competitive success, radical innovation and incremental innovation	Quantitative: 469 surveys, SEM Mplus 5.21, correlation	Coopetition has positive impact on competitive success, and more strongly increases radical than incremental innovation. Incremental innovation and competitive	Positive	High tech industry sector

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
	coopetition and relational factors (trust, dependency)			success are achieved through high trust and high dependency.		
(Jiang & Li 2008)	Organisational learning (e.g. new techniques, new processes, new expertise) and control variables (alliance form and scope, competitive regime)	Financial performance: sales growth, profitability, ROI and ROA	Mixed method: 5 interviews, 127 surveys, EFA, CFA, Maximum-likelihood AMOS 6.0, SEM, correlation.	A significant and positive relationship between organizational learning and financial performance. The relationship is stronger in joint ventures in same industry and weaker in contractual alliances across industries.	Positive	German partnering firms
(Pansiri 2008)	Characteristics of alliance partners, compatibility, capability, commitment, control and trust	Overall alliance performance, operational performance, market share and profitability, general satisfaction, technology transfer and development	Quantitative: 104 surveys, EFA, correlation	Commitment and capability have a positive influence on general satisfaction, market share, profitability and overall alliance performance. Trust, positively influence and general satisfaction. Control has an influence on satisfaction with technology transfer and alliance operational performance. Compatibility positively associated with general satisfaction.	Positive	Tourism sector in Australia
(Luo 2002b)	Contract, previous cooperation, contingency adaptability and term specificity	Sales level and ROI	Quantitative: 293 surveys, multiple regression analysis, correlation.	Cooperation has a positive effect on performance when term specificity and contingency adaptability are higher. Term specificity and contingency adaptability have a positive influence on performance.	Positive	International joint ventures in China
(Lunnan & Haugland 2008)	Alliance characteristics, alliance dynamics	Abrupt termination, short-term performance and long-term performance	Quantitative: 100 surveys, correlation, logistic regression, OLS regression analyses	Specific investments and increasing level of alliance involvement have a positive effect on long-term performance. Complementarity resources and strategic importance have a positive effect on short-term performance.	Positive	Engineering industries sector in Norway
(Hasan et al. 2020)	Challenging of banking industry, desire for coopetition, interfering conditions and background	Consequences of coopetition: organisational, social and economic consequences	Mixed methods: 33 interviews, 368 survey, CFA, SEM	Challenging of banking and willingness for coopetition have a strong impact on consequence of coopetition. Interfering conditions and background have a strong impact on adoption of coopetition strategies.	Positive	Banking sector in Iran
(Zacharia et al. 2009)	Collaboration level, supply chain partner insight, interdependence of knowledge and proccess,	Business performance: organizational performance, asset	Mixed methods: 23 discussion groups, 6 interviews, 342 surveys, SEM using	There is a positive relationship between interdependence of knowledge, supply chain partner, operational and relational outcomes with collaboration level. Positive	Positive	Different sectors e.g. construction and manufacturing

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Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
	operational outcomes and relational outcomes	utilisation, competitive position and profit	AMOS 4.0, CFA, correlation	relationship between operational and relational outcomes with business performance.		
(Wemmer et al. 2016)	Coopetition (e.g. close competition, common goals) and use of outside knowledge (external sources of information, implement new services)	Performance: better position with regard to membership development, and financial stability	Quantitative: 292 online surveys, correlation, Mplus software CFA, SEM	Engagement in coopetition has a positive effect on organizational performance via use of outside knowledge and innovation implementation. Use of outside knowledge has a direct positive effect on organisational performance.	Positive	Non-profit sports clubs in Germany
(Silva et al. 2012)	Trust, shared values, communication, opportunistic behaviour, similarities, experience and size	Performance (profitable, relationship satisfaction, relationship successful, met expectation)	Quantitative: 232 surveys, CFA using AMOS 6.0 with maximum likelihood (ML) estimation method, SEM, correlation	Trust has a strong and positive effect on performance via experience and size of a firm. Key antecedents identified as significant influencers on trust and shared values, communication and opportunistic behaviour. Similarities among partners enhance the positive relationship between trust and performance.	Positive	International alliances firms in Portugal
(Demirbag & Mirza 2000)	Inter-partner conflict and control, inter-partner relations and inter-partner commitment	Overall business performance, marketing and financial control and human resource productivity	Quantitative method: 47 structured interviews, EFA, path analysis (stepwise regression analysis)	Conflict and control, commitment and inter-partner relationships have a positive impact on performance.	Positive	International joint venture projects in industrial sector
(Zollo et al. 2002)	Collaborative experience, technology experience, partner experience, governance design, monitoring change, coordinating committee and equity	Alliance performance (knowledge accumulation, created new opportunities, achieve initial objectives)	Quantitative: 145 surveys, correlation, multiple regression	Partner experience has a positive impact on alliance performance, and this effect is stronger in the absence of equity-based governance mechanisms.	Positive	Alliances between biotech and pharmaceutical firms
(Pangarkar & Wu 2013)	Diversity of alliances: managerial experience, age of organization, resources committed to technology development and marketing	Sales growth, profit growth and market share	Quantitative: 76 surveys, CFA, regression model, correlation	Start-up firms' performance influenced by the number of alliances formed. Start-up firms with a diverse set of alliance partners exhibit a better performance than who do not have alliance partner/s.	Positive	Internet companies in Singapore
(Crick 2018)	Antecedents of coopetition activities (e.g. industry-wide cooperative mind-set, access to	Organisational performance: market-level survival, cost/benefits of	Qualitative: 38 interviews, thematic analysis	Coopetition is comprised of the interplay between competition and cooperation in the form of resource- and capability-sharing activities. Coopetition is related	Positive	Wine industry in New Zealand

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
	competitors' resources and capabilities), facets of coopetition activities (e.g. resource-sharing activities, capability-sharing activities)	collaborating as a group, regional-level performance and competitive advantages		positively to organizational performance, and it driven by an industry-wide cooperative mind-set and access to competitors' resources and capabilities.		
(Park et al. 2014a)	Cooperation dominant coopetition, weak coopetition, balanced strong and competition dominant coopetition	Coopetition based innovation performance (e.g. innovation co-created with partner, innovation generated through acquisition partner's knowledge)	Content analysis method from secondary data (e.g. annual reports, securities data company), regression analysis	Competition and cooperation intensities have non-monotonic positive relationship with firm's coopetition-based innovation performance. Balanced coopetition has a positive effect on innovation performance.	Positive	Semiconductor industry
(Lavie 2007)	Network resources (e.g. technology, marketing, financial), relative partner profitability, relative partner alternatives, bilateral competition and multilateral competition	Market performance: intangible assets, distance from alliance activities (e.g. firm profitability), explanatory power (e.g. return on sale), market share and common share	Pooled time-series analysis spanning years 1990–2001, SDC platinum database, correlation, regression	The marketing and financial network resources enhances market performance. The prominence of partners in the alliance portfolio is positively related to market performance. The firm's market performance improves with the intensity of competition among partners in its alliance portfolio.	Positive	U.S. software industry
(Ali & Khalid 2017)	Trust, symmetric dependence, symmetric equity share and resources complementarity.	Joint venture performance: overall performance, profitability, market share and achieving the goals	Quantitative: 89 surveys, partial least squares (PLS) - SEM using Smart PLS	Trust has a positive and direct impact on performance and through symmetric dependence and resource complementarity.	Positive	Joint ventures of Nordic firms operating in Asia, Europe, and USA
(Nielsen 2007)	Pre-alliance formation factors (e.g. prior experience, partner reputation, country risk) and post alliance formation factors (collaborative knowledge, trust, protectiveness, complementarity, cultural distance)	Alliance performance (efficiency, relation equity, financial, learning)	Quantitative: 119 survey, Pearson correlations, multiple regression	There is a significant relationship between alliance performance and host country risk, partner reputation preceding alliance formation. During the operation of the alliance, relationships between collaborative knowledge, trust, protectiveness, complementarity, cultural distance and alliance performance were found.	Positive	Danish firms' alliances with firms in Europe, North America and Asia firms

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
(Raza & Kostis 2020)	Trust (e.g. honest, keeps promises, negotiations), distrust (profit at our expense, hesitant to transact with partner, engage in a harmful behaviour) and coopetition intensity	Relationship performance: (e.g. expected results and revenues, integration of firms' technologies, resources and expertise, adds to competitive advantage)	Quantitative: 225 surveys, PLS-SEM using Smart PLS 3	A positive and significant effect of coopetition intensity on relationship performance. Trust and distrust mediate the linkage between coopetition intensity and relationship performance.	Positive	High technology manufacturing industries in Sweden
(Bendig et al. 2018)	Cross-functional coopetition, power sharing and organizational learning technological turbulence	Firm performance (customer satisfaction market effectiveness, profitability)	Quantitative: 331 surveys, regression analysis.	Organizational learning mediates the association between cross-functional coopetition and firm performance. Power sharing increases the strength of the positive relationship between cross-functional coopetition and organizational learning.	Positive	German industries (e.g. automobile, biotechnology, construction)
(Fernandes et al. 2019)	Coopetition and knowledge transfer	Innovation activities and innovation performance	Quantitative: 6840 surveys, Pearson's correlation	Coopetition and the transfer of knowledge to and from competitors generates a statistically significant positive impact on company innovation-related activities and performance.	Positive	Portugese innovative institutions
(Pekovic et al. 2020)	Cooperation (cooperates in innovation activities with non-rival and rival partners, cooperates on innovation activities with non-rival partners only)	Firms' economic performance (earnings before interest, tax, depreciation and amortization)	Quantitative: ESANE 2957 surveys, ordinary least squares regression	A positive and significant relationship between various forms of cooperation with and without rivals and economic performance. Cooperation with rivals is lower than the impact of cooperation with non-rivals.	Positive	French innovative firms (e.g. export, agri-food, transport)
(Hameed & Naveed 2019)	Coopetition (e.g. close and active competition, common goal), trust (e.g. trustworthiness, promises) and dependency (e.g. bargaining position, unique contributions)	Open innovation performance: (e.g. new idea, communication, degree and required knowledge, learn from experience)	Quantitative: 72 online surveys, Smart Partial Least Square (PLS)-Structural Equation Modelling (SEM) technique	There is a positive relationship between coopetition and open innovation performance. Trust and dependency are crucial to develop coopetition. Trust and dependency mediated the relationship between coopetition and performance and have a positive impact on innovation performance.	Positive	High-tech SMEs from Malaysia
(Crick & Crick 2021a)	Coopetition (e.g. close and active competition) export intensity (e.g. hostility, heterogeneity) and	Financial performance (e.g. business unit profitability, ROI, ROS,	Quantitative: 101 electronic surveys, EFA using SPSS 23, CFA, via LISREL	Coopetition has a non-linear (inverted U-shaped) relationship with financial performance. Export intensity and an export geographical scope positively moderate this quadratic association.	Positive	New Zealand wine industry

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
	export geographical scope (e.g. the number of export markets)	reaching financial goals, market share)	9.30, a hierarchical regression analysis			
(Iqbal & Hameed 2020)	Trust (e.g. trustworthiness, keeping promises), dependency (e.g. bargaining position, unique contributions) and coopetition (close competition, achieve a common goal)	Open innovation performance: new idea, communication, degree of knowledge, awareness the required knowledge, willingness to learn	Quantitative: 400 surveys, CFA, PLS-SEM version 3	Trust and dependency have a positive effect on coopetition. Coopetition has positive effect on open innovation performance.	Positive	Manufacturing sector of SMEs in Malaysia
(Muthusamy & Dass 2021)	Mutual influence (equal influence in alliance decisions), trust (ability, benevolence, integrity-based partner trust) and coopetive alliances, international alliances	Alliance performance: productivity and worthwhile alliances, fair benefits and returns, contributed profits, achieving competitive advantage	Quantitative: 223 surveys, archival data (e.g. online financial database, annual report), EFA, correlations, hierarchical regression model	Inter-firm trust was quite significant to alliance performance and the link between trust and performance was more salient in alliances with high mutual influence and coopetition, where inter-firm trust was less salient and weaker in international alliances.	Positive	US industries (e.g. biotech, pharmaceutical, computers and electronics)
(Krishnan et al. 2006)	Trust, interdependence, inter-partner competition, environmental instability and environmental unpredictability	Alliance performance: reach objectives, satisfied with financial performance, satisfied overall performance	Quantitative: 126 questionnaire surveys, CFA using LISREL 8.3, regression analysis model, correlation	A positive relationship between trust and performance is stronger under high behavioural uncertainty and weaker under high environmental uncertainty.	Positive	International alliances operating in India
(Bouncken et al. 2018)	Coopetition (close and active competition, collaboration to achieve common goals)	Radical innovation and incremental innovation	Quantitative: secondary data, multiple databases, 1049 surveys, CFA, covariance-based structural equation modelling (CB-SEM) with Mplus 7	While coopetition is advantageous for incremental innovation in both pre-launch and launch phases, radical innovation benefits from coopetition in the launch phase only.	Positive	German medical and machinery sectors

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
(Tanriverdi & Küçükyilmaz 2018)	Coopetition rules, purposes, partner selection criteria, and practices	Intensity of competition, effects of coopetition on competition, benefits, opportunities, costs and risks and opinions	Qualitative: Five semi structured face to face and phone interviews, thematic analysis	Coopetition has a significant effect on company outcomes and offer many benefits to airline industry.	Positive	Airline industry
Author	**Coopetition success factors**	**Coopetition success indicators**	**Main data collection and analysis methods**	**Main findings**	**Impact of relations**	**Sector**
(Le Roy & Sanou 2014)	Aggressive, cooperative, coexistence and coopetive strategies.	Financial performance: number of subscribers of the operator, and annual increase in the number of subscribers of the operator	Four semi-structured interviews, secondary data (structured content analysis for documented data), principal component analysis (PCA), K-Means clustering, analysis of variance (ANOVA)	Aggression, cooperation and coopetition are identified in the industry. A coopetition strategy seems to perform better than either an aggressive or a cooperative strategy. An aggressive strategy is more effective than a cooperative strategy.	Positive	Mobile phone industry
(Estrada et al. 2016)	Coopetition, internal knowledge sharing mechanisms, formal knowledge protection mechanisms	Product innovation performance: turnover of new products introduced to firm and market	627 Flemish Community Innovation Surveys, regression analysis, correlation	Coopetition has a significant positive impact on product innovation performance when internal knowledge sharing mechanisms and formal knowledge protection mechanisms are present.	Positive	Innovative manufacturing firms
(Crick et al. 2020)	Coopetition (e.g. close and active competition, competitor's partners) and industry experience	Financial performance (e.g. profitability, ROI, ROS, reaching financial goals, market share)	Quantitative, 101 surveys, EFA through SPSS 23, CFA through a LISREL 9.30, hierarchical regression model	Coopetition exhibited a quadratic relationship with financial performance. Industry experience positively moderated this association as it helps decision-makers to yield mutually beneficial performance outcomes.	Positive	Wine producers in New Zealand
(Della & Aria 2016)	Collaboration factors (e.g. relationships, reciprocal advantages, cultural compatibility, trust, level of cooperation) and competition factors (e.g. number of investment	Number of hotels, accommodation capacity, intensity of investments in accommodation, tourist flows, relationships	Quantitative: 80 surveys, EFA, Pearson correlation	Coopetition improves performance but a key determinant is not only numbers of links, but also acquired trust between partners.	Positive	SMEs in tourism sector in Italy

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
	and competitors, price, innovation)	between arrivals and overnights				
(Klimas & Czakon 2018)	Interdependence of coopetition (direct and indirect in primary and secondary activities)	Organisation innovativeness: strategic innovative focus, openness in communication, extrinsic motivation system and management encouragement	Quantitative: 84 surveys, ANOVA, Pearson's coefficients correlation, stepwise regression model, SPSS version 23	Organizational innovativeness and its dimensions are positively and significantly related to both direct and indirect coopetition. Openness and encouragement to innovate stimulates especially indirect coopetition, while strategic innovative focus affects especially direct coopetition.	Positive	Polish video game industry
(Raza 2020)	Paradoxical tension, emotional ambivalence, organizational mechanism (emotional and balancing capability)	Coopetive performance: produces expected results, generates revenues, integration of technologies and resources, generates new customers and products	225 survey questionnaires, retriever business database, ANOVA, PLS-SEM using Smart PLS 3	Emotional ambivalence and a positive influence of balancing capability mediate the relationship between tension and performance. A blend of higher balancing capability and lower emotional capability produces a positive indirect effect of tension on performance.	Positive	Alliances firms in Swedish industry
(Zacharia et al. 2019)	Customer requirements, organizational interconnectedness, environmental uncertainty and coopetition	Firm performance (e.g. cost reduction, knowledge sharing, and innovation) and relational outcomes (e.g. trust, credibility, relationship effectiveness).	Qualitative: 21 interviews, thematic analysis.	Customer requirements and organizational interconnectedness have a positive impact on firm performance and relationship outcomes. Environmental uncertainty motivates coopetition and has a positive impact on firm performance and relationship outcomes.	Positive	Automotive, apparel, and IT industries in India
(Perera et al. 2016)	Trust, mutual benefits, commitment, resources compatibility and power balance	Coopetition strategy success: sustainability and continuity of the relationship	Qualitative study: 15 structured and semi-structured interviews, four focus group discussions, thematic analysis	Trust, mutual benefits, commitment, resources compatibility have a positive effect on coopetition strategy success. Power balance positively moderates the relationship between trust, mutual benefits, resources compatibility and coopetition success.	Positive	Banking sector in Sir Lanka

(Avital & Singh 2007)	Goal and strategy, team competencies, partner involvement and management support	Project expectations, innovation, team performance and business value	Quantitative: 176 surveys, EFA, CFA, correlation, SEM, estimated coefficients	The results suggest a strong influence of collaboration on project performance while only a limited influence from competition.	Positive	IT projects (Motorola and its partner firms)
Author	**Coopetition success factors**	**Coopetition success indicators**	**Main data collection and analysis methods**	**Main findings**	**Impact of relations**	**Sector**
(Sepuru et al. 2021)	Collaborative factors: external environment attributes of partners, leadership, culture, strategic factors	Organisation performance: knowledge creation, transfer, innovativeness, ability to leverage resources, maximum benefits and competitive advantage	Thematic content analysis	Collaboration factors have a positive influence on organisation's performance.	Positive	Systematic literature review
(Yoon et al. 2017)	Planning process (cooperation R&D, method of work and performance distribution, geographical similarity) and collaboration process (mutual trust, partner characteristic)	Financial performance, process innovation, improving competitiveness and technology acquisition	Quantitative: 127 surveys, correlation analysis, multiple regression analysis, SPSS 18.0	The characteristics of partners positively influence competitiveness in captive and global markets, while they improve process innovation in open and domestic markets.	Positive	IT service industry in Korea
(Ritala et al. 2008)	Competitive relationships (relative number of coopetive relationships among competitors) and cooperative relationships (the relative number of coopetive relationships among alliances)	ROA and company sales	Quantitative: alliance and joint venture database, companies' public annual reports survey, Pearson correlation, a linear regression analysis	The relative number of strategic alliance relationships among the group of firms' key competitors is negatively related to firm performance.	Negative	Information and communication technology sector
(Crick 2019a)	Coopetition (e.g. collaborate with competitors, share assets, cooperate with rivals, active collaboration)	Customer satisfaction performance, market performance and financial performance	Quantitative: 101 electronic surveys, EFA, CFA through LISREL 9.30, hierarchical	Coopetition has non-linear (quadratic) relationships with customer satisfaction performance, market performance, and financial performance.	Negative	New Zealand wine industry

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
			regression analysis SPSS 23			
(Crick & Crick 2020a)	Coopetition activities (e.g. cooperate extensively, share assets, cooperate with rivals) and competitive intensity	Market performance: Market share, sales growth and revenue and acquiring new customers	Mixed methods: 101 surveys, 20 semi-structured interviews, EFA through SPSS 23, CFA through LISREL 9.30, hierarchical regression analysis	Coopetition has a non-linear (inverted U-shaped) relationship with market performance. Competitive intensity yielded a negative moderation effect.	Negative	New Zealand wine industry
(Yuan et al. 2019)	Competitors' ties (mutual trust and benefits, stable relationship, support, high reputation), entrepreneurial risk-taking (leadership initiatives for change, safe, implement plans) and market orientation (customer and competitor orientation, inter-functional coordination)	Innovative performance: Competitiveness of new products, market share, and the profitability of new products	Mixed methods: 7 in-depth interviews, 204 surveys, validity reliability methods, EFA, CFA, regression analysis, correlation analysis	Competitor ties have a direct negative effect on market orientation, and indirect negative effect on innovative performance through a negative relationship with market orientation.	Negative	Manufacturing firms in China
(Kim & Parkhe 2009)	Competing and cooperating similarity, and relation efforts	Strategic goals, enhances core competences, competitive advantages and new opportunities arises	Quantitative: 70 surveys, regression analyses using ordinary least squares, correlation	Competing similarity has a negative effect on performance. Cooperating similarity has a positive effect on alliance outcomes. Similarity in corporate culture is positively related to alliance outcomes.	Mix	US chemical, electronic companies in industry sector

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
(Lechner et al. 2016)	Vertical coopetition: Size of the competitor, mutual dependence, overdependence among the cooperating rivals.	Sales growth (e.g. profitability, the number of employees, market share, and physical output)	Quantitative: 82 survey, correlation, hierarchical ordinary least squares (OLS) regression.	Vertical coopetition with larger competitors and mutual dependence has a positive effect on the sales growth of firms while overdependence in vertical coopetition has a negative effect on the sales growth of firms.	Mix	German industries (e.g. IT and electronic)
Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
(Bouncken & Kraus 2013)	Coopetition, knowledge sharing, learning from the partner, uncertainty.	Revolutionary innovation, (e.g. technological advancements) and radical innovation (e.g. performance improvements)	Mixed methods: 11 interviews, 830 survey, correlation, EFA, CFA, and SEM with the maximum likelihood estimation method.	Coopetition increased the connection with radical innovations negatively and positively. Knowledge sharing negatively affects revolutionary innovation through coopetition. Learning from partner increases the positive effect on revolutionary innovations. The greater technology uncertainty positively moderates the effect of coopetition on revolutionary innovations.	Mix	German SMEs in IT sector
(Wu 2014)	Coopetition, technological capabilities, research collaboration,	Innovation performance: number of new products	Mixed methods: 1499 survey, 17 interviews, correlation, and regression analysis.	An inverted U-shaped relationship between coopetition and product innovation performance. The bell-shaped relationship is weaker for firms with strong technological capabilities and research collaboration.	Mix	Chinese firms from services and industrial sectors
(Iyer 2014)	Downstream integration collaboration, downstream integration resources specificity technological context.	Operational performance (delivery lead times, inventory turnover rates, on time deliveries to customers)	Quantitative: 115 survey, stepwise multiple linear regression model.	The greater the downstream collaboration, the better the operational performance. The greater the technological turbulence led to stronger relationship of downstream collaboration with operational performance and to weaker relationship of resource specificity with operational performance.	Mix	Manufacturing sector in USA
(Shu et al. 2017)	Cooperation, competition, partner cultural compatibility, technological turbulence, market growth	Overall profitability and ROI	Quantitative: 194 survey, CFA, hierarchical regression analysis, correlation,	Coopetition fosters performance under the conditions of low partner cultural compatibility, high technological turbulence, and high market growth while it hinders performance at technological turbulence, market growth, and high levels of partner cultural compatibility.	Mix	International joint ventures in manufacturing in China
(Nakos et al. 2014)	Alliances with competitors, alliances with non-competitors, entrepreneurial orientation.	International performance: sales growth, market share, ROI, profitability, overall satisfaction with performance	Quantitative: 126 survey, Dun and Bradstreet database in both countries, CFA, correlation,	Alliances with non-competitors are positively associated with international performance, but the alliances with competitors are negatively related. Alliances with non-competitors, entrepreneurial orientation increase international performance and those alliances with	Mix	British and U.S. private SMEs

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
			Truncated regression analysis.	competitors. Entrepreneurial orientation reduces the negative impact.		
(Crick 2020b)	Coopetition (e.g. close and active competition) and competitive aggressiveness (e.g. intensity of outperforming activities, utilizing new opportunities)	Customer satisfaction performance (customer's loyalty, delivering value, level of customer satisfaction)	Quantitative: 101 surveys, EFA through SPSS 23, CFA through LISREL 9.30, correlation coefficients, hierarchical regression model	While coopetition has a positive association with customer satisfaction performance, this link is negatively moderated by competitive aggressiveness.	Mix	New Zealand wine industry
(Robert et al. 2018)	Firm size, vertical coopetition, horizontal coopetition and experience in horizontal coopetition	Commercial performance: price performance and time performance	Quantitative: database from real estate brokerage industry, correlation, regression analysis	Horizontal coopetition enhances product commercial performance compared to competition, whereas vertical coopetition does not.	Mix	Real estate brokerage industry
(Chen et al. 2020)	Cross–functional coopetition (communications, relationship, resources, attention), technological turbulence (highly uncertain, complex environment) and market turbulence (changed rapidly, highly uncertain, difficult to predict changes)	Firm performance: product innovation (e.g. accepts new product demands, inventing new products) and services innovation (e.g. developed new brand, improved existing service)	Quantitative: 149 surveys, correlation, descriptive statistics, CFA using AMOS 21.0, stepwise regression	The opposite relationships of cross-functional coopetition on innovations enhances product innovation but hurts service innovation. Market turbulence attenuates the positive effect on product innovation but strengthens the negative effect on service innovation. Technological turbulence attenuates the negative impact of cross-functional coopetition on service innovation.	Mix	Pharmaceutical firms in China
(Crick & Crick 2020c)	Coopetition (e.g. achieve a common goal, active cooperation), inter-firm conflict (e.g. similar offers, strong competitors) and competitive intensity (e.g. tension, dislike interacting, conflict)	Sales performance: acquiring new students, volume of students and revenue volume growth from students	Mixed methods: 25 interviews, 151 surveys, EFA through SPSS 23, CFA using LISREL 9.30, hierarchical regression analysis	Coopetition has a positive relationship with sales performance, but inter-firm conflict yielded a negative interaction effect. This link is positively moderated by competitive intensity.	Mix	Sporting clubs in New Zealand

Author	Coopetition success factors	Coopetition success indicators	Main data collection and analysis methods	Main findings	Impact of relations	Sector
(Czakon et al. 2020a)	Numbers of partners, governance types, market conditions and knowledge management	Coopetition outcomes: radical innovativeness (manager's preferences and choices)	Online experiments study and scenarios, 160 surveys, hierarchical regression	Clear preference for network coopetition, using formal governance, and being based on intensive knowledge sharing while market uncertainty does not appear to significantly influence coopetition design for radical innovation.	Mix	Automotive industry sector
(Nieto & Santamaría 2007)	Collaboration and continuity, collaboration with research organisations clients, suppliers, and competitors	High and low degree of product innovation novelty	Data base from Spanish Ministry of Science, Technology, and the Public Enterprise survey, 6500 observations, regression analysis, correlation analysis	Collaboration with suppliers, clients and research organisations have a positive impact on the novelty of innovation, while collaboration with competitors has a negative impact. The greatest positive impact on the degree of innovation novelty comes from collaborative networks comprising different types of partners.	Mix	Spanish manufacturing firms,
(Crick & Crick 2021b)	Coopetition, competitive intensity and competitive aggressiveness	Financial performance: (e.g. profitability, ROI, ROS, reaching financial goals, market share)	Mixed methods approaches: 101 surveys, EFA through SPSS 23, CFA using LISREL 9.30, hierarchical regression analysis, 20 semi-structured interviews	Coopetition has a positive association with firms' performance. However, competitive aggressiveness provided a negative moderation effect and competitive intensity had a positive moderation effect.	Mix	New Zealand wine producers
(Shakeri & Radfar 2017)	Partner fit, alliance capabilities, social capital, learning, opportunistic behaviour, conflict management, trust and alliance capabilities	Alliance performance: satisfied performance, met objectives, profitable investment, competitive position, successful in learning skills, strong relationship	Quantitative: 260 electronic questionnaire, multivariable regression, SEM, CFA, LISREL 8.8	Partner fit, alliance capabilities, social capital and learning are determinant constructs of strategic alliance performance. Opportunistic behaviour is negatively related to alliance performance. Alliance capabilities partially mediate between alliance experience and alliance performance.	Mix	Iranian biopharmaceutical industry
(Luo et al. 2007)	Competitor's alliances, competitor's orientation strategies, and objectives	Financial performance: firm profitability (ROE)	Quantitative: Study 1 - 228 survey, Study 2 - 157 Standard &	The intensity of competitors has a curvilinear influence on return on equity. Competitors' orientation can strengthen or weaken this curvilinear effect.	Mix	High-tech and low tech industries sector

			Poor's COMPUSTAT database, CFA, hierarchical regression analysis model			

2.7　The Gap in the Literature

As indicated earlier, research on COS is at a conceptual development phase. Studies are relatively small and fragmented (Dagnino & Rocco 2009; Czakon 2010; Yami et al. 2010; Niemczyk & Stańczyk 2014; Bengtsson & Raza 2016; Felzensztein et al. 2018; McGrath et al. 2019; Lascaux 2020). Previous studies have explored many aspects essential for COS such as the relationship between COS and organisational performance (Ritala et al. 2008a), COS and innovation (Quintana & Benavides 2004), and COS and competitive behavior (Gnyawali et al. 2006). In the same context COS has been studied in a variety industries such as transportation (Gnyawali & Park 2009; Himpel 2012); finance (Czakon 2009a; Gonggrijp et al. 2013); tourism (von Friedrichs 2003; Kylanen & Mariani 2012); healthcare (Barretta 2008; Peng & Bourne 2009); aerospace (Salvetat & Géraudel 2012); and information technology (Gueguen 2009; Pellegrin et al. 2013).

Previous studies have been conducted on COSFs in various sectors such as airlines (Hoffmann & Schlosser 2001; Kraus et al. 2018), construction (Akintoye & Main 2007; Hwang et al. 2013), industry (Chin et al. 2008; Winkler 2019); tourism (Chim & Canino 2017; Czakon et al. 2020); health (San Martín et al. 2005); and pharmacy (Dadfar et al. 2014). Others have noted a link between COSFs and performance in different sectors such as industry (Morris et al. 2007; Crick 2018), banking (Perera et al. 2016; Hasan et al. 2020), airline (Oum et al. 2004; Tanriverdi & Küçükyilmaz 2018), tourism (Pansiri 2008; Della & Aria 2016), manufacturing (Iyer 2014; Shu et al. 2017) and IT (Avital & Singh 2007; Bouncken & Kraus 2013). However, these factors have still not been examined in the education sector (Adnett & Davies 2003; Bennett & Kottasz 2011; Czachon & Kuś 2014; Muijs & Rumyantseva 2014; Niemczyk & Stańczyk 2014), particularly in HESJ.

Only a few studies of COS have been applied in HES (Adnett & Davies 2003; Bennett & Kottasz 2011; Czachon & Kuś 2014; Muijs & Rumyantseva 2014; Niemczyk & Stańczyk 2014) but they constitute about only 4% of total studies in COS research in general (Czachon & Kuś 2014). In addition, COS studies have been adopted by scholars in different countries but these studies are still rare, especially in Asia, including Jordan (Czachon & Kuś 2014). Thus, this study will focus on clarifying the ambiguity surrounding COSFs by exploring these factors in PJUs.

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2.8 The Initial Proposed Conceptual Framework

This study follows four stages to provide a research model design for the initial proposed conceptual framework guiding this research in its exploration of potential success factors for COS in HESJ (see Figure 2.3). The stages can be clarified as follows:

| **Stage 1**
(Chin et al. 2008)
model

Figure 2.4 | → | **Stage 2**
Factors from
Literature Review

Table 2.7 | → | **Stage 3**
(Bengtsson & Raza
2016) model

Table 2.8 | → | **Stage 4**
The initial proposed
conceptual
framework
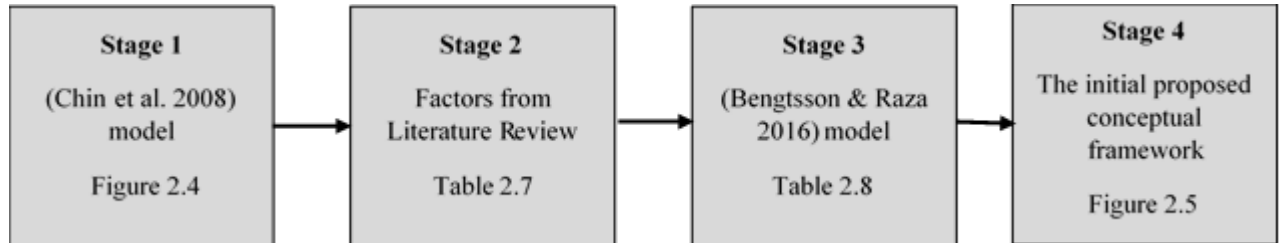
Figure 2.5 |

Figure 2.3: Stages for designing the proposed conceptual framework

Source: The author

2.8.1 Stage 1: Chin et al. Model (2008)

For the purpose of this study, the study adopted the (Chin et al. 2008) model as an indicator (in addition to other factors from other studies) to explore the COSFs in the higher education sector in Jordan due to a limited body of research on COSFs in the education sector. The basis for selecting this model for this study's conceptual framework is as follows:

1. It has covered the common factors of other COSFs models and studies

2. It has been tested and applied in both the industry and services sectors (Ruijun & Zhiman 2011; Alves 2013; Lindström & Polsa 2016; Schmidt 2016; Winkler 2019)

3. It is rigorous and reliable as it has been built, validated and confirmed in different studies in COSFs

4. It is a contemporary model which was established and tested in 2008.

In their work to determine and prioritise CSFs for a COS in the industry sector in Hong Kong, Chin et al. (2008), pp 441-445 identified seven factors divided into seventeen sub-factors grouped into three main categories: management commitment, relationship management and communication management (see Figure 2.4).
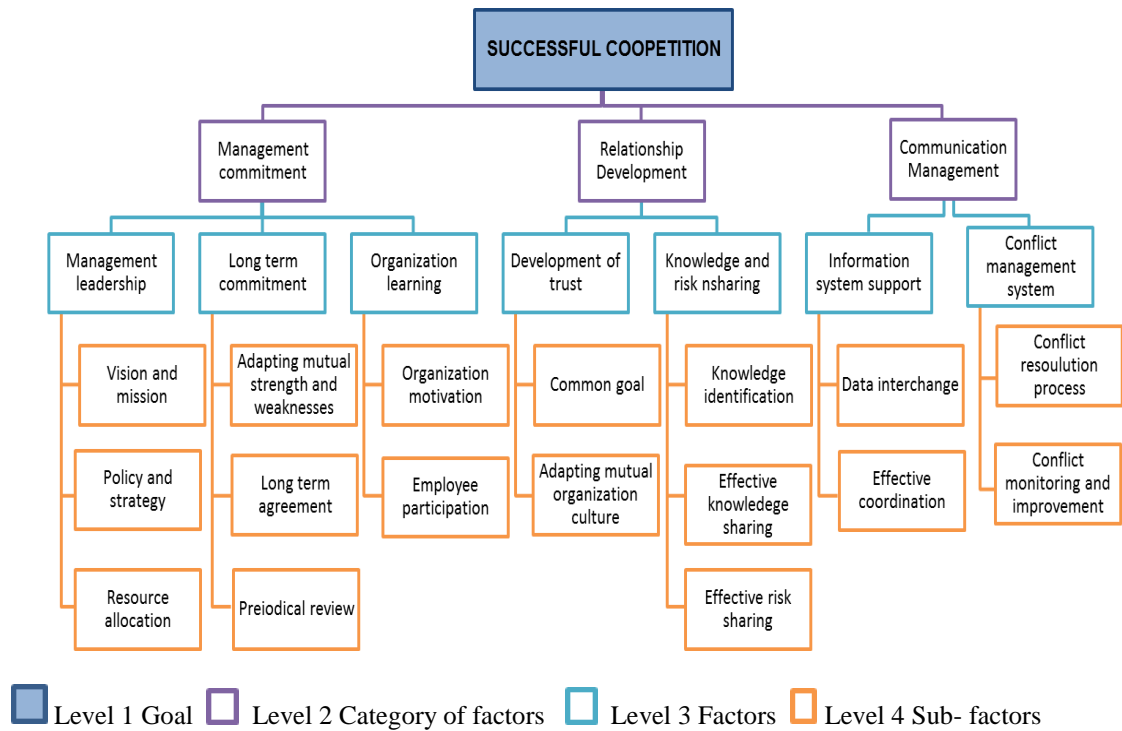
Figure 2.4: Coopetition strategy management model

Source: (Chin et al. 2008, p.442)

Category 1: Management commitment represents the degree of management support and attitude of top management towards the implementation of the coopetition approach which is crucial to COS success. This category comprises three CSFs. First, *Management leadership* which analyses top management's capabilities in guiding the organisation towards achieving goals, and excellent performance. It involves three significant sub-factors in this category: Vision and Mission, Policy and Strategy and Resources allocation. Second, *Long-term commitment* which can maintain a long-term relationship with competitors and achieve common goals. This factor includes three sub-factors: Adapting mutual strength and weakness, Long-term agreement and Periodical review. Third, *Organizational learning* which is a powerful tool to improve the performance of an organization in a changing and complex environment and helps organizations to succeed in COS. Organisational motivation and Employee participation are the sub-factors of Organisational learning.

Category 2: Relationship development refers to the growth of a healthy relationship between coopetitors. It includes two CSFs: *1) Development of trust* refering to the extent of trust between partners as a factor reinforcing cooperative behaviour, reduces conflicts, causes partner satisfaction and maintains cooperation with the competitors.

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It involves the significant sub-factors in this category: Common goal and Adapting mutual organisational culture. *2) Knowledge sharing* is an important objective because it adds value to each organisation and maintains a cooperative relationship between competitors while risk sharing can minimise losses and cost. There are three significant sub-factors: Knowledge identification, Effective knowledge sharing and Effective risks sharing.

Category 3: Communication management refers to the systematic planning, implementing, monitoring and revision of all channels of communication within an organisation and between coopetitors. It includes developing corporate communication strategies, designing internal and external communications directives, and managing the flow of information, including online communication. In this category, two factors and four sub-factors are identified. *1) Information system support* explores the organisation's effectiveness in systematising information as a means to coordinate business operations in a way that adds value to the partnership. It facilitates collaboration with competitors, exchanges information, and assists top managers in making the correct decisions. This factor includes the two significant sub-factors of Data interchange and Effective coordination. *2) Conflict management system* refers to a system which enables effective and efficient handling of conflict to maintain the COS relationship. This system should enable people to gather information, understand the background and make decisions, thereby enhancing people's capacity to deal with conflict before it escalates. Two other significant sub-factors are Conflict resolution process and Conflict monitoring and improvement.

2.8.2   Stage 2: Factors from Literature Review not Mentioned in the Chin et al. Model (2008)

Based on the intensive literature review of other studies, the researcher has identified some factors that were not mentioned in the (Chin et al. 2008) model. The Chin et al. (2008) model does not consider factors to COS success such as organisational resources and capabilities, flexibility to change and management perception to COS. Therefore, this study added some factors to its initial framework. Table 2.8 lists the factors and contributing studies for the conceptual framework used in this this study.

Table 2-7: Factors from studies in literature

Factors	Literature by Authors
1. Organisational resources and capabilities	(Bengtsson & Kock 1999, 2000; Lee 2001; Luo 2007a; Walley 2007; Wu 2007; Bengtsson et al. 2010; Barney et al. 2011; Gnyawali & Park 2011; Bengtsson & Kock 2014; Park et al. 2014a; Petter et al. 2014; Bengtsson & Raza 2016; Perera et al. 2016; Kraus et al. 2017; Crick 2018; Gnyawali & Charleton 2018; Hoffmann et al. 2018; Le Roy et al. 2018; Crick 2019b, 2019a; McGrath et al. 2019; Sahlan et al. 2019; Crick & Crick 2020b; Sraha et al. 2020; Zhang et al. 2020).
2. Flexibility to change	(Young & Wiersema 1999; Burn & Szeto 2000; Terry & Douglas 2000; Grewal & Tansuhaj 2001; Hoffmann & Schlosser 2001; Cheng & Li 2002; Luo 2007a; Nadkarni & Narayanan 2007; Jiang et al. 2008; Paulraj et al. 2008; Czakon 2009a; Wu et al. 2009; Niu 2010; Zhou & Wu 2010; Feifei 2012; Dadfar et al. 2014; Petter et al. 2014; Rudny 2015; Li et al. 2017; Shu et al. 2017; Ceptureanu et al. 2018a; Raweewan & Ferrell 2018; Hindarsah et al. 2020; Yulianeu et al. 2020).
3. Geographic proximity	(Boschma 2005b; Ganesan et al. 2005; Fontana et al. 2006; Abramovsky et al. 2007; Robst et al. 2007; Felzensztein & Gimmon 2008; Boschma & Frenken 2010; Felzensztein et al. 2010; Laursen et al. 2011; Balland 2012; Letaifa & Rabeau 2013; Petter et al. 2014; Rusko 2014; Geldes et al. 2015; Della & Aria 2016; Dal-Soto & Monticelli 2017; Geldes et al. 2017; Crick 2018; Felzensztein et al. 2018; Ryu et al. 2018; Crick & Crick 2019; Zhu et al. 2020).
4. Management perception to coopetition	(Hornsby et al. 2002; Elsbach 2003; Powell et al. 2006; Walley 2007; Jankowska & Bartosik 2012; Sroka 2012; Thomason et al. 2013; Bez et al. 2015; Bengtsson et al. 2016; Della & Aria 2016; Bergman et al. 2017; Fumi & Batista 2017; Miruka 2017; Chim & Canino 2018; Kraus et al. 2018; Van den Broek et al. 2018; Albert & Dos Santos 2020; Czakon & Marszałek 2021; Czakon et al. 2020; Sabri et al. 2020; Klimas et al. 2021).
5. Tension	(Bradford et al. 2004; Eckert & Rinehart 2005; Chen et al. 2007; Gnyawali et al. 2008; Li & Ferreira 2008; Bengtsson et al. 2010a; Bengtsson et al. 2010; Fang et al. 2011; Bengtsson & Kock 2014; Raza et al. 2014; Tidström 2014; Bengtsson & Kock 2015; Bengtsson et al. 2016; Santolaya et al. 2017; Bouncken et al. 2018; Ceptureanu et al. 2018a; Chou & Zolkiewski 2018; Wilhelm & Sydow 2018; Devece et al. 2019; Gast et al. 2019; Bengtsson et al. 2020; Bouncken et al. 2020; Jakobsen 2020; Raza 2020; Raza & Kostis 2020).
6. Coopetition experience with the organisations	(Rothaermel & Deeds 2006; Heimeriks & Duysters 2007; Jiang et al. 2008; Pansiri 2008; Buckley et al. 2009; Luo & Deng 2009; Wu et al. 2009; Chang et al. 2010; Hong et al. 2010; Osarenkhoe 2010a; Fang 2011; Gnyawali & Park 2011; Park et al. 2014; Petter et al. 2014; Bengtsson & Raza 2016; Bengtsson et al. 2016; Bouncken et al. 2016a; Czernek & Czakon 2016; Dorn et al. 2016; Mariani 2016; Bouncken et al. 2020; Czakon et al. 2020; Estrada & Dong 2020; Jakobsen 2020; Raza 2020).
7. Control and standardization	(Zineldin 2004; Eriksson 2008b; Faems et al. 2008; de Man & Roijakkers 2009; Hoetker & Mellewigt 2009; Della & Sciarelli 2012; Hung & Chang 2012; Ho & Ganesan 2013; Petter et al. 2014; Bouncken et al. 2016a; Dorn et al. 2016; Le Roy & Czakon 2016; Ratzmann et al. 2016; Ceptureanu et al. 2018a; de Resende et al. 2018; Mione 2018; Damayanti et al. 2019; Devece et al. 2019; Chim et al. 2020; CzakonNiemand, et al. 2020a; Liu et al. 2020; Zhong & Sun 2020; Muthusamy & Dass 2021).
8. Interdependence and harmony	(Zineldin et al. 1997; Narula 2002, 2004; Belderbos et al. 2004a; Zineldin 2004; Morris et al. 2007; Caglio & Ditillo 2008; Poppo et al. 2008; Sammarra & Biggiero 2008; Das & Kumar 2009; Rampersad et al. 2010; Van Cleynenbreugel 2013; Gast et al. 2015; Sklavounos et al. 2015; Dal-Soto & Monticelli 2017; Fumi & Batista 2017; Ceptureanu et al. 2018a; Chou & Zolkiewski 2018; de Resende et al. 2018; Monticelli et al. 2018; Zacharia et al. 2019; Schiffling et al. 2020).

Source: The author

2.8.3 Stage 3: Coopetition Success Indicators

In order to determine COS success and satisfaction in COS outcomes, this study has adopted the model by (Bengtsson & Raza 2016), pp31-32 to measure successful COS performance. Businesses need to know details about the status of the coopetive organisation, and tracking their performance is an essential part of successful COS management (Marr et al. 2004). The model classifies the outcomes of COS into four categories: Innovation related, Knowledge related, Firm performance and Relationship related.

1. Innovation related refers to measures of innovation performance (Quintana & Benavides 2004; Huang & Yu 2011; Park et al. 2014), radical innovation (Mention 2011; Ritala & Sainio 2014) and incremental innovation (Bouncken & Fredrich 2012)

2. Knowledge related refers to measures of knowledge sharing (Ritala & Hurmelinna 2009; Bouncken & Kraus 2013; Ho & Ganesan 2013), knowledge creation (Dagnino & Padula 2002; Czakon 2009a), and knowledge acquisition (Song & Lee 2012)

3. Firm performance uses measures of economic performance (Liu et al. 2014), financial and customer performance (Luo et al. 2006), market performance and quality and services (Wu et al. 2010), and competitive advantages (Gnyawali et al. 2006; Chi et al. 2007; Luo & Rui 2009)

4. Relationship performance uses measures of maintenance or failure of the relationship (Ketchen et al. 2004), loss or recovery of trust (Zerbini & Castaldo 2007), commitment of resources (Amaldoss et al. 2000), learning of partners (Zhang & Frazier 2011) and goal fulfilment (Tiessen & Linton 2000; Kim & Parkhe 2009; Liu et al. 2014b). Table 2.9 lists the indicators and the supportive studies of these indicators.

Table 2-8: The supportive studies of coopetition success indicators (COSIs)

Dimension	Sub-dimension	Supportive studies
Innovation related	Innovation performance	(Afuah 2000; Perks 2000; Erzurumlu 2010; Osarenkhoe 2010a; Wang et al. 2010; Park 2011; Johansson 2012; Ritala 2012; Bouncken & Kraus 2013; Park et al. 2014a; Wu 2014; Soltani et al. 2017; Della Corte 2018; Fernandes et al. 2019; Hameed & Naveed 2019; Hani & Dagnino 2020)
	Radical and incremental innovation	(Ritala & Hurmelinna 2009; Bouncken & Fredrich 2012; Bouncken & Kraus 2013; Ritala & Hurmelinna 2013; Ritala & Sainio 2014; Yami & Nemeh 2014; Forés & Camisón 2016; Hamouti 2017; Ardito et al. 2018; Bouncken et al. 2018; Xie et al. 2018; El Idrissi & El Manzani 2019; Le Nguyen et al. 2019a; Nguyen et al. 2019; Tiberius et al. 2020)
Knowledge related	Knowledge sharing	(Levy et al. 2001; Tsai 2002; Luo 2005; Baruch & Lin 2012; Ghobadi & D'Ambra 2012; Ghobadi & D'Ambra 2013; Ho & Ganesan 2013; Bengtsson & Kock 2014; Estrada et al. 2016; Cortese et al. 2021; Devarakonda & Reuer 2018; Gast et al. 2019; Seepana et al. 2020)
	Knowledge creation	(Phan & Peridis 2000; Dagnino & Padula 2002; Czakon 2009b; Meier 2011; Wilhelm & Kohlbacher 2011; Bengtsson & Kock 2014; Bouncken et al. 2016; Dorn et al. 2016; Rusko et al. 2016; Sindakis et al. 2017; Chiambaretto et al. 2019; Cheng & Chang 2020)
	Knowledge acquisition	(Inkpen 1998; Rindfleisch & Moorman 2001; Norman 2004; Sherwood & Covin 2008; Buckley et al. 2009; Li et al. 2011; Song & Lee 2012; Vasudeva et al. 2013; Geneste & Galvin 2015; Frankort 2016; Kavusan et al. 2016; Ortiz et al. 2018; Ho et al. 2019; Garri 2020)
Firm performance	Economic and financial performance	(Oum et al. 2004; Luo et al. 2007; Morris et al. 2007; Ritala et al. 2008; Kim & Parkhe 2009; Robert et al. 2009; Le Roy & Czakon 2016; Christ et al. 2017; Paula & Silva 2018; Crick 2019a; Kiraci 2019; Lamrani 2019; Lee 2019; Manzhynski & Figge 2020; Pekovic et al. 2020; Crick & Crick 2021b; Klimas et al. 2021).
	Market performance	(Sarkar et al. 2001; Kandemir et al. 2006; Ritala 2012; Le Roy & Sanou 2014; Le Roy & Czakon 2016; Sanou et al. 2016; Ferreira & Franco 2017; Ritala 2018; Crick 2019a; Henttonen et al. 2019; Crick & Crick 2020a).
	Quality and services	(Ali & Rady 2020; Burton 2002; Yang et al. 2003; Al-Nuaimi et al. 2013; Zareinejad et al. 2014; Handayani et al. 2015; Wijetunge 2016; Urban 2018; Rcardianto et al. 2019; Safaie et al. 2020; Musenze & Mayende 2021).
	Competitive advantages	(Lado et al. 1997; Gnyawali & Madhavan 2001; Luo 2007a; Chin, et al. 2008; Della & Sciarelli 2012; Bengtsson & Kock 2014; Ritala et al. 2014a; Della & Aria 2016; Chim & Canino 2017; Crick 2019b, 2020a; Seo 2020)

Dimension	Sub-dimension	Supportive studies
Relationship related	Maintenance or failure of the relationship	(Dussauge et al. 2000; Hannesson 2000; Ketchen et al. 2004; Zerbini & Castaldo 2007; Zhang & Frazier 2011; Pellegrin et al. 2013; Bengtsson & Johansson 2014; Bouncken & Fredrich 2016; Rusko et al. 2016; Cygler et al. 2018; Galati & Bigliardi 2019; Chaudhry 2020).
	Loss or recovery of trust	(Hong & Snell 2013; Fernandez et al. 2014; Kang & Park 2017; Lumineau 2017; Jeive 2019; Mirkovski et al. 2019; Omeihe et al. 2019; Raza 2019; Kostis & Näsholm 2020; Lascaux 2020; Omeihe et al. 2020; Raza & Kostis 2020; Schiffling et al. 2020; Sharif et al. 2020).
	Commitment of resources, learning from partners and goal fulfillment	(Byrne & Polonsky 2001; Norman 2002; den Ouden et al. 2005; Jané et al. 2008; Lunnan & Haugland 2008; Dze & Soldi 2011; Bouncken & Kraus 2013; Gast et al. 2015; Czajka & Dudek 2016; Franco & Haase 2017; Rusko 2019; Randolph et al. 2020; Vaivode & Sceulovs 2020; Findikoglu et al. 2021).

2.8.4 Stage 4: Design of the Initial Proposed Conceptual Framework

To guide the process of this research, a framework for exploring COSFs has been adapted by merging the (Chin et al. 2008) model and factors from the literature as independent variables. The Bengtsson and Raza-Ullah (2016) model has been used for indicators to measure COP success as a dependent variable (see Figure 2.3). Figure 2.5 illustrates coopetition success factors (COSFs) and constructs that are believed to influence the coopetition success indicators (COSIs).
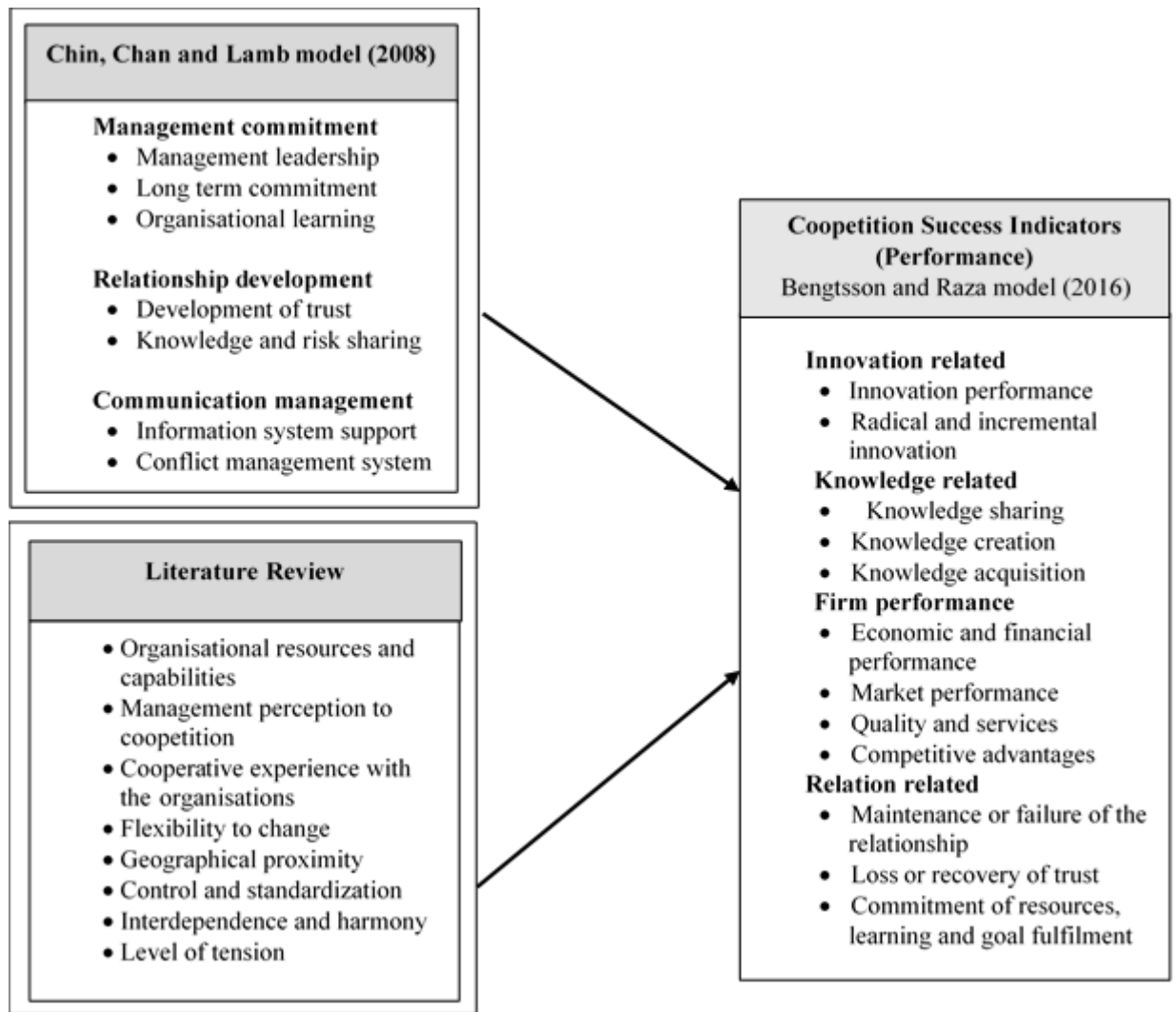
Figure 2.5: The initial proposed conceptual framework

The context of this study is the higher education sector in Jordan. Both coopetition success factors (COSFs) and coopetition success indicators (COSIs) are explored in this context. Due to the lack of studies of these factors in the education sector, this study adopts the initial proposed conceptual framework (Figure 2.5) as a guide. There is an expectation of other COSFs and COSIs to be explored if any exist, so this framework guides the process of research and to assist in developing a framework for successful COS management in the Jordanian higher education sector.

2.9   Summary

The purpose of this literature review was to explore COSFs and COSIs in other sectors in general. Based on the results of this review, little information exists to provide a comprehensive understanding of COSFs and COSIs in education sector in general and particulary for PJUs. Finally, this chapter provided an initial conceptual framework to

guide the process of research and to assist in developing a framework for a successful COS management in PJUs. The next chapter explains the research design and methodology used in this research.

3   CHAPTER THREE: METHODOLOGY

3.1   Chapter Overview

This chapter outlines the methodology and research design used to collect and analyse the research data. The intent of this study was to explore the coopetition success factors (CSFs) related to COS in the under-researched context of higher education, in particular the HESJ. The researcher adopted a pragmatic philosophical approach to the methodology and used a mixed method design, first collecting qualitative data to inform a wider collection of data using a qualitative survey.

3.2   Research Questions

The focus question for this study was: What are the critical factors that determine the coopetition strategy success in private Jordan universities (PJUSs)?

Drawing on the main research question, the study formulated the following questions and sub-questions:

RQ1: What is the current organisational relationship existing among PJUs?

Sub1: What are the coopetition strategy aspects and levels exist between PJUs?

Sub2: What coopetition strategy type is used between PJUs?

RQ2: What are the factors that enable coopetition strategy to be successful in PJUs?

Sub1: What are the important factors for coopetition strategy success in PJUs?

Sub2: What are university success indicators in adoption of coopetition strategy?

Sub3: What are the relationships between coopetition success factors and university success indicators in adoption coopetition strategy?

RQ3: What explanatory model of coopetition strategy success emerges from these findings?

3.3   Philosophical Approach

Research philosophy refers to a system of beliefs and assumptions about the development of knowledge (Collis & Hussey 2014; Saunders et al. 2015). It is a significant part of the research method because it may provide a solution to the

research problem, open the researcher's mind to other options, improve the researcher's skills, increase the researcher's self-confidence, and guide the researcher to the results by directing a critical and systematic method (Holden & Lynch 2004; Hughes & Sharrock 2016). Based on this rational guide, researchers can choose the most suitable methodology for their research (Lancaster 2007; Crowther & Lancaster 2012; Mkansi & Acheampong 2012). Furthermore, the research philosophy provides the formula by which the evidence is collected to answer the research questions outlined, and the method for interpretation of the supporting evidence (Crossan 2003; Holden & Lynch 2004). Business and management research can be divided into key philosophical categories. According to Saunders et al. (2019, p.130), these categories encompass: "positivism, critical realism, interpretivism, postmodernism and pragmatism".

Positivism is a philosophical approach that sees only quantitatively provable proposals as being meaningful (Sarantakos 2013; Saunders et al. 2016). Critical realism is a methodical process based on knowledge acquired from the real world in place of human thoughts, and it emphasis on a single approach in each study (Mingers et al. 2013; Saunders et al. 2016). Interpretivism is developed as a critique of Positivism but from a subjectivist perspective and places an emphasis on qualitative methods (Goulding 1998; Sarantakos 2013; Saunders et al. 2019). Postmodernism emphasises oppressed/repressed meanings and interpretation, thereby giving voice and legitimacy to the suppressed and marginalised ways of seeing and knowing that have previously been excluded, and usually applies a qualitative methods of analysis (Atkinson 2002; Saunders et al. 2016, 2019). There is no agreement between business and management researchers about which philosophy is superior as the right approach must be tailored to the research questions and methods (Tsoukas & Knudsen 2003; Saunders et al. 2009; Cameron & Price 2009; Saunders et al. 2019).

This study is adopted the *Pragmatism Philosophy.* This is because Pragmatism is the paradigm that opens up all possible options in front of the researcher, and has the ability to provide the philosophical justification for the mixed research approach (Maarouf 2019). Many researchers consider Pragmatism to be the most common philosophical support for the mixed research approach (Yvonne 2010; Hall 2013; Dieronitou 2014; Biddle & Schafft 2015; Hathcoat & Meixner 2017). Denscombe (2008) and Mitchell (2018) have mentioned that Pragmatism is considered the

"philosophical partner" of the mixed research approach as its underlying assumptions provide the essence for mixing research methods. Further, other researchers agree that Pragmatism is an advanced philosophy that provides the epistemology and logic for combining the quantitative and qualitative approaches and methods within the one study (Johnson et al. 2007; Wahyuni 2012; Creswell 2014; Saunders et al. 2016). Moreover, Creswell (2014) has mentioned that Pragmatism is the philosophy that permits mixing paradigms, assumptions, approaches and methods of data collection and analysis. Therefore, the mixed methods approach is rooted in the pragmatist philosophical assumptions that guide the direction of the collection and analysis of data in many phases in the research process (Teddlie & Tashakkori 2009; Saunders et al. 2009; Mkansi & Acheampong 2012; Gray 2013; Saunders et al. 2016).

Pragmatism also provides a flexible and adaptable approach to coopetition strategy (COS) research that is consistent with contemporary modern practice (Emison 2010; Bengtsson & Johansson 2014; Ritala 2012; Ritala et al. 2014; Creswell 2018). It seeks to meet both objective and subjective meanings, values and facts, precise and rigorous knowledge, and various contextual experiences by considering theories, concepts, ideas, hypotheses and research outcomes (Polit & Beck 2010; Saunders et al. 2016). Pragmatism proposes that research questions are of the greatest importance to a study reflecting freedom of choice in designing a research process that spans various aspects of research methodology (Giacobbi et al. 2005; Andrew & Halcomb 2007; Tashakkori & Teddlie 2010; Wahyuni 2012; Christensen et al. 2014; Saunders et al. 2016).

Further, the pragmatist philosophy helps to orientate the researcher's view about the current phenomenon and guides the planning for an ideal research design in order to explain the research problem and to answer the research questions (Andrew & Halcomb 2007). In addition, the pragmatic philosophy focuses on the research problem and the consequences of actions and uses all approaches available to understand the problem (Kelemen & Rumens 2008; Polit & Beck 2010a; Creswell 2014). This inquiry process involves multiple research methods in order to explain an event that arises out of real world and practical problems (Creswell 2009; Wahyuni 2012; Creswell 2018). Pragmatism also allows the researcher to be free of mental and practical constraints imposed by the forced choice contrast between Postpositivism and Constructivism (Tashakkori & Teddlie 2010; Creswell & Clark 2017).

Pragmatism views the research question as the most important determinant of epistemology, ontology and axiology which a researcher can adopt (Terre & Durrheim 1999; Ponterotto 2005; Saunders et al. 2009). Finally, the answer to research questions of this study regarding epistemology, ontology and axiology by following a pragmatist approach offers an interpretative structure that guides the research study process comprising strategies, methods and analysis, and sets the direction of the collection and analysis of data and the mixed method approaches in all phases (Kelemen & Rumens 2008; Elkjaer & Simpson 2011; Saunders et al. 2009).

3.4 Research Paradigm (Assumptions)

Creswell and Poth (2018, p.19) defined paradigm as "a basic set of beliefs that guide action". It is a system of interrelated practices and thinking which refers to a research culture with a set of beliefs, values, practice, expectations and assumptions that are shared by a community of researchers regarding the nature and conduct of research (Rao & Perry 2007; Denzin 2008; Bunniss & Kelly 2010; Wray 2011). A research paradigm consists of the three assumptions: ontology, epistemology and axiology (Guba & Lincoln 1994; Heron & Reason 1997; Healy & Perry 2000; Blanche et al. 2006; Rao & Perry 2007; Bunniss & Kelly 2010; Saunders et al. 2016; Saunders et al. 2019). These three major ways of thinking about research philosophy will affect the way the researcher thinks about the research process.

In the context of this research study, these three assumptions guided the process of credible, relevant data gathering and analysis in the domain of COS. The setting of this research study relies on the experiences and perceptions of the participants in strategic decision making in PJUs to manage COS successfully. Hence, the research paradigm and assumptions will help to identify the context for the research study and underpin the research strategy and the methods chosen as part of that strategy (Ponterotto 2005; Saunders et al. 2009). Based on a research setting such as this, the research inquiry should be grounded in the three assumptions of ontology, epistemology and axiology (Terre & Durrheim 1999).

3.4.1 Ontology

Ontology refers to assumptions about the nature of reality and the way that the investigator defines the truth and reality (Ponterotto 2005; Saunders et al. 2016). Ontological assumptions shape the way researchers understand and study their

research objects (Healy & Perry 2000; Rao & Perry 2007), and determines how researchers see the world of business and management, and what subjects researchers choose for their research project/s (Saunders et al. 2016).

The ontological assumptions of Pragmatist Philosophy are based on two important aspects to produce valid knowledge: objectivism and subjectivism (Saunders et al. 2016). Objectivism is the position that social entities exist in reality external to social actors concerned with their existence, while subjectivism holds that social phenomena are created from the perceptions and consequent actions of those social actors concerned with their existence (Saunders et al. 2019).

Therefore, based on the principle of the ontological foundationalism in Pragmatism, a researcher needs to have a clear view about reality or he will not be able to make the right methodological choices (Lohse 2017). Many researchers have referred to the importance of dealing with the ontological differences between the two paradigms of objectivism and subjectivism. Morgan (2007) has argued that Pragmatism implies that pragmatic research is intersubjective which means being subjective and objective at the same time, accepting both the existence of one reality and that individuals have multiple interpretations of this reality. Moreover, Saunders et al. (2016) have mentioned that Pragmatism implies that reality is external and multiple at the same time and that a researcher chooses the view that best serves his research purposes. Similarly, Johnson and Christensen (2014) have mentioned that to conduct mixed research it is important to understand both the objective and subjective views of reality.

Further, ontology supports mixed methods approaches such as sequential mixed research, which was adopted in this research. It provides the guidance researchers need by explaining the basis on which a pragmatic researcher can switch between being objective or subjective which supports the sequential mixed research approaches (Johnson et al. 2016; Maarouf 2019).

Therefore, the ontology assumptions allow the pragmatic researchers to switch between objective or subjective, or locate themselves in the middle of the objectivity-subjectivity continuum and thus between the quantitative and qualitative research approaches and methods (Johnson et al. 2007; Hall 2013; Maarouf 2019).

3.4.2 Epistemology

Epistemology refers to assumptions about knowledge, valid and legitimate knowledge, and how we can share that knowledge with others (Guba & Lincoln 1994; Cousins 2002; Shah & Corley 2006). It gives researchers extensive choices when developing knowledge depending on the methodology, and the rigour of that methodology therefore epistemology has a direct correlation with the strength of the claims of the new knowledge (Oliver 2010; Saunders et al. 2019).

From the epistemological point of view, a pragmatic researcher can use whatever research method works to meet their research objectives based on its practical value and regardless of its underlying philosophy (Shaw et al. 2010; Johnson et al. 2016). Therefore, the researcher believes in an epistemological point of view that directly flows from the ontological stance and this epistemological position is conceptualised as the double-faced knowledge (Hall 2013a). The double-faced knowledge stance creates a link between the ontological and epistemological pragmatic assumptions, and any type of knowledge can be seen as observable or unobservable based on the ontological position of the researcher (Morgan 2014). As a consequence, the pragmatic researcher accepts both types of knowledge based on their instantaneous ontological position, and their main concern is to choose the right research method that is the most appropriate to this ontological position and best serves their research objectives (Maarouf 2019; Saunders et al. 2019).

Quantitative and qualitative researchers deal with observable and unobservable knowledge all the time because knowledge is observable or unobservable by nature (Maarouf 2019). However, every group of researchers use the method that is compatible with their paradigm's assumptions and help to reach the research goals (Maarouf 2019).

3.4.3 Axiology

Axiology refers to the role of values and ethics in human choices (Ponterotto 2005; Saunders et al. 2016). One of the key axiological choices is the extent to which researchers wish to view the impact of their own values and beliefs on their research as being a positive thing (Saunders et al. 2009).

Many researchers have referred to the effect of researchers' values on their research. They have mentioned that it is impossible to be completely free of our own values and

experiences because positivists' values affect their choice of the research topic, objectives, data collection, analysis and interpretation (Johnson & Onwuegbuzie 2004; Ma 2012; Saunders et al. 2016). Moreover, Weber (2004) added that the positivist is aware that variables choices in their research reflect a pre-understanding of reality and the main purpose of collecting and analysing data is to evaluate this pre-understanding. Further, Ma (2012) stated that pre-understanding or pre-judgment forms the basis of both quantitative and qualitative research and directs the researcher's choice of research questions and variables. These opinions mean that all decisions made by positivists through all stages of research are affected by the researcher's values, personal experience and perceptions about the phenomenon under investigation (Biddle & Schafft 2015; Maarouf 2019). However, in the axiology stance, a pragmatic researcher's values play a large role in interpreting results; the researcher adopting both objective and subjective points of view (Johnson et al. 2016; Maarouf 2019). Researchers should be biased only by the degree necessary to enhance their research and help answer the research questions. This is called the "necessary bias principle" (Maarouf 2019). Therefore, a pragmatic researcher should focus on their research objectives and use their values and experiences in a way that serve these objectives and enhances the research results (Johnson et al. 2007).

In summary, Table 3.1 outlines the basis of the research assumptions and data collection techniques related to the pragmatic philosophical approach and their application to this research study.

Table 3-1: The relationship between research assumptions and data collection with research philosophy and study context

Concepts	Researcher view	Pragmatism philosophy	Study context
Ontology	The researcher's view of the nature of reality is based on independent views and specific responsibilities	Complex, rich, external reality is the practical consequence of ideas, flux of processes, experiences and practices	Existence COS in PJUs, the nature of universities' relationships, and preliminary view of researcher about COSFs in PJUs
Epistemology	The researcher's view regarding what constitutes acceptable knowledge is based on both real experiences and expected actions	Practical meaning of knowledge in specific contexts, true theories and knowledge are those that enable successful action, focus on problems, practices and relevance, problem solving and informed future practice as contribution	Previous experience in PJUs and HESJ required from participants to interpret the data and to answer research questions, use of qualitative and quantitative data
Axiology	The researcher's view of their research is based on the role of researcher's values in research	Value-driven research, research initiated and sustained by researcher's doubts and beliefs	Responsible conduct including respect for participants and remaining neutral
Data collection techniques	The researcher's view of the suitable strategy to collect data in research	Typically deconstructive – reading texts and realities against themselves, in-depth investigations of anomalies, silences and absences, range of data types, typically qualitative methods of analysis	Following research problem and research question/s, range of methods: mixed sequential, qualitative and quantitative, research emphasis on practical solutions and outcomes

Source: Adapted from Saunders et al. (2016)

3.5 Research Approaches

Creswell (2014, p.31) defined research approaches as "the plans and procedures for research ranging from the broad assumptions made to the specific methods of data collection, analysis and interpretation". There are three main approaches to theory development adopted in research: deduction, induction and abduction (Cohen et al. 2018; Saunders et al. 2016). The deductive approach or top-down approach has been used when the research starts with theory, often developed from the academic literature, and designs a research strategy to test the theory quantitatively, e.g. surveys (Braun & Clarke 2006; Walliman 2010; O'Dwyer & Bernauer 2014; Cho & Lee 2014; Sekaran & Bougie 2016; Brannen 2017). The inductive approach, or bottom-up approach, is employed when research starts by collecting data to explore a phenomenon and researchers generate or build a theory from there (Braun & Clarke 2006; Collis & Hussey 2014; Cho & Lee 2014; Walliman 2016; Sekaran & Bougie 2016; Brannen 2017; Leavy 2017). It is one of the most suitable tools to qualitatively

explore rich information from participants (Saunders et al. 2016; Sekaran & Bougie 2016; Brannen 2017).

However, this study has adopted abductive approach which is a combination of deductive and inductive, and drives more benefits than the use of only one approach (Suddaby 2006; Williams 2007; Rahmani & Leifels 2018), and is more suited to the sequential mixed methods design (Creswell et al. 2011). Saunders et al. (2016) argues that most management researchers use at least some elements of abduction. Further, due to the flexibility of the abductive approach, it can be used by researchers from within a number of research philosophies because pure deduction and pure induction is difficult, if not impossible, to achieve (Saunders et al. 2019).

Therefore, as indicated previously, a well-developed abductive approach is most likely to be underpinned by pragmatism (Saunders et al. 2019). Moreover, the high level of quality of the research findings is improved by the use of qualitative as well as quantitative data (deductive and inductive approach) (Patton 2002a). Finally, researchers use an abductive approach to explore a phenomenon and identify themes, to generate a new or modify an existing theory through data collection (Van Maanen et al. 2007; Ketokivi & Mantere 2010; Saunders et al. 2019).

3.6   Methodology

Leedy and Ormrod (2001, p. 14) defined methodology as "the general approach the researcher takes in carrying out the research project". It means the systematic and theoretical assessment of the approaches used in a field of research (Johnson et al. 2007; Venkatesh et al. 2013). There are three common approaches to conducting research: quantitative, qualitative and mixed methods (a combination of qualitative and quantitative) (Kothari 2004; Leedy & Ormrod 2005; Williams 2007; Saunders et al. 2009; Harrison 2013; Zikmund et al. 2013; Choy 2014; Hair et al. 2015; Creswell 2018). The quantitative approach is used for research questions that require the analysis of numerical data (Leedy & Ormrod 2001), while the qualitative approach is usually chosen for research questions requiring textual data (Creswell & Clark 2003), and the mixed methods approach is used for research questions requiring both numerical and textual data (Tashakkori & Teddlie 2003; Johnson & Onwuegbuzie 2004; Williams 2007).

Table 3.2 outlines the methodological approach (mixed methods) used in this study and the implications in the study context. As illustrated in Table 3.2, the researcher uses interviews and surveys to provide evidence from different perspectives to understand the nature COS and coopetition success factors (COSFs) in PJUs. Further, the researcher spends time with his participants in order to obtain their perspectives on the study's focus questions. Finally, the researcher openly discussed values that shape the narrative and opinions including his own interpretation in conjunction with the interpretations of participants. The mixed methods approach is discussed in more detail in the next section.

Table 3-2: The assumptions of research method approaches in study context

Assumptions	Research questions	Mixed methods	Implications in study context
Ontology	What is the nature COS and COSFs in PJUs?	The reality is mixed between objective and singular, apart from the researcher; subjective and multiple, as seen by participants in a study	Researcher used multiple methods, interviews and surveys to provide evidence from different perspectives
Epistemology	What is the relationship between COSFs and COS success indicators in PJUs?	The researcher moves between independence from research and interacting with research	The researcher collaborated with participants and spent enough time with them and became as one of the participants to get the correct answers for the research questions
Axiology	What is the role of values?	The researcher combines values–free and unbiased with value–laden and biased	The researcher respected participants voices and opinions and included his own interpretation in conjunction with the interpretations of participants

Source: Adopted from Creswell (2013) and Al-Ababneh (2020)

3.6.1   Mixed Methods Approach

Researchers use a combination of qualitative and quantitative methods in a mixed-methods approach to fully understand a research problem and answer the research questions (Johnson et al. 2007; Onwuegbuzie et al. 2007; Leech & Onwuegbuzie 2009; Cameron 2010; Tashakkori & Teddlie 2010; Cameron & Azorin 2011; Jogulu & Pansiri 2011; Ponterotto et al. 2013; Graff 2016; Brannen 2017; Creswell 2018). The combination of both methods can generate a suitable approach for studying a variety of phenomena that could not be fully understood by using only one of the two methods without the other (Venkatesh et al. 2013; Creswell 2014). The design of a mixed research methods approach might begin with a qualitative research study followed by quantitative research, or the reverse. The order will depend on the purpose of the study and the research question (Morgan 1998; Sale et al. 2002; Sogunro 2002; Walsham

2006; Soffer & Hadar 2007; Cameron 2009a; Cameron 2010; Punch 2014; Venkatesh et al. 2013; Creswell 2014; Venkatesh et al. 2016).

3.6.1.1 The Justifications of the Mixed Method Approach

The use of the mixed methods approach is supported by scholars in business and social research. According to Saunders et al. (2009) and Moradi et al. (2012), mixed methods uses more than one technique in combination, and the current trend in management research is to use a mixed methods approach for designing better investigation strategies. Further, the mixed methods approach involves the collection, analysis and interpretation of quantitative and qualitative data in a single study that investigates the same phenomena (Cameron 2009; Schoonenboom & Johnson 2017; Guetterman & Fetters 2018). It uses multiple methods, either in parallel or sequentially but does not combine those (Borbasi & Jackson 2015). Moreover, Teddlie and Tashakkori (2003) argue that a mixed methods approach is useful because it provides better opportunities to answer the research questions and allows the researcher to gain better evaluation of the research findings by exploring the results qualitatively and confirming the findings quantitively. Thus, the mixed methods approach enables the researcher to seek clarification and elaboration of the findings from both quantitative data and qualitative input (Borbasi & Jackson 2008).

Further, one of the strengths associated with the use of mixed method design as a research approach relates to the benefit derived from using both types of data collection, thereby enabling the researcher to obtain a better view of the two sets of different data types about COSFs (Onwuegbuzie & Leech 2005; Johnson et al. 2007; Cameron 2009a; Teddlie & Tashakkori 2009; Richards & Morse 2013). Finally, using both qualitative and quantitative methods in the one study increases the reliability and validity of results by utilising both methods, and the results can be trusted, as can the inferences by the researcher (Walsham 2006; Punch 2014; Venkatesh et al. 2013; Creswell 2014). Thus, the mixed methods approach is increasingly recognised for improving the quality of the study as it both encompasses the depth of meaning and the empirical basis for claims (Fidel 2008; Creswell 2009).

In this study, the researcher used a sequential approach, with interviews at the first phase of the research (the qualitative phase) in order to explore the COSFs, before using a questionnaire (the quantitative phase) to collect data from a broader base and

explore whether or not these factors supported validity. Furthermore, the mixed method approach also utilised the pragmatic philosophical technique which includes the use of induction to evaluate patterns, deduction to evaluate hypotheses and theories, and abduction to determine the best description resulting from the research, which is understandable and can be relied upon (Johnson & Onwuegbuzie 2004).

3.6.1.2 The Purpose of the Mixed Method Approach for This Study

The purpose of this study is to explore and then confirm information. According to researchers, a quantitative study method is conducted to confirm the findings from a qualitative study and gain complementary views about the same phenomena (Greene et al. 1989; Creswell et al. 2003; Tashakkori & Teddlie 2003; Bhattacherjee & Premkumar 2004; Soffer & Hadar 2007; Tashakkori & Teddlie 2008; Venkatesh et al. 2013). In this research, a qualitative study was used to develop constructs and hypotheses (Irma & Sabherwal 2001; Ho et al. 2003; Grimsley & Meehan 2007; Cameron 2009). This enabled the researcher to obtain a better understanding of the points of contention in the research and discover the relevant variables that need to be considered in relation to COSFs in PJUs. Following the sequential design, the qualitative findings informed the design of the survey questions for the quantitative stage (Irma & Sabherwal 2001; Ho et al. 2003; Grimsley & Meehan 2007; Cameron 2009). As a sequence, this study then explored, confirmed and complemented these factors as they applied to the education sector.

3.6.1.3 Justification for Using the Sequential Mixed Method Approach

Depending on the research domain, aim and questions, the mixed methods approach can be comprised of three different designs: sequential, conversion and multilevel (Graff 2016). Given that the aim of this research study is to explore COSFs and coopetition success indicators (COSIs) in PJUs to develop the proposed model, the sequential mixed methods design was appropriate. Many researchers (Cameron 2009a; Cameron 2010; Östlund et al. 2011; Creswell 2014; Imran & Yusoff 2015; Subedi 2016; Berman 2017; Cabrera & Reiner 2018; Jokiniemi et al. 2018; Nawaz et al. 2020), offer rules to inform sequential mixed method research. The researcher needs to decide the priority of either the quantitative or qualitative method, and then decide on the sequence of the two methods. For this study, the researcher decided to give priority to the qualitative method at the exploratory stage (Phase 1) to explore the factors, and

then confirm and complement it with the quantitative method as a confirmatory stage (Phase 2). Priority and sequence are outlined in Table 3.3. In accordance with the research sequence design, the survey was considered as being follow-up input to enhance and confirm the main data gathered from the interviews. Thus, the present research applied a sequential exploratory mixed method approach (Onwuegbuzie & Leech 2006; Tashakkori & Teddlie 2010; Kumar et al. 2019).

Table 3-3: Priority and sequence design of the research

	Exploratory stage (qualitative method Phase 1)	Confirmatory stage (quantitative method Phase 2)
Research priority	Primary	Complementary
Sequence	First	Second
Tool type	Semi-structured in-depth interviews	Survey-structured closed questions
Participants	Interview with top management level (Deans' Council)	Survey to top level management and decision makers in PJUs
Purpose	Explore, complement and inform Phase 2	Confirm, refine research model, and develop survey questionnaire

As shown in Table 3.3 the exploratory stage (qualitative method Phase 1) is crucial to define the constructs and concepts, develop the hypothesis and assist the researcher in designing effective subsequent stages of their study (Berman 2017; Zaher 2018; Khan et al. 2020). According to Creswell et al. (2003a) and Ivankova et al. (2006), this stage plays a pivotal role in the development of the instrument that specifies the characteristics of the construct, which is of research interest for measurement purposes following this stage. Therefore, the exploratory stage was conducted to first explore COSFs in PJUs, then the research model was refined. Then, information from Phase 1 was used to develop the survey in the Phase 2.

The survey was then conducted to follow up, in more detail, on the issues that emerged from the qualitative data analysis to confirm the information gathered from Phase 1. This survey also provided more specific contextual data for COSFs between PJUs.

3.6.1.4 Mixed Method Sampling Technique

The literature shows researchers using mixed methods that combine probability and purposive sampling techniques in certain unique prescribed manners to meet the specification of popular mixed method designs (e.g., sequential design) (Teddlie & Yu 2007). According to Teddlie and Yu (2007, p.89) "researchers should be sure to follow the assumptions of the probability and purposive sampling techniques that they are

using". Mixed method sampling strategies involve the selection of units or cases for a research study using both probability sampling to increase external validity (generalisability) and purposive sampling strategies to increase transferability (Collins et al. 2006; Teddlie & Yu 2007; Palinkas et al. 2015; Onwuegbuzie & Collins 2017). However, the qualitative design perspective guidelines refer to the credibility of the inferences, while the quantitative design perspective guidelines refer to the internal validity of the inferences. Thus, the purposive mixed probability sampling continuum is a suitable sampling technique for the mixed methods approach in this study (Tashakkori & Teddlie 2009; Teddlie & Tashakkori 2011).

Sequential mixed method sampling follows the well-known design types described by several authors such as (Creswell et al. 2003a; Johnson & Onwuegbuzie 2004; Lund 2012; Creswell & Clark 2017; Botha 2020; Gezgin & Mihci 2020). It involves the selection of units of analysis through the sequential use of probability and purposive sampling strategies (qualitative to quantitative), or vice versa. Typically, the methodology and results from the first phase inform the methodology employed in the second phase. Therefore, in exploratory sequential mixed model studies (qualitative to quantitative), information from the first sample (typically derived from a purposive sampling procedure) is often required to draw the second sample (typically derived from a probability sampling procedure) (Kemper et al. 2003; Collins et al. 2007; Onwuegbuzie & Collins 2007). Thus, the qualitative phase of this study used a sub-sample of the quantitative sample.

3.6.2 Population, Target Population and the Sample for This Study

Greener (2008, p. 48) defined population as "the full universe of people or things from which the sample collected" , thereby describing the full set of cases from which an appropriate sample is taken given the target population (Kennedy et al. 2011; Saunders et al. 2009; Zikmund et al. 2013). The target population for this study was defined as all strategy level leaders, male and female, who had a role in in PJUs according to MHE law in 2018, and medium to high influence on strategic decisions at these universities. Strategy level leaders are those who participate in making strategic decisions and exert a moderate to high influence on a university's strategy. Thus, Jordan has 24 PUs in the higher education sector (HES) as a target population for this study.

A sample is defined as a group of members drawn from the targeted population of a study that is surveyed to draw conclusions about the entire population (Sekaran & Bougie 2016). According to Saunders et al. (2009, p. 212) "sampling provides a valid alternative to a census when it would be impracticable for the researcher to survey the entire population". All strategy level leaders who have participated in strategic decision making in nine private Jordanian universities were selected as a sample for this study according to the new law (Ministry oh Higher education 2021a). These strategic leaders had the full authority to manage PJUs and participate in making strategic and managerial decisions (Ministry oh Higher education 2021a). This study chose nine universities as a sample for the following reasons:

- They are well ranked among the PJUs and have a large number of students and faculties (see Appendix B1 Table 1)

- They are an important part of the group of leaders in PJUs and have a significant impact on the national economy (Badran 2014; Sabri 2011)

- These universities are in the capital of Jordan (Amman) making it easier for the researcher to access participants and collect data (see Appendix B1 Table 1)

- They already have cooperation and competition between each other and the content analysis for their websites confirm this cooperation and competition in many aspects (see Appendix B2 Table 2)

- Due to time and funding constraints, it is impossible to study all PJUs as the population of the study (Zikmund et al. 2013).

3.6.2.1 Justification for Selecting PJUs

Over the last two decades, PJUs have witnessed significant changes (Education 2016). One prominent change is the management of coopetition relationships with their competitors. COSFs are important for PJUs because it assists the universities to manage COS successfully to get COS benefits, face the issues of scarcity of resources, and absence government funding (Zineldin 2004; Badran 2014; Sabri 2011). Further, the researcher was a lecturer in the Business School at Mosul University from 2007 to 2014. This work enabled him to be familiar with the education sector, thus assisting him in developing a good relationship with the lecturers in PJUs because many of them

are from Iraqi universities and some of them are members in Deans' or College Councils whom it is expected will participate in this research. In addition, the researcher has participated in four conferences at Jordanian universities and has built a good network with people who work in the education sector. Next, the political situation and lack of safety in Iraq made it impossible for the researcher to locate the study in Iraq. Finally, Jordan, having a high level of cultural similarity to Iraq, has been selected as the location for the study.

3.7 Research Design

Zikmund et al. (2013, p. 64) define research design as "a master plan that specifies the methods and procedures for collecting and analysing the needed information and providing a framework of action for the research". A sequential mixed method approach was adopted for this research in two stages to meet research objectives and answer research questions:

Stage 1 (Exploratory stage): Qualitative stage focused interviews designed to provide data for qualitative analysis

Stage 2 (Confirmatory stage): Quantitative stage focused survey (pre-test, pilot survey, and the final survey).

In this research, the research design in the qualitative stage included eight elements including the data collection technique, sampling technique, selection criteria and sample size, process of contacting interviewees, preparing the interview protocol, managing the interview process, ensuring rigour and trustworthiness and data analysis technique. For the quantitative stage the research design addressed 10 elements including data collection technique, sampling technique, survey participants criteria, survey participants sample size, survey design process, preparing draft survey, final survey version, managing survey process and data collection, data preparation techniques and quantitative data analysis techniques.

The flow chart (see Figure 3.1) provides a clear picture of the research design used in this research. The exploratory and confirmatory stages are explained in the next section
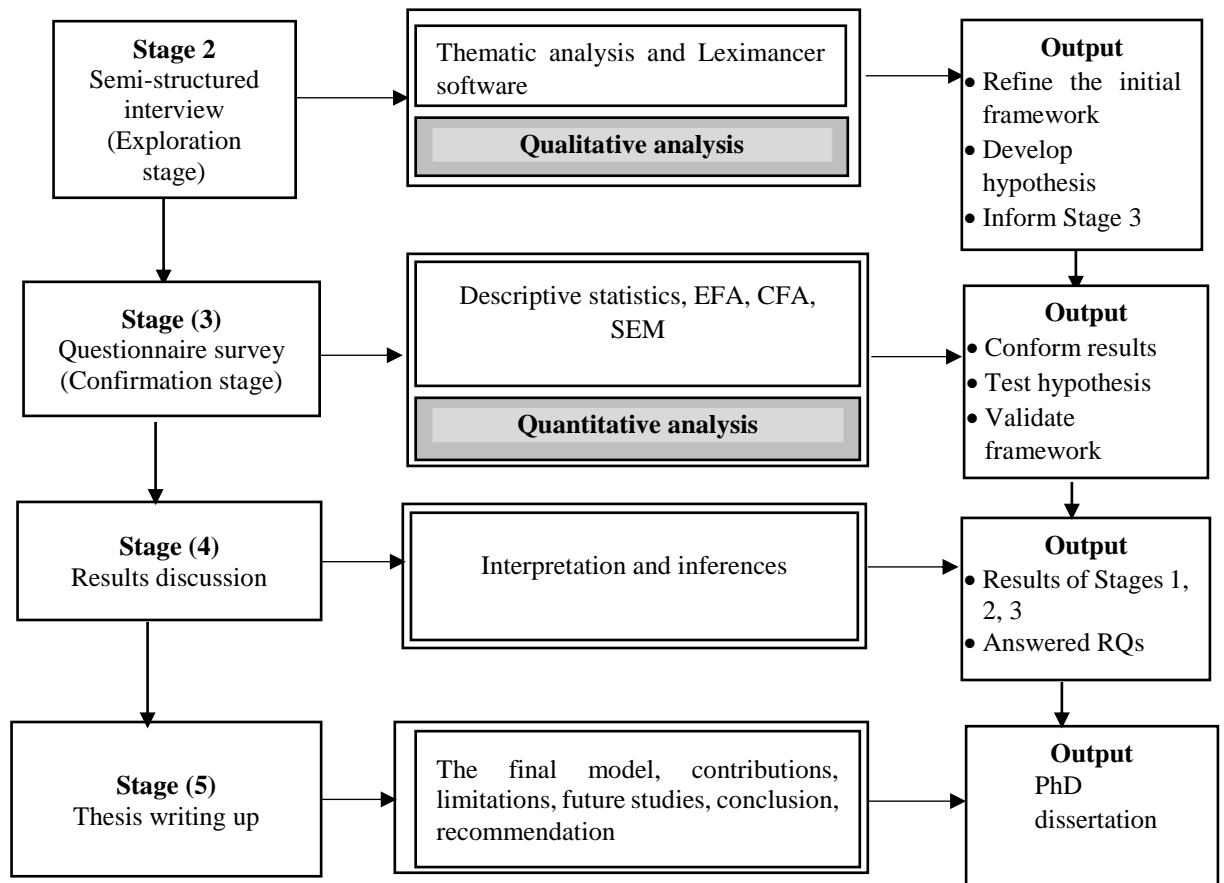
Figure 3.1: Research design flow chart

Source: Developed for this research

3.7.1 Phase 1: Qualitative Method (Exploratory Stage)

The qualitative method is a common approach utilised by social science researchers to identify and understand a human issue (Creswell 2014). It is a crucial method to gain an understanding of the topic in the early stages of the research (Antwi & Hamza 2015). According to Zikmund et al. (2013), if the research objective is to understand the occurrence of a phenomenon, qualitative tools are often appropriate and, as explained by (Patton 2014; Hennink et al. 2020), qualitative methods help the researcher to gain in-depth knowledge about the new or complex phenomena, and unexpected or new issues that need more clarification. Further, the qualitative method is recommended for exploratory studies where a limited knowledge of the subject matter exists (Soffer & Hadar 2007; Tharenou et al. 2007). As data about research for COSFs in the education sector appear to be sparse (Czachon & Kuś 2014; Muijs & Rumyantseva 2014; Niemczyk & Stańczyk 2014), the exploratory study gives deep answers to research enquires. Therefore, it provides the opportunity to discover factors

that need to be considered in relation to COSFs in PJUs. Next, analysing qualitative data can give detailed insights before conducting the survey (Leedy & Ormrod 2005; Venkatesh et al. 2013). Hence, discoveries from the exploratory investigation were utilised for the advancement of the survey. Figure (3.2) summarizes the qualitative methods used in Phase 1.
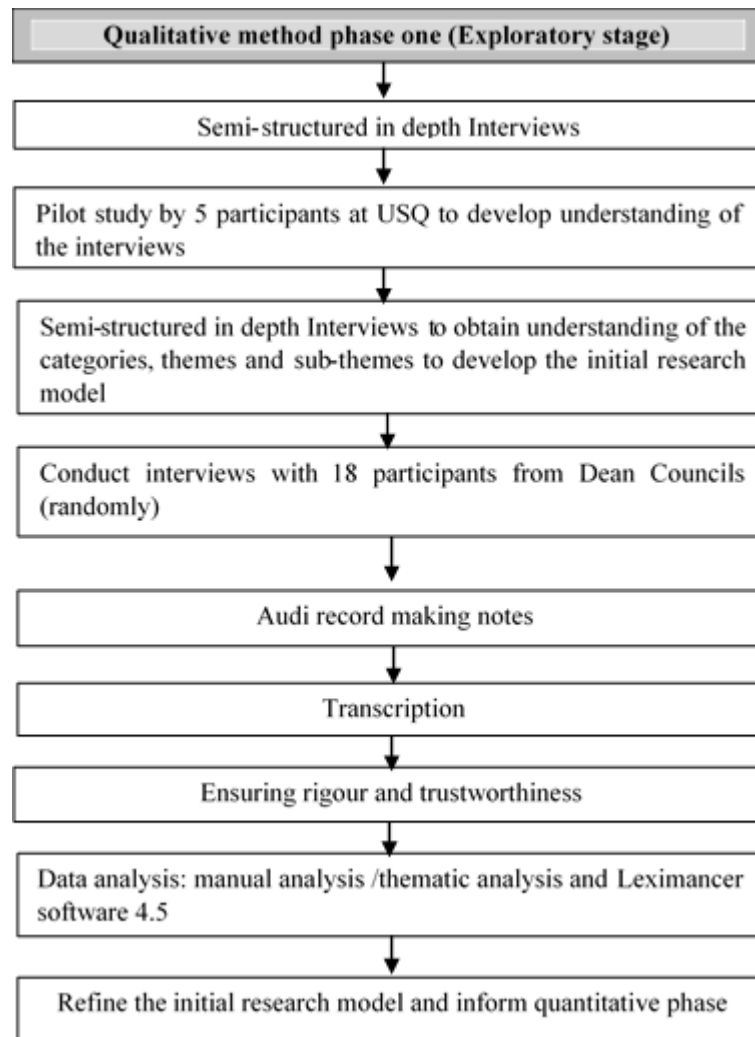
Figure 3.2: Phase 1 qualitative method

Source: Developed by researcher

3.7.1.1 Data Collection Technique

In this phase, the semi-structured in-depth interview was used as an instrument to collect data, which is explained in the next section.

3.7.1.1.1 Semi-Structured Interviews

The interview is one of the most common techniques through which an individual can explore another person's experience (Oltmann 2016). Gillham (2005) and Sweet

(2002) suggest that qualitative researchers prefer to select interview techniques as these assist in exposing the views of participants. They provide the participants with a voice in the research (Cheong et al. 2014).

For this study, a semi-structured in-depth interview with guiding open-ended questions were used to collect data from the selected participants from the Deans' Council and to attain the study's objectives. The interviews enabled the researcher to acquire sufficient comprehension of the topic and allowed for additional questioning based on the responses of the participants (Schmidt 2004; Jennings 2005; Brédart et al. 2014; Kallio et al. 2016; Adhabi & Anozie 2017; Evans & Lewis 2018; Scanlan 2020).

Further, the interviews also enabled the interviewer to obtain detailed information from the interviewees so as to identify themes and gain information about areas that might not have been foreseen by the researcher by asking the interviewee follow-up questions for explanation (Wengraf 2001; Rao & Perry 2003; Gugiu & Rodríguez 2007; Whiting 2008; Baumbusch 2010; Kallio et al. 2016). In addition, they help the researcher to direct clarifications of any phrase or word used by both the respondent and researcher (Russell 2002), provide the researcher with an opportunity to identify issues pertaining to the theories and knowledge that exist in the research (Rao et al. 2007), and identify problems that can occur in developing a questionnaire survey (Williams & Lewis 2005; Brédart et al. 2014).

3.7.1.1.2 Development of Interview Questions

Initially the semi-structured interview questions schedule developed for this study was prepared in English (see Appendix B3). As Arabic is an official spoken language in Jordan, the interview schedule was then translated into Arabic by a professional translator so that the participants could understand the questions clearly and provide relevant information to the researcher. After establishing the interviewees' backgrounds, the areas that the researcher deemed important to explore included their understanding and opinions on:

- the current relationships between PJUs pertaining to cooperation and competition

- the cooperation and competition aspects and levels between universities

- the advantages and the disadvantages of COS between universities

- the level of cooperation and competition between universities to determine the type of COS

- the factors that universities take into consideration when they plan to cooperate with rival universities

- the factors that would rate Not critical to Strongly critical

- the success of universities in their adoption of COS

- the indicators for each university's success.

(see Appendix B3 for a list of the eleven typical questions asked the interviewee).

3.7.1.1.3 Interview Technique

Telephone interviews are becoming an acceptable and increasingly popular form of interview technique for collecting data from distant participants (Zikmund et al. 2013; Zhang et al. 2017; Lamanna et al. 2019), and are reported by (Opdenakker 2006; Zikmund et al. 2013) to have several advantages such as the speed of data collection, the extended access to participants, accessing hard to reach populations, and low cost. Telephone interviews were adopted for this study because:

1. They were a time-efficient method to arrange long duration interviews with academics and top management staff at PJUs whose are regularly fully occupied

2. They enabled the researcher to access participants who were located at a distance. As the universities were located in Jordan it would have been costly and time consuming to travel from Australia to interview the participants

3. They enabled the researcher to check understandings and clarify misunderstandings (Zikmund et al. 2013), and allowed a degree of interpersonal privacy compared to face-to-face interviews

4. As the researcher is connected with the participants' culture, sociality and professional context, it assisted in building a good network connection with the interviewees.

3.7.1.2 Sampling Technique

The purposive (judgment) sampling technique based on criteria was used in this study for the qualitative phase. Purposive sampling is defined as a nonprobability sampling

technique in which an experienced individual selects the sample based on personal judgment about some appropriate characteristic of the sample member (Zikmund et al. 2013). Researchers select samples that satisfy their specific purpose, even if it is not fully representative (Zikmund et al. 2013). Purposive sampling techniques are typically informal ones based on the expert judgment of the researcher or some available resource identified by the researcher (Emmel 2013b; Campbell et al. 2020). There are several reasons behind the choice of purposive sampling techniques as it enables:

1. the researcher to select participants who can provide or yield data that addresses the research questions and study objectives (Saunders et al. 2009; Graff 2016)

2. particular settings, persons, or events that are deliberately selected to gain deep and important information from respondents that cannot be reached as well by using other methods (Teddlie & Yu 2007; Emmel 2013a; Patton 2014; Rapley 2014)

3. small samples of select cases that are particularly informative and content-rich cases (Patton 2002b; Kemper et al. 2003; Neumann 2005; Jung 2018)

4. selection to ensure the quality of data gathered (Tongco 2007; Gururajan et al. 2014).

5. free choice of an appropriate number of participants, considering the quality and quantity in the selection process (Tongco 2007; Etikan & Bala 2017).

3.7.1.3 Interview Participants (Selection Criteria and Sample Size)

For the qualitative method in this study the criteria used to select the sample were:

1. The participant's job, role, qualification, experience, authority and knowledge, including persons who have been working for at least 10 years in universities and for at least three years in their current position (Deans' Council) and have a PhD. The main reasons for choosing deans were: (i) they play a significant role in a universities; (ii) they can participant in strategic decisions; (iii) they have good experience in university management; (iiii) they can provide accurate information about COSFs and the indicators of university success (US) in the adoption of COS in their universities due to their high level of expert knowledge

2. The participants should belong to one of the local community organisations, represent different age groups, be as homogeneous as possible regarding educational level and socioeconomic and cultural status.

These criteria ensure that participants could assist in capturing the relevant information and building a comprehensive picture about COSFs in HESJ. Based on these criteria, participants were chosen randomly and were limited to members of the Deans' Council.

There are 85 deans working in nine PJUs (see Appendix B4 Table 3). Researchers propose different sample sizes for individual interviews, namely between five and eleven participants (Peet et al. 2010; Whelan et al. 2010; Kong et al. 2013; Mohammed et al. 2020). (Rao & Perry 2007) suggested that the minimum sample size should not be less than twelve and the sample should be increased or decreased according to the saturation level. The saturation level will be reached when no novel information is added (Guest et al. 2006).

For this research, the sample of this phase was a selection of 18 (two deans from each university were chosen randomly), however the research reached saturation level by interview number 12, when the researcher noticed that there were no more new information or patterns in the data emerging from the interviews. Another six interviews were conducted to obtain a comprehensive overview of issues.

3.7.1.3.1 Demographic Profile of Participants

The demographic profiles of participants were based primarily on their characteristics. As shown in Table 3.4, all the participants possessed a Ph.D. level of education and all of the participants were male because they are the majority in these universities. The highest proportion (77%) of participants had between 21 to 30 years of experience in universities, while 11% had 11 to 20 years of experience and 31+ years of experience. Of the participants, 88% held the academic title of Professor, while 11% had Associate Professor as their academic title. The highest percentage of participants (44%) specialized in the Business discipline and the lowest percentage (11%) were in Engineering and Law. All participants held the position of Dean and all participants had 1 to 5 years' experience in their current position.

Table 3-4: Demographic profile of participants (n=18)

Demographic Profile		Number	Percent
Level of education	Ph.D.	18	100
	MSC	-	-
Gender	Male	18	100
	Female	-	-
Experience in universities	1-10 years	-	-
	11-20 years	2	11
	21-30 years	14	77
	>31 years	2	11
Academic title	Professor	16	88
	Associate Professor	2	11
Specialisation	Business	8	44
	Science	3	16
	Education	3	16
	Engineering	2	11
	Law	2	11
Current position in university	Dean	18	100
Experience in current position	1-5 years	18	100
	6-10 years	-	-
	>11 years	-	-

3.7.1.4 Process of Contacting Interviewees

The researcher employed the following steps to contact with the participants in the interviews:

1. The researcher collected the contact details of PJUs staff from universities' websites and created a list of the target universities (see Appendix B2 Table 2)

2. The researcher contacted the external supervisor and some friends who had been working in the Deans' Councils of the PJUs in 2017 by phone to help the researcher with data collection and conducting interviews with the potential participants

3. The researcher also called some people in the Deans' Councils of the PJUs. In brief, the researcher introduced himself, presented the purpose of the call, discussed the research proposal, and checked contact details including phone numbers and email addresses. The researcher found the respondents supportive and interested in the research project

4. The invitation letter (Appendix B5), ethical clearance from University of Southern Queensland (USQ) (Appendix B6) and MHEJ (Appendix B7), information sheet (Appendix B8), consent form (Appendix B9), and the selection criteria were sent to the potential participants by email and through

personal resources (the external supervisor and researcher networks in PJUs as volunteers)

5. The researcher asked the potential participants to participate in interviews, read the information sheet, sign the consent form, and then send the forms back to the volunteers or back to the researcher by email or mail if they were willing to participate in the study

6. Participants were thus fully informed about the nature of the research before being involved in the individual interviews. Once they agreed to participate, further details were provided, as well as the consent form. The interviewees read and signed the consent forms before taking part in the interview. The participants were advised that they could withdraw at any time without consequence.

The researcher received 28 signed consent forms from Deans' Council members who agreed to do the interviews. After receiving the contact details of the participants, the researcher contacted the respondents to arrange a suitable date and time for the interview. Thus, 18 participants out of 28 (Deans) confirmed with the researcher to conduct telephone interviews, while the other 10 members of the Dean's Council preferred to withdraw.

3.7.1.5 Preparing for the Interview Protocol

The main reason for preparing and refining the interview protocol is to improve the process of conducting quality interviews and enhancing the reliability of interview protocols by gaining access to selecting participants and building trust (Rubin & Rubin 2012); improving the quality and clarity of questions (Yeong et al. 2018), and increasing the quality of interview data (Oltmann 2016).

The researcher refined the interview protocol process (Montoya 2016a; Yeong et al. 2018) by:

1. ensuring that interview questions aligned with the research questions and problem to increase the utility of the interview questions (Seidman 2006).
2. constructing an inquiry-based conversation using written interview questions and prompt questions (Rubin & Rubin 2012; Patton 2015).

3. conducting five pilot interviews to test the research instrument and obtain a realistic sense of how long the interview would take and obtain feedback on the clarity of the questions (Maxwell 2012).

3.7.1.6 Managing the Interview Process

The researcher designed an interview protocol form to focus and to take notes of important points. The protocol interview form contained the following steps (Rao & Perry 2007; Turner 2010; Rowley 2012; Montoya 2016a; Kallio et al. 2016).

The *first step* determined the time and the setting of this interview (Carson et al. 2001; Rao & Perry et al. 2007). The researcher was based in Australia, and the participants in the study were working in PJUs. The selected respondents were contacted around nine days prior to the interview and agreed on a suitable interview time by using the outside workplace technique (Carson et al. 2001). The interviews took between 30 and 60 minutes, and was mostly organised in Arabic by telephone (just one interview was in English).

In the *second step*, the researcher introduced the research, welcomed the interviewees and talked about the importance of the research to their universities (Rowley 2012; Brinkmann & Kvale 2015). The researcher assured the interviewees that anything they said would be kept confidential and de-identified (see ethics form appendix B6). All interviews were audio recorded and transcribed verbatim based on the agreement between the researchers and participants.

In the *third step*, the interviews were conducted following the open ended questions, and answers were often followed up with probe questions in order to draw out more information, encourage participants to express their opinions, arrange their ideas, and to help the interviewer to keep the interview moving forward (Qu & Dumay 2011; Zikmund et al. 2013).

In *step four,* the interview was completed once all the questions were asked (refer to Appendix B3) and any additional comments that the interviewees felt might be appropriate and support the research. The interviewer thanked the interviewees for their participation and contribution, and guaranteed the confidentiality of their interview data. The interviewer informed the interviewees that they could request a copy of the analysis of their data once it became available (Rao & Perry et al. 2007).

After each interview, the researcher evaluated the details and formulated a summary of events before undertaking the procedures for transcription, then transcribed without eliminating the spontaneous character of the speeches (Doody & Noonan 2013). The 18 interviews took six months, June to November 2017, to complete.

3.7.1.7 Ensuring Rigour and Trustworthiness

Trustworthiness means the degree of confidence that the researcher has that their qualitative data and findings are credible, transferable and dependable (Creswell et al. 2009). To ensure rigor and trustworthiness in the qualitative stage, four strategies were used: peer debriefing, member checking, triangulation and self-description (Shenton 2004; Creswell et al. 2009; Creswell 2014; Gunawan 2015; Hadi & Closs 2016; Cypress 2017). In addition, this study was interpretively validated using both manual methods and content analysis software for data analysis. Table 3.3 illustrates the trustworthiness strategies and researcher actions for this study.

Table 3-5: Trustworthiness strategies and researcher actions

Trustworthiness strategies	Purpose	Action	References
Peer debriefing	• To test credibility and trustworthiness	• Discussed the methodology, data analysis and interpretations continuously with supervisory team, two experts at Jordanian universities and three PHDs students at USQ and working in Jordanian universities in formal and informal discussions	(Lietz et al. 2006; Given 2008; Barber & Walczak 2009; Creswell 2014; Baillie 2015; Amankwaa 2016; Connelly 2016; Hadi & Closs 2016; Earnest 2020; Rose & Johnson 2020)
Member checking	• To test credibility and dependability	• Provided data, analyses, interpretations and findings to the participants to get their views • Used informal or formal cross-checking of data with the participants. For example, at the end of an interview, reviewing of drafts/notes	(Lincoln 1985; Long & Johnson 2000; Schwandt et al. 2007; Creswell 2014; Gunawan 2015; Birt et al. 2016; Hadi & Closs 2016; Candela 2019; Earnest 2020; Stahl & King 2020)
Triangulation	• To test validity, credibility, conformability and reduce bias	• Used multiple data sources, data collection methods, investigators and theories • Sequential mixed methods research design	(Decrop 1999; Long & Johnson 2000; Golafshani 2003; Cope 2014; Creswell 2014; Carter et al. 2014; Creswell & Poth 2018; Abdalla et al. 2018; Renz et al. 2018; Earnest 2020)
Self-description	• To test credibility, conformability, and reduce bias	• Made notes and maintained a reflective paper to identify and make explicit any personal biases • Recorded and documented information about the researcher self, understanding interpretations and methods	(Long & Johnson 2000; Mucherah & Finch 2010; Creswell 2014; Hadi & Closs 2016; Hadi et al. 2019; Pila et al. 2020; Wendt 2020)

3.7.1.7.1 Dependability Tests (Reliability)

To test the dependability of qualitative data, researchers suggest several qualitative strategies (Yin 2009; Gibbs 2012; Creswell 2014) which were used in the current study. The researcher:

- asked all participants to check transcriptions and indicate their approval
- checked the definitions of codes, compared data with codes, and documented memos about codes and definitions
- conducted an external check on the processes by which the study was to be conducted. This was done by employing an audit trail that provided documentation and a running account of the process of inquiry to check dependability
- created detailed field notes by employing a high quality machine for recording and then transcribed the interviews
- conducted an external check with three professionals from PJUs to validate cross checking and benchmarking on the interpretive coding process and compared between them
- worked with the research supervisor who also acted as an expert to monitor the process of the research.

3.7.1.8 Qualitative Data Analysis Techniques

The purpose of qualitative data analysis is to organise and, provide structure to, and elicit meaning from, the data (Polit & Beck 2006). In this research, the semi-structured, in-depth interview data were analysed using thematic analysis and Leximancer software analysis which are explained next.

3.7.1.8.1 Transcription of Interview Data

Transcribing interviews word by word was done for the preparation of accurate data analysis. To ensure transcription quality, the researcher sent the recorded interviews and transcripts, both in Arabic, to a professional translator for translation into English (see Appendix B12). The professional translator checked the transcriptions and finished his translations from Arabic to English, then ensured the quality of the English transcript. By following this method, the researcher was able to ensure the quality and accuracy of data while conducting the analysis.

The verbal data collected from the interviews in English was transcribed verbatim using 'f4' version 2012, a transcribing software. The others data, which was collected in Arabic, was transcribed by listening to the interview audio and writing the entire speech in Arabic so that no words in the conversation were missed. The researcher took care not to lose or change the meaning of Arabic words, then the researcher sent the transcriptions in Arabic and English to professional translators to translate and check the transcription interviews as mentioned before. Next, the researcher prepared a list of participants' names, and coded each name with a number and a letter to de-identify the participant. The codes PJ stands for Private Jordan, code U to universities, codes A, B, C, D, E, F, H, G, I gave to the target universities in the study as (UA, UB, UC, …), code Pn standard for participant number (P1, P2, P3 …) (see Appendix B10). This coding also helped maintain the confidentiality of each participant. In addition, all the participants were asked to read the transcripts of their interviews and indicate their approval.

3.7.1.8.2 Thematic Analysis

Thematic analysis is a method for categorising, analysing and reporting patterns (themes) within data as it minimally organises and describes a researcher's data set in detail. However, it involves searching across a data set – be that a number of interviews or focus groups, or a range of texts – to find repeated patterns of meaning (Braun & Clarke 2006).Thematic analysis is based on the skills, understanding, analytical capabilities and the investigator's style (Hoskins & Mariano 2004).

Thematic analysis was used to inductively derive and identify phrases and words that were related to the research question (Tong et al. 2014; Mayer 2015). It was appropriate for addressing different challenges associated with qualitative data analysis (Polit & Beck 2004) such as organising and making sense of pages and pages of narrative materials, and maintaining the richness and value of the data in a concise way. Further, thematic analysis considers both latent contents (developing themes) and manifest content (developing categories) in data analysis (Vaismoradi et al. 2013).

Thematic Analysis Process

After the interviews were transcribed and translated, the data was analysed using qualitative descriptive content analysis based on the six thematic analysis steps suggested by (Roberts & Taylor 2002; Braun & Clarke 2006):

1. **Familiarisation with data:** The audio recordings were listened to several times by researcher during the transcription process, data was transcribed in detail and the tapes checked for accuracy, and initial ideas noted

2. **Generation of initial codes:** Interesting features of the data were coded with a systematic approach across the entire data set, and relevant data was collated for each code (Gibbs 2007, 2018)

3. **Search for themes**: Codes were collated into potential themes, and all data was gathered into potentially relevant themes (Hoskins & Mariano 2004; Paulus & Bennett 2017)

4. **Review of themes**: The researcher arranged the data under question categories in table format in order to identify the similar words and phrases and frequent words in each answer to a question, and organised them into different sub-themes to bring meaning to the data and create themes and categories, and generated a thematic map (categorisation scheme) of the analysis (Polit & Beck 2004; Gibbs 2007, 2018). Each category that emerged from this categorisation was granted a descriptive label. The categorising that appeared to be connected was marked in the same colour coding. The categories with similar features were grouped together and classified into the main themes for each interview question

5. **Definition and naming of themes:** Analysis continued to refine the specifics of each theme and the overall story the analysis told. Clear definitions were generated and each theme was given a name

6. **Production of the report:** The results of the analysis were provided to the supervisory team and experts at the Jordanian universities for accuracy validation. The findings of this in-depth data analysis enabled this researcher to move on to interpreting the data using the identified themes. The themes were arranged into four groups: management mindset factors, management relationships factors, supporting factors and coopetition strategy success indicators.

3.7.1.8.3 Leximancer Software Analysis

The results of manual analysis may include unanticipated relationships that may be related to the user's evaluation (Smith 2003; Watson et al. 2005). Therefore, after the

manual coding process was completed, the data was analysed for a second time using Leximancer version 4.5 to further explore the findings (Smith & Humphreys 2006; Middleton et al. 2011). Leximancer is software that performs a conceptual analysis of text information irrespective of the language of the text. It uses two steps of common information extraction which are connected words and related meanings (Smith & Humphreys 2006) in order to identify key themes, sub-themes and related concepts.

Leximancer Analysis Process

Leximancer processes data in five stages: select documents, generate concept seeds, generate thesaurus, generate concept map and run project, as shown in Figure 3.3. These stages were used in the analysis, and are explained next.
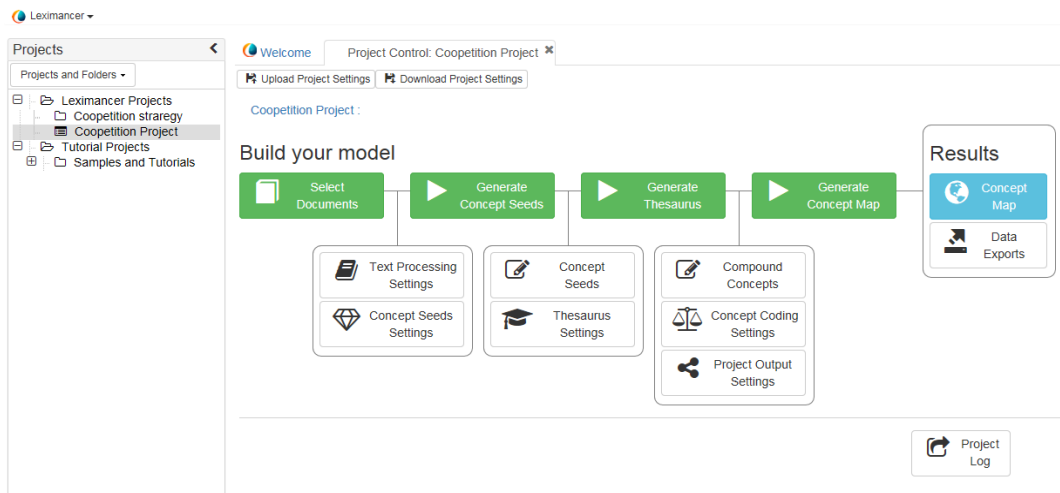
Figure 3.3: Leximancer stages

1. **Select documents**

The interview questions and transcripts were placed in the word document file. The interview transcripts were divided into five parts and the interview questions analysed separately (see Appendix B3)

2. **Generate concept seeds**

This stage included two different processes. The first identified text processing options. It is used for transforming raw data into an arrangement appropriate for processing by making boundaries out of sentences and paragraphs (Cretchley et al. 2010). The second process, known as concept seeds settings, automatically extracts important concepts from the text, which are simple keywords that occur prominently or frequently in the text

3. Generate thesaurus

In this step, concepts are fundamentally sets of words which move as a whole throughout the document (Cretchley et al. 2010). This step recognises groups of words that are associated with the key terms identified in the previous phases of the process

4. Generate Concept map

In this stage Leximancer creates a conceptual map. These maps construct and display the relationships among the concepts both graphically and statistically

5. Run project

Run project is the last stage of analysis to obtain the concept map results. It consists of three different processes (Cretchley et al. 2010). The first process enables the researcher to compound concepts that are similar in meaning. The second process is known as concept coding settings and the third process enables the researcher to create the type of map, which is known as a topical network.

Thus, this study used both Leximancer and manual analytical methods in two levels of analysis to define the themes and sub-themes, and gather the dimensions of content (Smith & Humphreys 2006; Middleton et al. 2011). The outputs of qualitative data analysis have been used to design the questionnaire survey for the quantitative stage.

3.7.2   Phase 2: Quantitative Method (Confirmatory Stage)

Quantitative methods are the predominant methodology used in business and management research (Creswell & Clark 2003; Hanson & Grimmer 2007). It is used as a survey or data analysis technique (graphs or statistics) to prove an existing hypothesis or theory (Brannen 2017). A large number of participants are considered in the quantitative method for statistical significance and the generalisation of findings to the population of interest (Duffy & Chenail 2009; Ponterotto et al. 2013). The quantitative stage was used for this study to confirm the results of the qualitative method (Phase 1). The quantitative method was summarised for this study (see Figure 3.4).
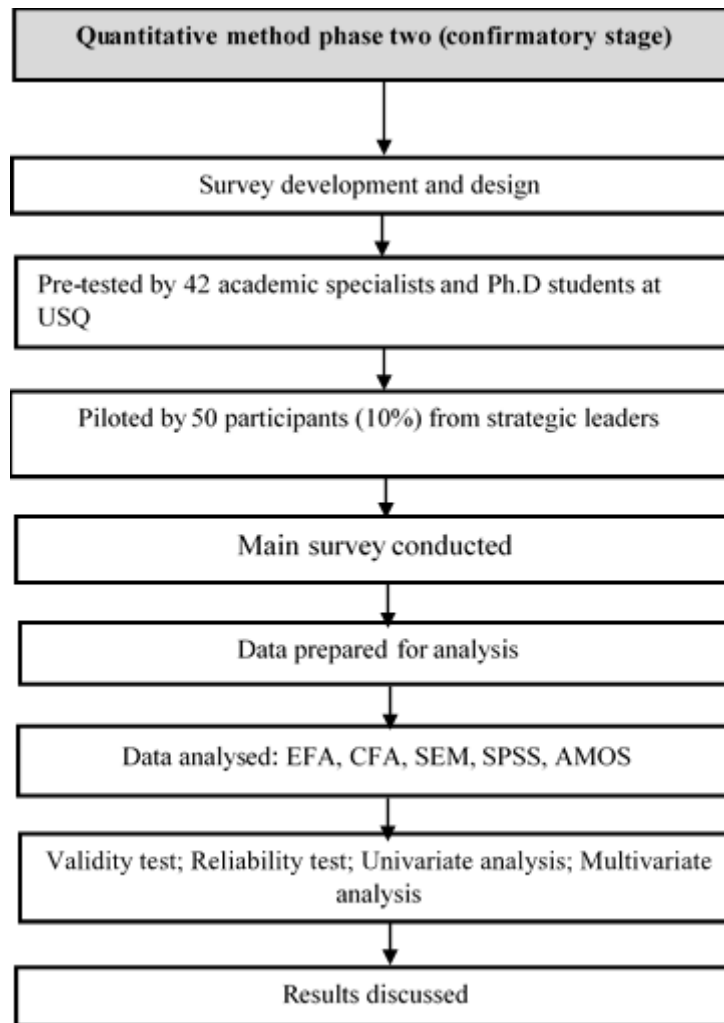
Figure 3.3: Phase two Quantitative method

Source: Developed by researcher

3.7.2.1 Data Collection Technique

In this phase, the questionnaire survey was used as an instrument to collect data as explained in the next section.

3.7.2.1.1 Questionnaire Survey

Surveys are the instrument most commonly used to collect data in quantitative studies (Zikmund et al. 2013; Creswell 2014; Bryman 2016; Bell et al. 2018). They provide a quick, affordable, efficient and relatively accurate means to get data and achieve several goals (Zikmund et al. 2013; Saunders et al. 2016). They allow the researcher to elicit attitudes or perceptions of participants and are easy to conduct, simple to code, can be generalised to similar populations, are easily reused with different groups and places, and confirm quality findings (Sekaran & Bougie 2016; Ghauri et al. 2020).

Surveys can be conducted with different and equally valid techniques, such as face to face surveys, mailed surveys, and online surveys (Saunders et al. 2009; Jones et al. 2013; Zikmund et al. 2013; Osuagwu 2020). Therefore, the technique is selected according to the research type, topic, population, time constraints, cost and research budget, quality of data, research objectives, accessibility and research experience (Jones et al. 2013; O'Gorman & MacIntosh 2014; Sekaran & Bougie 2016; Ghauri et al. 2020).

This study adopted three methods of a self-administration survey including face to face, mail and online survey techniques for quantitative data collection in the pilot and main study, and the participants were free to response to their preferred technique. This approach was aimed at increasing the response rate from participants.

3.7.2.2 Sampling Technique

In the quantitative stage, the probability sampling technique is an optimal technique to avoid a biased selection procedure (Creswell 2014; Saunders et al. 2016; Bloomfield & Fisher 2019). It is primarily used in quantitatively oriented studies and involves selecting a relatively large number of units from a population or from specific sub-groups (strata) of a population, in a random manner where the probability of inclusion for every member of the population is determinable (Tashakkori & Teddlie 2010). This study used probability sampling as this method aims to achieve representativeness, which is the degree to which the sample accurately represents the entire population (Saunders et al. 2009). It:

1. allows a researcher to make a generalisation from a sample to the population (Migiro & Magangi 2011; Zikmund et al. 2013).
2. produces a higher sample size of probability sampling is to ensure a lower error factor in generalisation (Saunders et al., 2009)
3. has benefits if the population is homogeneous and large (Collins et al. 2007; Migiro & Magangi 2011; Bryman & Bell 2015).

3.7.2.3 Survey Participants' Criteria

For the quantitative method the following criteria were used:

1. Job title, role, qualification, experience, authority and responsibility (i.e. people who had at least 10 years in universities and worked for at least three years in their position in universities and have a bachelor or higher degree

2. The participants should also belong to one of the local community organisations, and they should represent different age groups, be as homogeneous as possible with regard to educational level and socioeconomic and cultural status. These criteria ensure that the views of decision makers (participants) assist in capturing the information and building a comprehensive picture of COSFs in PJUs

3. According to university laws, strategic leaders who are involved in strategic decision making can include individuals with the following roles: Trustees' Council members; University Council members; Deans' Council members and College Council members who are responsible for management at the universities and participate in strategic decisions (Ministry of higher education, 2021a, 2012b).

The study justifies this selection on the following grounds:

- They have full authority in making, implementing and evaluating strategic decisions (Durmaz & Düsün 2016)

- They have full responsibility to determine vision, objectives, strategy, methods and tactics related to actions to be taken

- They have a good experience in HESJ and a high level of knowledge and skills related to the work in their faculties

- They are the main person participating in decision making related to their universities and have the governance authority to take these decisions

- These individuals can provide accurate information about cooperation with competitor universities due to their high level of expert knowledge

- Are strategic leaders in these universities playing a significant role in their university's survival in a dynamic environment

- They have knowledge and proficiency in implementing COS due to their positions at the universities. This allows an understanding of the issues that

may be associated with COS planning and implementation from Council members' perspectives.

3.7.2.4   Survey Participants Sample Size

The survey was distributed to 533 members in Trustees', University, Deans', and College Councils in nine PJUs (see Appendix B4). From the 533 who were invited to participate, 303 responded, making the response rate of the survey approximately 56%. However, a number of considerations were taken into account related to determining sample size including purpose and nature of the research, the nature of the analysis, sample sizes in similar studies, and resource constraints (Malhotra & Birks 2007; Malhotra & Dash 2019; Nunan et al. 2020).

Hair et al. (2014) argued that the sample size of 300 is more than enough in terms of structure equation model (SEM) analysis. Some researchers concluded that a sample size equal to or greater than 200 is reasonably large and displays comparable information regarding model fit across fit indices for SEM (Fan et al. 1999; Kenny & McCoach 2003; Ruiz et al. 2010; Ekermans et al. 2011; Afthanorhan 2013; Awang et al. 2015; Fan et al. 2016; Igundunasse 2016). Similarly, other researchers have recommended that the minimum sample size should not be less than 200 individuals for SEM (Barrett 2007; Lei & Wu 2007; Hoe 2008; Hooper et al. 2008; Fabrigar et al. 2010; Byrne 2016a; Sharif et al. 2018). In the same vein, Kim (2005), Hoyle and Gottfredson (2015), and Kline (2015) stated that sample sizes of 200 could be considered as acceptable for most analytical models. Thus, 303 participants were adequate for the quantitative stage of this study.

3.7.2.5   Survey Design Process

The survey design process for this study included specific steps: conceptualisation and operationalisation of constructs, measurement scale development, survey structure wording and content, survey layout, survey translation and preparation of a draft questionnaire.

3.7.2.5.1   Conceptualisation and Operationalisation of Constructs

This research depends upon the research model which emerged from the qualitative study (see Chapter 4) which included fourteen concepts called constructs (Howitt & Cramer 2017; Jhangiani et al. 2019). Construct is a term used to refer to concepts

measured with multiple variables (Zikmund et al. 2013). Constructs are defined through an operational description used by researcher (Breakwell et al. 2006; Shaughnessey et al. 2012). Operationalisation involves the aspects which represent the questions related to the aims of research to obtain the specific answers (Cohen et al. 2007). It is an accurate description of the way a conceptualised variable is going to be measured (Dwivedi & Weerawardena 2018). Conceptualisation of a variable means taking a construct and refining it by giving it a conceptual or theoretical definition (Bernard & Bernard 2013). To improve a measurement for each construct of the research model, each construct is conceptualised and then operationalized. All the construct and item measures developed are based on the findings of the exploratory study which the researcher collected from interviews with Deans' Councils in PJUs.

3.7.2.5.2 Measurement Scale Development

The questionnaire contains closed-ended questions only. The study questionnaire has multiple choices questions to ask respondents about the demographic variables, and Likert scales for the study variables. Using a Likert scale provides some advantages for the study such as:

1. Provision of a broader range of possible scores
2. Improvement in the number of options for statistical analyses
3. It is considered as the most popular scale in social sciences and business research
4. It is very familiar to the public as it is used frequently (Jankowicz 2002; Sekaran & Bougie 2016).

Many researchers recommend using five and seven-point Likert scales to analyse survey data (Li 2008; Hair et al. 2010; Hair et al. 2014; Lian et al. 2014; Joshi et al. 2015; Bell et al. 2018; Hair et al. 2019). This research utilised a seven-point Likert scale to ensure an extra level of accuracy and participants' true responses (Madanoglu 2006; Van Zanten et al. 2006; Dawes 2008; Abdullah & Sofian 2012; Kaushal & Kumar 2016; Agbenyegah 2019; Babagana 2019; Shin et al. 2020). In this research the survey scale was coded in a seven-point Likert-type scale ranging from 1 "Strongly Disagree" to 7 "Strongly Agree" for the COS area and variables model, and 1 "Very Low" to 7 "Very High" 7 for COS level (refer to Appendix B11).

3.7.2.5.3 Survey Structure, Wording and Content

To ensure a good response rate and the collection of authentic data, a survey was designed to be easy to use, clear, accurate, simple, reasonable in length, and concise by avoiding dispensable questions (Iarossi 2006; Blair et al. 2013; Zikmund et al. 2013; Brace 2018). The content of questions was relevant to examined variables, avoided doubled-barrelled questions (i.e. questions that touched upon more than one issue), and avoided technical and specialised terms. Question wording was stated positively (words should reflect one meaning only), and avoided bias, leading words, abbreviations, and incomplete sentences (Blair et al. 2013; Sekaran & Bougie 2016).

The survey had two types of questions: multiple choice questions which were used to collect demographics data about the sample, and scale questions which were used to measure the variables related to the research model. Each type of question was separated from other types. Thus, the demographic questions were put first, followed by the scale questions which were grouped based on topic. The respondents were given support to complete the survey. Close-ended questions was selected for quick answering, with the most appropriate response depending on participants' perception, knowledge and experience (Reja et al. 2003; Colosi 2006; Jain et al. 2016). All of these common rules were taken into consideration to achieve the ultimate research objectives by creating suitable and explicit questions (Blair et al. 2013; Brace 2018). The online survey used the USQ Custom Survey System as the web survey host site, to assist in data collection and to keep data on a secure server (Saleh & Bista 2017; Toepoel 2017).

3.7.2.5.4 Survey Layout

The survey is composed of a set of elements (see Appendix B11). The first page of the survey is a participant information sheet. It was used to explain the research topic and to encourage better participant responses. The Information sheet includes statements regarding protecting confidentiality of the responses and confirming that the data collected is for research purposes only. It explained the purpose of the study, the benefit of taking the survey, contact details of the supervisor for further information, followed by a thank-you message to participants (refer to Appendix B11). The second page contains instructions and guidelines for the participants to help them complete the questionnaire. The rest of the survey contains the demographic and scale questions.

3.7.2.5.5 Survey Translation

As Arabic is the first and the formal language in Jordan and the participants use English as their second language, it was necessary to translate the survey to the language of that context (Sekaran & Bougie 2016). Therefore, the researcher contacted professional translators (see Appendix B12) who are fluent in both English and Arabic, to translate the questionnaire from English to Arabic to help participants understand the questions and answer them appropriately (see Appendix B13). However, some of the participants requested a copy of the survey in the English language because they were already studying and teaching in English. Therefore, to encourage participants to be involved in this study and increase the response rate, this study used two version of surveys for both the pilot and the main surveys.

3.7.2.6 Preparing a Draft of Survey

Based on the research objectives of this study, an initial draft questionnaire was formulated by this researcher and checked by his supervisory team (see Appendix B11). The survey was based on the output from the exploratory stage in the qualitative phase (interviews) that was developed to guide this research. The researcher adjusted some questions to make the questionnaire relevant to the working environment and culture in Jordanian universities. The nature of the information required was made clear to the respondents to ensure accurate feedback. Consideration was paid to the ease of use and the flow of questions in the survey to encourage the participants to complete each part of the questionnaire. The initial draft of the survey questionnaire was divided into four parts:

A. Background: The first part of the questionnaire was designed to investigate the characteristics and background of the participants to examine whether or not they were involved in strategic decision-making. These answers were generated from the semi-structured, in-depth interview phase. This first part included six questions (Q1-Q6) (see Appendix B11). The findings gained from this section of the questionnaire provided a clear view for assisting the researcher to build up a valuable description of the background and characteristics of the sample of participants in the study

B. Current relationships between universities: The aim of the second part of the survey was to collect information about the current relationships between

PJUs. This part of the survey consisted of six questions (Q7-Q12); these questions were taken from the qualitative phase (see Appendix B11)

C. **Research model**: The third part of the survey aimed to measure COSFs that need to be considered in the adoption of COS between PJUs (Q13-Q25). This part identified the independent variables for research models that were grouped into three categories including the Management Mindset (MM) category, Management Relationships (MR) category and Supporting Factors (SFs) category. These categories, which included 13 factors, were measured using a seven-point Likert scale, labelled from Strongly Disagree (1) to Strongly Agree (7). The thirteen factors were taken from the qualitative phase of this study and were measured by constructs and items (see Appendix B11):

- MM category included five constructs (Q13-Q17) including Management Commitment (MC) construct (Q13), Strategic Leadership (SL) construct (Q14), Flexibility to Change (FCH) construct (Q15), Management Perception (MP) construct (Q16) and Top Management Support (TMS) constructs (Q17) (see Appendix B11)

- MR category included five factors (Q18-Q22) including Trust Development (TD) construct (Q18), Mutual Benefit (MB) construct (Q19), Sharing Resources and Capabilities (SRC) construct (Q20), Organisational Learning (OL) construct (Q21) and Communication Management (CM) construct (Q22) (see Appendix 11)

- SF category included three factors (Q23-Q25) including Institutionalisation (INS) construct (Q23), Ministry of Higher Education Law (MHEL) construct (Q24) and Geographic Proximity (GP) construct (Q25) (see Appendix B11)

- The final variable included in this section was the dependent variable in the research model (Q26) which was COS success. This part of the survey aimed to measure University Success (US) in adoption of COS by exploring the indicators of COS in PJUs. The US construct was measured by 10 items using a seven-point Likert scale, labelled from Strongly Disagree (1) to Strongly Agree (7). The factor and items were taken from the qualitative phase of this study (see Appendix B11)

D. The last part contained any other comments for participants (Q27).

3.7.2.6.1 Pre-Test the Initial Survey (Validity Test)

The study conducted a pre-test of the initial draft questionnaires for non-sample respondents to achieve validity and to improve the survey quality by obtaining experts advice and academic peer review (Kane 2001; Cooper et al. 2006; O'Dwyer & Bernauer 2013; Sekaran & Bougie 2016; Goodman & Zhang 2017; Leavy 2017; Mohajan 2017; Bell et al. 2018). The validity of the survey included content validity and face or construct validity (Drost 2011; Sekaran & Bougie 2016; Taherdoost 2016a; Mohajan 2017). Face or construct validity indicates that the selected scale items of the survey are drawn from the variables which they are intended to measure, while content validity focuses on whether the measure covers a sufficient and representative set of items that measure the concept (Kane 2001; Hair et al. 2007; Sekaran & Bougie 2016).

The recommended method for assessing the face and the content validity is to solicit experts in the field to assess whether or not the scale items have face and content validity (Sharrack & Hughes 1999; Mozaffari et al. 2014; Abootalebi et al. 2017; Shojaee et al. 2017; Darabi et al. 2018; Negin et al. 2020; Ong et al. 2021). On this basis, the survey was given to the supervisory team, 14 academic lecturers in Management and Education at USQ, seven lecturers at the Open Access College and USQ Learning Centre, eight Ph.D students in the Business specialisation, and 10 experts in the Jordanian universities sector. Issues with spelling, the wording of questions, survey format and design, flow and sequence, grammar and punctuation of the questions, measurement scale, and completion time and technical problems were identified during the pre-testing process. Corrections and rephrasing of some elements were made to enhance the survey's clarity in terms of content and design. Several respondents suggested that modifications should be made to shorten the survey and make it more appealing.

Based on their constructive feedback, this researcher modified 13 statements from the initial survey for example Questions 12, 13, 16, 19, 20, 22 and 24. The time taken for the respondents to complete the survey was around 10 to 12 minutes. The survey instrument was also validated and refined by integrating information gathered from the expert interviews. This research also considered similar previous studies for COSFs in other contexts to increase validity (Zineldin 2004; Chin et al. 2008; Czachon & Kuś 2014; Petter et al. 2014; Bouncken et al. 2015). However, prior to the pilot

study, the survey was reviewed again with the supervisory team to increase the accuracy and clarity for use in the pilot study.

3.7.2.6.2 Pilot Study of the Survey

Prior to the actual data collection and data analysis, a pilot survey was conducted after the survey was refined based on pre-test process outcomes. The pilot study gives an advance warning to the researcher before going on to the final distribution. The main reasons for the pilot survey were to identify survey issues, refine the research instrument, test the survey questions' clarity and accessibility, improve the survey design, increase the accuracy and reliability of the method and results, evaluate survey validity, and prepare the scales for the final stage of the research (Van Teijlingen & Hundley 2001; Beebe 2007; Connelly 2008; Cohen et al. 2018; Mauceri 2014; Arunasalam 2017). Further, it allows the researcher to assess the feasibility of the survey, estimate the response rate, assess the likelihood of success of the proposed research methodology and instrument, and assess the preliminary data analysis technique (Doody & Doody 2015; Jamadin & Noordin 2018; Greener & Martelli 2018).

The study selected a convenient sampling technique to distribute the pilot survey (Taherdoost 2016b; Rahi 2017), and conducted the pilot survey in the same way as it would be conducted in the main study. The pilot study sample in this research was like the anticipated sample of the final survey in this study (Shaughnessey et al. 2012; Jhangiani et al. 2019). The researcher sent the pilot survey to a number of participants who were not involved in the final sample of the main study. The pilot study followed specific criteria for selecting sample (see Table 3.6).

Cohen et al. (2018) stated that the exact sample size relies on the environment of the population under scrutiny and the intention of the study. According to Cooper et al. (2006) and Connelly (2008) 10% of the total sample is sufficient for a pilot study. Accordingly, the survey was distributed 60 participants which was more than 10% of the total sample of the main study (about 11%) which involved 533 participants. The researcher received 50 completed surveys from the respondents, which constitutes an 83% survey response rate. The pilot survey was analysed using IBM SPSS 25.0. The frequency function was used to extract the frequencies for each demographic variable. Table 3.6 details the frequencies and percentages for the demographic variables which

were used in this pilot study. Accordingly, amendments were applied to the pilot survey including formatting changes, removing replications, revising questions, and reducing the survey length.

Table 3-6: Pilot study demographic data

Variable	Description	Number	Percent
Position	Dean	2	0.04%
	Deputy Dean	3	0.06%
	Head of the department	17	34%
	College Council Member	28	56%
Qualification	PhD	50	100%
Title	Professor	11	22%
	Associate Professor	21	42%
	Assistant Professor	18	36%
Specialty	Business	22	44%
	Engineering	5	0.01%
	Science	9	18%
	Education	10	20%
	Law	4	0.08%
Experience in universities	1-10	7	0.14%
	11-20	37	74%
	21-30	6	0.12%
Experience in position	1 – 5	50	100
Total number	**50**		

3.7.2.6.3 Pilot Study Results (Reliability Test)

Reliability means the measurement of consistency of the variables in study (Bell et al. 2018). It assesses an important source of measurement error in multi-item measures (Polit & Beck 2010a; Heale & Twycross 2015). It increases the 'truth of score' factor and decreases the error factor of an obtained score (Polit & Beck 2010a; Field 2013; Taherdoost 2016a). Research model constructs and items (the third part of instrument - C) were tested and checked thoroughly in the pilot study using the Cronbach's Alpha (Polit & Beck 2010a; Sekaran & Bougie 2016; Mohajan 2017; Ahmad & Ahmad 2018; Taber 2018; Hair et al. 2019a). All the items, showing low rates of reliability were eliminated (Sekaran & Bougie 2016, 2020). Cronbach's Alpha is one of the most sophisticated and accurate ways of computing internal consistency (Polit et al. 2001; Cozby 2012; Shaughnessy et al. 2012; Hair et al. 2014; Sekaran & Bougie 2016; Greener & Martelli 2018; Hair et al. 2019a; Ghauri et al. 2020). The use of IBM SPSS Statistics 25 for calculation of Cronbach's Alpha is the evidence of internal consistency reliability (Cozby 2012; Field 2013; Hair et al. 2014). Many researchers

have articulated that 0.7 is an accepted value (Nunnally & Bernstein 1994; Gefen et al. 2000; Helms et al. 2006; Stafford & Turan 2011; Field 2013). In order to increase the alpha co-efficient some of the items were removed. However, Alpha Cronbach >0.9 can be interpreted as excellent, >0.8 as good, >0.7 as acceptable, >0.6 as questionable, >0.5 as poor, and <0.5 as unacceptable (Calaguas & Dizon 2011; Gabriel & IonuŃ 2013; George & Mallery 2019; Rodríguez et al. 2019; Mohammadi et al. 2020; Senin et al. 2021). In order to increase the alpha co-efficient, 10 items were removed from the survey instrument. The details of Alpha Cronbach are shown in Table 3.7.

Table 3-7: Alpha Cronbach for items

Constructs	Alpha Cronbach Stage 1	Number of items	Alpha Cronbach Stage 2	Number of items
Management commitment	**0.631**	6 items	**0.777**	5 items
Strategic leadership	**0.629**	6 items	**0.753**	5 items
Flexibility to change	**0.762**	5 items	**0.762**	5 items
Management perception	**0.662**	6 items	**0.783**	5 items
Top management support	**0.679**	6 items	**0.810**	5 items
Trust development	**0.630**	7 items	**0.744**	5 items
Mutual benefit	**0.815**	5 items	**0.815**	5 items
Sharing resources and capabilities	**0.639**	6 items	**0.767**	5 items
Organisational learning	**0.675**	6 items	**0.780**	5 items
Communication management	**0.757**	5 items	**0.757**	5 items
Institutionalisation	**0.747**	5 items	**0.747**	5 items
Ministry of Higher Education	**0.634**	6 items	**0.779**	5 items
Geographic proximity	**0.664**	6 items	**0.777**	5 items
University success	**0.761**	10 items	**0.761**	10 items
Total		**85 items**		**75 Items**

The values of Cronbach's Alpha for the scale items ranged between 0.744 and 0.815. The function "If item deleted" was applied to enhance some of the reliability coefficients. This procedure resulted in eliminating items such as MC6, SL6, TD7, OR6, MHE6, and GP6 (see appendix B11).

3.7.2.7 Final Version of the Survey

Based on the validity and reliability tests, the final draft of the survey questionnaire is provided in Table 3.8 (see appendix B14).

Table 3-8: The final survey draft

Survey parts	Descriptions	Questions numbers	Response	Source	Items
A. Background	Positions	Q1	Tick the best item that describes you	Qualitative phase	13
	Qualifications	Q2			5
	Titles	Q3			5
	Specialisations	Q4			10
	Experience in universities	Q5			4
	Experience in the current positions	Q6			4
B. Current status between PJUs	The relationships between PJUs	Q7	Tick the real relationships	Qualitative phase	4
	Cooperation areas	Q8	(1 Strongly Disagree -7 Strongly Agree)	Qualitative phase	4
	Competition areas	Q9			3
	Cooperation level	Q10	(1 Very Low -7 Very High)		4
	Competition level	Q11			3
	Type of CS	Q12	Tick the best description to your university's relationships		4
C. Research model	MMC	Q13-Q25	(1 Strongly Disagree -7 Strongly Agree)	Qualitative phase	25
	MC	Q13			5
	SL	Q14			5
	FCH	Q15			5
	MP	Q16			5
	TMS	Q17			5
	MRC	Q18-Q22	(1 Strongly Disagree -7 Strongly Agree)	Qualitative phase	25
	TD	Q18			5
	MB	Q19			5
	SRC	Q20			5
	OL	Q21			5
	CM	Q22			5
	SFC	Q23-Q25	(1 Strongly Disagree -7 Strongly Agree)	Qualitative phase	15
	Ins	Q23			5
	MHEL	Q24			5
	GP	Q25			5
	CS success	Q26	(1 Strongly Disagree -7 Strongly Agree)	Qualitative phase	10
	Further comments	Q 27			

3.7.2.8 Managing the Survey Process and Data Collection

After collecting the data for Phase 1, this researcher used a self-administered survey to collect the survey from the participants including a personal survey, mail survey and online survey (Evans & Mathur 2005; Jones et al. 2013; Zikmund et al. 2013; Creswell 2014; Saunders et al. 2016; Osuagwu 2020) to increase the response rate and ensure that the survey was distributed to all participants. Prior to sending the survey, the researcher sent an explanation of the research topic in the form of an Information sheet (see Appendix B15), Invitation form (see Appendix B16), and Consent form (see

Appendix B17) through the mail and email to the participants for each Council of the universities involved in the study. This ensured participants were fully informed about the nature of the research before being involved in the survey questionnaire. All participants were assured that the confidentiality of their responses would be maintained. Once they agreed to participate, further details were provided. The survey was administrated in three sequential waves which are explained as follows:

- **The first wave - personal survey:** The researcher asked his personal resources (which included the external supervisor with his networks and the researcher networks in PJUs) to coordinate the data collection process and distrusted the surveys. Accordingly, a package containing the cover letter, information sheet, consent form, questionnaire, invitation form and an envelope addressed to the researcher (coded for follow up purposes), were mailed to the personal resources to distribute to the participants. The participants are asked to return the surveys in 4 to 6 weeks

- **The second wave - mail survey:** Was posted to the Councils for each university with a package containing the questionnaires with the other related forms and envelopes addressed to the researcher with a request to circulate the survey to the participants in the Trustees', University, Deans' and College Councils through internal mail. The protocol in PJUs may require researchers to work through this process and for this study the researcher complied. The researcher found the key members in the councils supportive and cooperative

- **The third wave - online survey:** In order to make the survey available 24/7, an online survey service and link was offered for about four months from 15 April 2018 to 20 August 2018. The survey was distributed through USQ's Custom Survey System (Lime Survey web link) to all participants in the Councils. Each participating Council was asked to forward the survey link to their staff participants through email, or SMS. All the participants were assured of the confidentiality of their responses.

To prevent participants completing the survey twice, the researcher requested that participants answer one survey only from the three methods previously described. For the online survey, the server saved the IPs of all the participants for four months to avoid any duplication of answers. The researcher sent a reminder letter to all potential participants along with a thank-you note to those who had responded to the survey. Table 3.9 shows the response rate for each method.

Table 3-9: Survey details

Method	Participants	Survey received	Response rate
Personal survey	425	242	79.7%
Mail survey	78	44	14.6%
Online survey	30	17	5.62%
	533	**303**	**56.8%**

3.7.2.8.1 Response Rate

Different techniques were used in this study to increase the questionnaire response rates including follow-up phone calls conducted through waves to key people in each Council, pre-paid return-addressed envelopes, follow-up emails, follow-up letters, pre-notification, e-mail invitations, and e-mail reminders (Walter 2006; Fan & Yan 2010; Zikmund et al. 2013; Agustini 2018; Harrison et al. 2019). The participants from nine PJUs responded to the survey, which represented a response rate of 56.8% while the other 44.2% did not respond to the survey. Some participants stated that that they were working under university regulations and could not give out any information that related to their university's strategy. The other stated they did not participate because they did not respond to any of the attempts by the researcher to contact them.

However, this response rate is considered acceptable in the context of Social and information system research as it more than the 50% (Mugenda & Mugenda 2003; Badger & Werrett 2005; Sekaran & Bougie 2016; Agustini 2018; Kog 2019). The nine participating PJUs had around 533 possible participants from Trustees', University, Deans' and College Councils who may have been invited to participate and 303 responded. This process took about six months from 30 March 2018 to 30 September 2018. Table 3.10 shows the distribution of respondents by university.

Table 3-10: Distribution of respondents by the university

University code	Number of participants	Number of respondents	Response rate
PJU1	50	26	52%
PJU2	67	40	59%
PJU3	68	37	54.4%
PJU4	58	28	48.2%
PJU5	65	33	50%
PJU6	59	30	50.8%
PJU7	63	31	49.2%
PJU8	60	44	73.3%
PJU9	43	34	79%
Total	**533**	**303**	**56.8%**

3.7.2.8.2 Sample Demographic Characteristics

The respondents' demographic data included: position, qualification, title, specialisation, experience at universities and the numbers of years in their current position (see Table 3.11).

Table 3-11: Demographic profile of the participants

Demographic profile	Descriptions	Number	Percent
Position in university	Chairman of Board of Trustees	1	0.33%
	Deputy Chairman	1	0.33%
	President	3	1.0%
	Vice President	5	1.7%
	Dean	41	13.5%
	Deputy Dean	43	14.29%
	Trustees' Board Member	27	8.91%
	University Board Member	33	10. 9%
	Manager	13	4.39%
	Head of Department	103	34.0%
	Dean Council Member	23	7.6%
	College Council Member	10	3.3%
Qualification	PhD	273	90.1%
	Master	14	4.6%
	Bachelor	16	5.28%
Title	Professor	69	22.8%
	Associate Professor	139	45.9%
	Assistant Professor	65	21.5%
	No academic title	30	9.9%
Specialty	Business	94	31.0%
	Engineering	59	19.5%
	Science	37	12.2%
	Education	33	10.9%
	Law	34	11.2%
	Linguistic	29	9.6%
	Pharmacy	5	1.7%
	Media	8	2.6%
Experience in universities	1-10	38	12.5%
	11-20	147	48.5%
	21-30	92	30.4%
	More than 30	26	8.6%
Experience in position	1 - 5	289	95.4%
	6 - 10	14	4.6%
	11 - 15	-	0.0%
	More than 15	-	0.0%

Table 3.11 shows that the highest proportion (34%) of participants (103) held the position of Head of Department at their university, while the lowest proportion (0.33%) for each of the respondents was for those in the positions of Chairman and Deputy Chairman of the Board of Trustees. Of the respondents, 273 (90.1%) reported they held Ph.D degrees, while 14 of the respondents (4.6%) had a Master's Degree. The highest proportion of participants 139 with (45.9%) held an Associate Professor

title, while 29 of the respondents (22.8%) held the title of Professor. 103 participants (34%) held a Business specialty, whereas the lowest percentage (1.3%) of participants (four) specialised in Nursing. Of the respondents, 147 (48.5%) reported their years of experience with their university as being between 11 and 20 years, while 26 (8.6%) of respondents had experience of more than 30 years. Finally, 289 respondents (95.4%) reported that they had experience in their position for between 1 and 5 years. These results indicate that most of the respondents had considerable experience related to their position.

3.7.2.9 Data Preparation Techniques

Before carrying out any statistical analysis, a preparation stage was applied after collecting the questionnaire data from participants to clean data from errors (Elliott et al. 2006; Field 2013; Hair et al. 2006; Tabashnick & Fidell 2007; Field 2009). This study adopted two stages to prepare data before the main statistical analysis.

In the first stage: the researcher followed the following steps:

- Checking raw data to ensure that it was accurately arranged, uniformly entered and complete (Wilson 2014; Saunders et al. 2016)
- Ensuring data accuracy and quality before data entry into SPSS (Tharenou et al. 2007; Saunders et al. 2016)
- Numbering the responses and checking their validity based on the way that the questions were answered (Phakiti 2010; Bernard & Bernard 2013; Watkins & Gioia 2015).
- Coding data to classify data into a limited number of categories (Malhotra et al. 2006; Zikmund et al. 2013; Creswell 2014) (see Appendix B18).
- The numerical data collected were entered into the computer by converting a Microsoft Excel spreadsheet to SPSS software.

In the second stage: the researcher adopted the following assessments.

- **Missing Data Assessment**

  This technique was used to assess any value that may be missing in the data set or to identify measurement items that respondents failed to complete (Hair et al. 2014). It is important to minimise missing values in the survey questionnaire (Hair et al. 2014; Bell et al. 2018) because missing data may adversely affect the

adequacy of the sample size (Enders 2010), lead to erroneous research results (Collins et al. 2001; Hair et al. 2010), cause information bias (Chen 2010), or negatively impact the fit measurement and saturated model in SEM (Enders & Bandalos 2001). However, a data set with missing values of up to 10% is not large and unlikely to be problematic for the interpretation of the findings (Fox & El-Masri 2005; Hair et al. 2010; Cohen et al. 2014). Moreover, a total of less than 5% missing values is considered to be randomly missing, which means a value is missing independent of other values (Schafer & Graham 2002; Tabachnick et al. 2007). In this research, there was no missing data in the returned questionnaires (see Appendix B19 Table 6). Therefore, no action was required to treat missing data.

- **Normality and Data Distribution Assessment**

Multivariate normal distribution for data is the basic requirement for SEM analysis because the non-normality of data will severely affect the standard error and goodness-of-fit indices (Hair 2006; Hair et al. 2014). Normality of data is measured statistically and graphically (Hair 2006; Hair et al. 2014). The graphical analysis of normality is implemented by checking graphical descriptive statistics such as Q-Q plots and histograms visually to compare the actual distribution of the observed data values with a normal distribution (Field 2009; Hair et al. 2010; Pallant 2020). The graphical assessment histogram and Q-Q plot graphs tested latent constructs and items (i.e. independent variables MC2 and CM4) (see Appendix B20).

Statistically, normality is assessed by skewness and kurtosis test to the measurement items (Tabachnick et al. 2007; Field 2009; Razali 2011; Kim 2013; Barton & Peat 2014; Hair et al. 2014). Skewness is used to indicate the symmetry of the distribution of the measurement items; while kurtosis is used to indicate the peakedness of the data set distribution (Pallant 2020). According to (Kim 2013, p. 53), "sample sizes greater than 300 depend on the histograms and the absolute values of skewness and kurtosis without considering z values". Barton and Peat (2014, p.31) suggested that "values above +3 or below -3 are a good indication that the variables are not normally distributed". Based on these criteria, skewness values were between (-1.499, -0.043) while kurtosis values between (-0.947, 2.077) occurred respectively (see Appendix B19 Table 6).

- **Multivariate Outliers and Multi-Collinearity Assessment**

Outliers refer to observations in a data set which have significantly high or low values (Hair et al. 2010; Hair et al. 2014). An outliers test is important because extreme values may negatively influence the subsequent analysis (Pallant 2020). Boxplots for latent constructs and items (i.e., OL2, MHE1) (see Appendix B21), and standardised scores for the items were used to determine the extreme outliers (Thompson 2006; Tabachnick et al. 2007; Cousineau & Chartier 2010; Hair et al. 2010; Hair et al. 2014; Hair et al. 2019a). The result of boxplot and Z scores for the items of all research variables indicated no extreme outliers that extended more than 3 box lengths from the edge of the box (Pallant 2020); and values of Z standardised scores were not above 3 which is within the acceptable level ($z < 3$) (Kline 2015), or ($z < 4$) when the sample size is moderate (under 300 - 400, and not exceeding 1000) (Hair et al. 2010; Hair et al. 2014) (see Appendix B22 Table 7).

Multi-collinearity was also checked by conducting a multiple regression procedure with the collinearity diagnostic option for independent variables. The results indicated no extreme multi-collinearity for all independent variables as the variance inflation factors (VIF) for them were below 6 and all tolerance figures are over 0.1 which is within the acceptable collinearity threshold of tolerance values up to .10, corresponding to a VIF of 10 (Lin 2006; Hair et al. 2010; Hair et al. 2014; Kline 2015; Pallant 2020) (see Appendix B19 Table 6).

3.7.2.10 Quantitative Data Analysis Techniques

This study conducted several quantitative analysis techniques to answer the research questions and test the proposed hypotheses. These statistical techniques were conducted with Statistical Package for the Social Sciences (SPSS 25) and Analysis of Moment Structure (AMOS V25) software. Each of these techniques are explained as follows.

3.7.2.10.1 Descriptive Data Analysis

It is a critical base for any quantitative data analysis in terms of describing and summarising the data (Thompson 2009; Leavy 2017). The descriptive statistic is an initial test conducted on numerical data to examine data properties, analysis techniques, and to obtain sample description and data (Tharenou et al. 2007). The

descriptive data was used SPSS 25 software to calculate frequency, mean score and standard deviation.

3.7.2.10.2 Exploratory Factor Analysis

The purpose of Exploratory Factor Analysis (EFA) is to reduce or summarise the data. The data set pertaining to each measurement item is calculated and clustered into a smaller group, based on intercorrelations. It is also used to condense variables from a larger number of factors into a smaller number without missing variables (Williams et al. 2010; Fabrigar & Wegener 2011; Izquierdo et al. 2014; Taherdoost et al. 2014; Howard 2016; Watkins 2018; Goretzko et al. 2019). SPSS software 25 was used for this analysis.

3.7.2.10.3 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is employed to test how well the measurement items represent the constructs. It is also used to ensure that the measurement items (questions) are valid and reliable (unidimensional) for the constructs and to ensure the measurement model quality (Thompson 2004; Schreiber et al. 2006; Suhr 2006; Brown & Moore 2012; Lewis 2017; Bandalos & Finney 2018; Orçan 2018; Crede & Harms 2019). AMOS V25 was used for this test.

3.7.2.10.4 Structural Equation Modelling

Structural Equation Modelling (SEM) was used to find the most appropriate observed variables (measurement items) pertaining to each latent variable (measurement dimensions), as well as testing the relationship between exogenous variables (independent variables) and endogenous variables (dependent variables), testing hypotheses, and validating the research model (Byrne 2013; Ardasheva 2016; Byrne 2016; Grotzinger et al. 2019; Mueller & Hancock 2019; Chatterjee & Bhattacharjee 2020; Mardani et al. 2020; Mustafa et al. 2020). The fitness of the structural model can be assessed by interpreting the goodness-of-fit (GOF) index. The measurement of the fitness model can be justified by three main indices: incremental fit indices, absolute fit indices and parsimony fit indices (Hair et al. 2010; Hair et al. 2014; Cangur & Ercan 2015; Ainur et al. 2017; Garnier & Jorgensen 2020). AMOS 25 software was used for this analysis.

3.7.2.10.5 Reliability Test

Reliability testing includes Cronbach's alpha, Construct Reliability, Squared Multiple Correlation (SMC) and Composite Reliability (CR).

3.7.2.10.6 Validity Test

Validity testing includes Face validity, Convergent Validity, Construct Validity and Discriminant validity

3.8   Ethical Considerations

All aspects of this research were based on ethically sound foundations and complied with the Australian National Statement on Ethical Conduct in Research Involving Humans (National Health and Medical Research Council, 2007). In accordance with appropriate ethical conduct, this researcher avoided fabrication, omission and contrivances while conducting the data analysis (Zikmund et al. 2013; Saunders et al. 2016; Sekaran & Bougie 2016; Greener & Martelli 2018). Both English and Arabic versions of the semi-structured questions and survey questions were submitted to The Human Research Ethics Committee (HREC), University of Southern Queensland (USQ) and clearance was obtained (see Appendix B6).

While accuracy of data is one of the fundamental principles of research in the Social Sciences, ethical conduct in the collection and management of data is also of prime importance. In all research work, potential ethical issues that may arise during or after the study. This researcher recognised the requirements for confidentiality, anonymity, protection from discomfort, and the human rights of the participants (Mann 2013; Bell et al. 2018; Greener & Martelli 2018; Rashid et al. 2019). To maintain discretion, privacy, and minimise these ethical issues, the researcher followed The USQ guidelines that stem from the National Statement on Ethical Conduct in Human Research (National Health and Medical Research Council, 2007). The researcher understands the cultural sensitivities in this study because this is his culture and he comes from this area. Also, the researcher obtained ethics approval from MHEJ and already added an external supervisor from one of the PJUs to assist him in obtaining ethical approval and collect the data (see Appendix B7).

3.9   Summary

This Chapter presented the research methods, data collection procedures, and data analysis procedures of this study. Mixed methods were used in this research and the

sequential exploratory design was applied successfully. Data collection procedures included two phases, where Phase 1 involved semi-structured, in-depth interviews which randomly selected participants from Deans' Councils. Phase 2 included survey research by collecting data from participants in decision making in Trustees', University, and Deans' and College Councils in nine PJUs. The validity and reliability of the instruments were determined during the research process. Initial themes from the interviews and surveys were developed and these outcomes helped in answering the research questions, addressing the hypotheses, and achieving the research objectives. Chapter Four describes the analysis that was conducted on the data collected from Phase 1 and presents the findings.

4 CHAPTER FOUR: QUALITATIVE DATA PRESENTATION, ANALYSIS AND FINDINGS

4.1 Chapter Overview

This chapter presents the qualitative data, analysis and findings of the exploratory stage of this research study. The purpose of this stage (Phase 1) was to explore factors perceived to influence COS success in PJUs and identify the COSIs for COS adoption. These were identified through a two-process thematic analysis and Leximancer analysis. Findings from this data were used to modify the initial framework presented in Chapter two and, from that, develop a quantitative survey for Phase 2 of the study. This chapter also identifies the current cooperation and competition relationships between the universities and COS types.

4.2 Current Relationships between Universities

At the beginning of the interviews, the interviewees are asked about the meaning of COS and the researcher found that the Interview Participants (INPs) had a comprehensive understanding of the terminology. All 18 participants agreed that coopetition relationships (CORs) already existed between PJUs.

The following extract from the interviews captures the essence of CORs:

> *Cooperation between universities exist in the field of application instructions, regulation, and laws issued by the MHE and the accreditation body. We have strong competition in attracting more students, faculty members, increase profits and market value.* (PJ-UE-P9).

Another participant indicated that the relationship was simultaneous:

> *We are competing with the local university in direct competition, However, we are cooperating with them at the same time because we are working in the same sector and provide similar services* (PJ-UA-P2).

The data also revealed that a lack of knowledge and resources is the main resoan for the adoption COS between PJUs. All participants acknowledged that the HESJ is suffering from a lack of resources, therefore, universities experience the same circumstances and face the same challenges in this regard. This view is captured in the following:

> *The main reason for collaboration and competition with other PJUs is that all of these Universities are aware that the education sector is suffering from a lack*

*of knowledge and resources. Therefore, I think **we have the same circumstances and same problems in this area*** (PJ-UC-P6).

Further, universities need to work together to improve effectiveness because PJUs face funding and resource shortages so need to minimise the intensiveness of the competition between them. Further, it would, they commented, reduce the cost of services, increase the level of trust between universities, and increase their profits. This view is captured in the following comment:

> *The university needs cooperation with other universities **to reduce the intensity of competition, to increase trust level, reduce the cost of services, and reduce the** lack **of resources and funding.** At the same time, we have been competing with them to **get more students, more profits and more funding*** (PJ-UB-P4).

Participants also commented that universities need more strategic action because removal of government funding to PJUs have resulted in the adoption of COS. For example, as one of the participants mentioned:

> *We **do not have any funding from the government.** That reason may push all PJUs to **look for new strategy such as COS*** (PJ-UI-P18).

Finally, universities, which adopt a COS, can gain many benefits as outlined in the following:

> *The main reason for COS is to **share resources, improve university quality and academic performance, and keep the University's statu**s high **among other universities in Jordan*** (PJ-UI-P17).

Thus**,** data indicates that CORs existed and were driven by the removal of government funding, resulting in many benefits.

4.3   Cooperation Areas

A thematic analysis of data gathered from the respondents indicates four main themes of cooperation. These themes are academic activities, sharing interests, government policy and university services (see Table 4.1).

Table 4-1: Cooperation areas between universities (n=18)

Themes and subthemes	Number	Percent	Rank
1. Academic activity	**16**	**88**	**1**
• Collaborative teaching	14	77	
• Research	12	66	
• Supervision	11	61	
2. Sharing interests	**13**	**72**	**2**
• Knowledge	11	61	
• Experiences	10	55	
• Publications	9	50	
• Course materials	5	27	
3. Government policy	**12**	**66**	**3**
• Laws & legislation	10	55	
• Instruction	6	33	
• Regulations	5	27	
4. University services	**9**	**50**	**4**
• Health insurance	7	38	
• Social and athletic activities	4	22	
• Community services	3	16	

4.3.1 Academic Activity

Academic activity was identified as the most important theme in the cooperation areas. Related this theme are the subthemes: collaborative teaching, research and supervision (see Table 4.1). For instance, one of the participants provides a strong opinion about themes and subthemes:

> *My university has co-operated with other PJUs in different **academic and scientific activities such as collaborative teaching** by exchange academic staff in faculties between universities, **joint research** between researchers in similar faculties and discipline, **supervision,** and conferences* (PJ-UA-P1).

Further, another participant emphasised the themes and subthemes:

> *We have extended cooperation to include other universities in **joint academic activities such as collaborative teaching** in postgraduate and undergraduate courses, to the exchange experience in postgraduate courses, along with collaborating in the **supervision** of postgraduate student, and **collaborating on joint research between academic staff** (PJ-UA-P2).*

However, such activity was not without its critics. Dissatisfaction is mentioned by all participants. For example, one of the participants captured this dissatisfaction in the following:

> *Universities management are encouraged their academics to cooperate with each other in different **academic activities** such as **collaborative teaching, research and supervision. However, it is still not enough** (PJ-UA-P1).*

While these activities were seen as important, they occurred at a low level (as mentioned by all respondents) because they tended to occur at the individual level and when universites needed them, as one participant explained:

*I think there is **a limited cooperation** in particular areas, such as for **exchanges academic staff** in postgraduate programs and **supervision, joint research, exchanging some lecturers because these activities mostly occure at personal levels and when universities need them** (PJ-UC-P6).*

And another participant remarked:

*Cooperation in research projects is done **only by researchers at a person-to-person level not at the university-to-university level and it very limited** (PJ-UD-P7).*

Thus, the academic activities area was identified as the most important of the cooperation areas, however these activities are still at a low level between PJUs.

4.3.2 Sharing Interests

Sharing interest was considered to be an important theme by the participants (see Table 4.1). This theme included exchanging knowledge, sharing experiences, publication and course materials. This view is captured in the following:

*University **exchanges generate interest** in **experiences, knowledge, publications and courses materials** for postgraduate studies and other programs (PJ-UE-P10).*

Another participant further emphasised that:

*My university **exchanges experiences, knowledge, materials for postgraduate courses**, and **academic publications** particularly in new subjects and programs. (PJ-UD-P7).*

It was also mentioned that this exchange could develop as was standard in the HESJ for improving the quality of universities outputs:

*Exchange experience and knowledge are a **standard for the HESJ, to improve the quality of universities such as our postgraduate programs** (PJ-UA-P1).*

Another participant reported sharing databases at international libraries representing a beneficial solution for overcoming the lack of funding, reducing costs and gaining new knowledge. As one participant said:

*Sharing the **database from international libraries** with other local universities enable to **access to high-quality academic journals and books to get new knowledge, reduce cost, and could be a good solution for a lack of funding** (PJ-UA-P2).*

However, a number of participants indicated that sharing interest is still insufficient in and of itself because what is required is strong relationships between academics and not just between leaders and adminstration staff. As participants noted for example:

*Exchange knowledge, experiences, and information are **insufficient; it requires strong relationships** among **academic staff, not just leaders and administration staff** (PJ-UE-P9).*

*[Sharing experience], require **strong and solid relations** between **academics and professionals**. This is currently done in **a narrow and limited** way among universities (PJ-UF-P12).*

Thus, while sharing interests enable universities to obtain benefits such as new knowledge and decreased costs, it is still limited to the inter-personal level.

4.3.3 Government Policy

While answering the research question on the cooperation areas, participants frequently mentioned laws and legislation and instructions and regulations as being important subthemes related to government policy (see Table 4.1). The importance given to government policy and its related subthemes is evident for compliance purposes. As one participant indicated:

*We cooperate with other universities to ensure compliance with **government policy** through the execution of **instructions, laws and legislations, and the regulations of the MHEJ** and its **accreditation body** (PJ-UD-P7).*

Another participant confirmed that PJUs are governed by the MHEJ:

*All universities and institutions in the HES are under the authority of the **MHE** and their **accreditation body** (PJ-UA-P1).*

Compliance motive was stressed, as captured in the following:

*We have **meetings every month** between all **Dean Councils** and the **University Councils** with the MHEJ. We have implemented all their **official directions** (PJ-UC-P5).*

Thus, from participant responses, it is evident that government policy is a fundamental prerequisite for cooperation between universities.

4.3.4 University Services

The third theme identified is university services, including health insurance, social and athletic activities, and community services (see Table 4.1). One of the participants commented:

*Sometimes my university has been working with other PJUs to provide **university services** to our students and staff such as transportation services, housing, **health insurance services,** and joint to **social and athletic activities** (PJ-UC-P5).*

Another emphasised that university services could be utilised by nearby universities to the reduce cost of service provision as well as improving their image in society:

*Sometimes we shared **university services** with some universities, which are located in **same area in order to reduce the cost of the services.** Also, the university is interested in building a good image in society by providing consultations and training courses to public and private institutions* (PJ-UD-P7).

These views regarding university services indicate that there is an interest among universities in providing common services to reduce costs and enhance their reputation within society.

4.4 Competition Areas

The thematic analysis of the data also revealed three main themes related to competition amongst PJUs, as represented in Table 4.2.

Table 4-2: Competition areas between universities (n=18)

Themes and subthemes	Number	Percent	Rank
1. Students	**18**	**100**	**1**
● Fees	15	83	
● Quality services	11	61	
● New programs	6	33	
2. Higher revenue	**16**	**88**	**2**
● Profit	13	72	
● Satisfaction of stakeholder's	9	50	
● Market value (share)	5	27	
3. Reputation	**14**	**77**	**3**
● Quality assurance	13	72	
● Universities ranking	11	61	
● Academic staff	9	50	
● University image and brand	2	11	

Within each theme, contribution subthemes were identified (see Table 4.2.).

4.4.1 Students

All participants agreed that students strongly influenced competition between PJUs (see Table 4.2). For example, one of the participants stated:

*we have a **high competition with local universities to get more students,** particulary students who are looking to get good qualifications ...universities like ours provide high quality services in order **to attract more students*** (PJ-UB-P3).

Participants also identified the contributing subthemes of fees, quality of services and new programs as a means of attracting students. One participant outlined this view:

*Attracting more **students** is the most fierce area of competition between universities through **opening new programs** for postgraduate and/or undergraduate students, **providing quality and new services*** (PJ-UA-P1).

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Also, as universities have a formal numerical capacity for student numbers, they need to fill that capacity by attracting more students. This complexity is outlined in the following:

> *As you know each university has a **formal capacity for the number of enrolments**, and **they all want to fill this capacity…** and **university management attempts** to get more students … Therefore, **we are competing fiercely with other PJUs** (PJ-UA-P1).*

And as another participant indicated:

> *… there is a **high possibility of admission of students from neighbouring states** especially. Now that the situation is not politically stable in some of our neighbouring countries, I think it is a good chance for us to attract more students* (PJ-UD-P8).

From the responses, it is evident that the attraction and retention of students is an important activity for competition between PJUs.

4.4.2 Higher Revenue

In this research, the majority of participants considered that higher revenue was a major theme for competition areas (see Table 4.2). According to the law, the revenue or financial resources in PJUs comes from different sources including study fees, revenues from mobile and permanent properties, incomes from the educational, advisory and research activities of the faculties, institutes and centres, and from any productive projects and university facilities, grants, donations and wills (after the approval of Cabinet if from a non-Jordanian source), and any other income (Ministry of Higher Education, 2021a). The participants identified other subthemes that directly affected higher revenue, including profit, the satisfaction of stakeholders and the market. Participants' comments reveal the importance of higher revenue and its related subthemes. One of the participants remarked:

> *We are competing to get **higher revenue, more profits, a bigger market share** and a stronger position in the market to **satisfy university owners and others studenstakeholders** (PJ-UA-P2).*

Another participant commented:

> *We are competing with other universities to get a **higher revenue and satisfy the stakeholders and get higher market value** for our university because we are PUs; and one of our aims is to **get more profit** (PJ-UC-P5).*

Participants emphasised the importance of increasing profits because it means more funding and resources to develop the university, particularly universities that have limited resources and that receive no funding from government:

> *We are competing to get **more profits, more resources, and more funding to develop our universities and colleges**; especially we have **limited resources and do not have any funding from our government*** (PJ-UI-P18).

It seems that increasing profit is positively influenced by development and expansion. For instance, one of the participants voiced this view as follows:

> *We use this **profit to improve the quality of learning and expand the capacity of our university** by adding new classrooms, new computers or new laboratories, **recruiting a new and distinctive academic staff** to improve our university's reputation* (PJ-UC-P5).

Some participants felt that the competition between PJUs is fierce when attempting to gain a larger market share and increase profits because the number of seats offered per year is higher than the number of Jordanian high school graduates. For example, one participant stated:

> *Obtaining a bigger **market share** and **increase profits** comes through the admission of a larger number of students. So, there is fierce competition for that because **the number of seats offered per year is higher than that of Jordanian high school graduates*** (PJ-UE-P10).

From the responses, it is evident that higher revenue is a fundamental prerequisite for competition areas because of the limited resources and the extremely limited funding available to PJUs.

4.4.3   Reputation

Approximately three quarters of the participants commented that university reputation was an important theme (see Table 4.2). The importance given to university reputation and its related subthemes (including quality assurance, university ranking and academic staff) is evident in the following statements made by two participants:

> *Generally speaking the competition among PJUs is for **getting a good academic reputation, quality assurance** and a **competitive position in the local universities ranking**… and there is competition in this way. There is competition also to get **excellent academic staff** as well* (PJ-UA-P1).

> *We are competing to get **better ranking** …to enhance the **academic reputation** of our university, as well as seeking high **quality assurance** to our programs and faculties, to **recruit excellent staff with high qualifications*** (PJ-UA-P2).

Other participants stressed the importance of a unique image and brand used in marketing:

*... a good **scientific and academic reputation** for the university, and create a **new look, unique and a professional image for the university … and unique image for the purposes of marketing**, because we are looking to attract more students locally and from other foreign countries* (PJ-UG-P13).

One of the participants mentioned that quality assurance standards are determined by the MHE in Jordan and applied as a criteria for university ranking:

Quality assurance *standards, which are **determined by the authorities of the MHE and accreditation institution**, to be applied by the universities to **obtain advanced positions among universities**. There are yearly distinction norms outlined by the ministry for competition in this field* (PJ-UD-P7).

There is evidence of strong competition between PJUs aimed at gaining a good reputation.

4.5 Coopetition Strategy Types

The other area that emerged from the interview data was participants' views about COS types. In Chapter 2, Chin et al. (2008) developed different types of COS: Mono player, Contender, Partner, and Adapter (see Figure 2.2, p 19), and in this study it was possible to identify four types of COS with regard to the level of competition and cooperation reported by the participants. The thematic analysis of data from the interviews indicates that all PJUs (100%) are located in Type 2 ***Contender*** as represented in Figure 4.1. ***Contender*** is described as having a high level of competition and a low level of cooperation. For instance, participants provided a clear view about this type of relationship:

*I think the relationship between my university and others is characterised by **strong competition and low levels of cooperation**. The level of **cooperation among universities is still at low levels** (PJ-UA-P1).*

*We are in a **competition** with other PJUs **more than cooperating with them**. There is a **high degree of competition and the work collaboration is at a low level** (PJ-UB-P3).*

*We have **strong competition and weak cooperation** among universities. We have a **high level of competition and low level of cooperation** (PJ-UA-P2).*

Another participant described the relationships between PJUs by saying:

*…The level of cooperation among universities **is still limited.** We are encouraging universities to be more cooperative, but I think it is still described as **low cooperation and high competition** (PJ-UB-P4).*

High **Competition** **Low**	**Type 2 Contender** 100% (303 participants)	**Type 4 Adapter**
	Type 1 Mono player	**Type 3 Partner**
	Low **cooperation** **High**	

Figure 4.1: Participants' responses in Chin model

The analysis of interviews indicated that there are two main reasons for low cooperation between PJUs:

1. Local universities cooperate with international universities to gain great benefits:

   *Many of these local universities prefer to cooperate with the **international universities,** they can **get many benefits** by working with **foreign universities,** because they have **new knowledge, and give local universities many scholarships** (PJ-UC-P5).*

   *...foreign Universities are **more advanced**, they have a **higher reputation, excellent experience**, **provide excellent qualifications and certifications**, and have a **higher academic reputation** – especially in USA and UK and Australia. Also, we do **not have any direct competition with them** (PJ-UC-P6).*

2. Weak communication between local universities:

   *...we do not have a **strategic relationship**. I mean we do not have a **long-term relationship**, and maybe the reason of that is the **weak communication and non-effective communication** between local universities (PJ-UG-P13).*

However, the level of competition between PJUs is high. The analysis of interviews indicated that there are three main reasons for the strong competition:

1. Limited number of students available in the market:

   *Because the local market in Jordan is **still limited** and I think the numbers of the **players in this market comprise large numbers -** T...19 PJUs are **competing with each other**, and the **number of students** in PJUs have been **dropping** for the **last two years,** and that is why competition is stronger than cooperation (PJ-UA-P1).*

   *...the **number** of students leaving high schools in Jordan has **reduced from (60) thousand students per year to about (30) thousand students in recent years.** However, we note that the number of students graduating from PJUs is approximately (**1000-1500) students** per year, while the number of students who have been accepted is between (**500-1000) students** annually. Therefore, the **competition among PJUs will increase steadily** (PJ-UD-P7).*

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*The ratio of remaining number of students is **meagre,** and for this reason the universities **compete** against each other intensively to get the **biggest number of students …***this case creates **imbalance** among student numbers per PJUs (PJ-UH-P15).

2. Universities are competing to increase profits and market share:

*We are competing with other universities to **obtain more profits**, a better **competitive position** and greater **market share**. There is competition among universities by producing **similar education services**. Also, the **resources are similar**, and **market commonality is high**. The actions of one university will affect the others in the educational sector. They are mainly in the same market segment* (PJ-UA-P2).

3. The opportunistic behaviour and weak monitoring of PJUs by the MHE:

*The **opportunistic behavior of** some universities has been to **get more students and increase the profits** with the **absence of monitoring and supervision** from the MHE and the accreditation institution* (PJ-UD-P7).

Thus, data analysis indicates that PJUs compete with each other without paying close attention to cooperation. Participants perceive that cooperation does not contribute to the university either economically or scientifically because there is no value adding benefit as they all operate at the same level of services.

The data was then examined for COS success using both overall thematic analyis and Leximancer. The following themes emerged and are now detailed.

4.6 Themes Influencing Coopetition Strategy Success

In order to explore themes that may influencing COS success in PJUs, the study used two approaches that is a thematic analysis (process 1) and Leximancer analysis (Process 2).

4.6.1 Overall Thematic Analysis for All Themes for Coopetition Strategy Success

The main reason for this analysis is to explore themes that PJUs considered for COS success. These themes are explained below.

4.6.1.1 Process 1: Thematic analysis

The first process scanned the data from the semi-structured interviews to capture the emerging themes. Each data set followed the interview format, and the themes that emerged reflect the factors possibly influencing COS and those that were considered crucial for ongoing use of COS as an organisational relationship.

In this process of analysis, 13 themes were identified as affecting COS, and these are presented in Table 4.3. The interviewees reported that these themes could be then categorised in three groups. The three categories are the Management Mindset (MM), which includes Management Commitment (MC), Strategic Leadership (SL), Flexibility to Change (FCH), Management Perception (MP) and Top Management Support (TMS). The second category, Management Relationship (MR), includes Trust Development (TD), Mutual Benefit (MB), Sharing Resources and Capabilities (SRC), Organisational Learning (OR) and Communication Management (CM). The third category Supporting Factors (SFs) include Institutionalisation (INS), Ministry of Higher Education (MHE) and Geographic Proximity (GP). In Table 4.3, the order of importance of each theme within each category is shown as a rank, with 1 being the most important.

Table 4-3: Themes affecting coopetition strategy success (n=18)

Categories	Themes	Number	Percent	Rank
1. Management mindset	• Management commitment	17	94	1
	• Strategic leadership	15	83	2
	• Flexibility to change	13	72	3
	• Management perception	12	66	4
	• Top management support	11	61	5
2. Management relationship	• Trust development	16	88	1
	• Mutual benefit	14	77	2
	• Sharing resources and capabilities	12	66	3
	• Organisational learning	11	61	4
	• Communication management	10	55	5
3. Supporting factors	• Institutionalisation	14	77	1
	• Ministry of Higher Education	13	72	2
	• Geographical proximity	9	50	3

4.6.1.2 Process 2: Leximancer Analysis

The interview data for the research was re-analysed using Leximancer to clarify and confirm the thematic analysis (Caspersz & Thomas 2015; Tseng et al. 2015; Sullivan et al. 2018; Lemon & Hayes 2020) Leximancer outcomes show the thematic groupings, which address subthemes, and interrelationships between themes and subthemes.

In this analysis, the results from the Leximancer clustered thirteen themes around the central theme, 'factors' which included commitment, trust, leadership, benefits, INS;

ministry, flexibility, resources, perception, learning, top, management, communication and geographic (see Figure 4.2). The central theme factors, and the themes clustered around the centre aggregating two or more subthemes, is represented by labelled circles. For example, the theme trust has aggregated the subthemes' relationships, Jordan, education, higher and administration (see Figure 4.2).
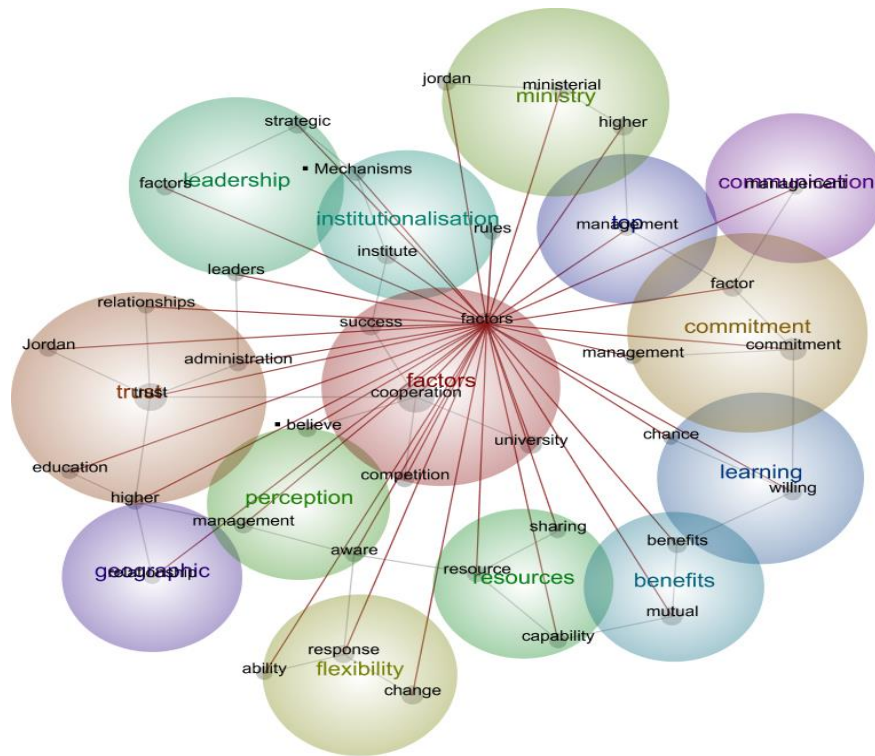
Figure 4.2: The relationships between the central theme with, surrounding subthemes in the map

After conducting a comparison between the results from Leximancer, and mapping the themes from the thematic analysis, it was found that both processes yielded nearly the same result and supported the importance of COS themes for successful COR for PJUs. The data is now presented a detailed description from the participants' interviews and the Leximancer analysis.

4.6.2   Individual Analysis for Each Theme

The main reason for this analysis is to provide details about an individual analysis for each theme in each category and explore the theme and subthemes through the two processes of analysis (thematic and Leximancer analysis), which is explained in the following section.

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4.6.2.1 Themes Related to Management Mindset Category (Category 1)

In the Management Mindset (MM) category, the data shows that the participants identified five main themes that influence COS success (see Table 4.3).

4.6.2.1.1 Management Commitment (Process 1: Thematic Analysis)

A major theme influence on COS success is Management Commitment (MC) (see Table 4.4). The following are examples of the comments from participants:

Table 4-4: Management Commitment (n=18)

Theme	Number	Percent	Rank
Management Commitment	17	94	1
Subthemes			
● Compulsory commitment	14	77	2
● Long term commitment	14	77	2
● Formal or informal agreement	13	72	3
● Mutual strength and weaknesses	11	61	4
● Important relationship	11	61	4
● Review relationships	3	16	5

*According to my experience as a Dean at my university, I think the **essential factors** that we need to consider when we are going to plan the cooperation relationships with other universities in Jordan is **MC or university commitment*** (PJ-UA-P1).

*The **MC** is **the most important factor** that a university needs when it planning to cooperate with other universities in Jordan. The most important characteristic of cooperation with competitors is the **commitment of the senior leadership of the universities** in encouraging staff to adpot cooperation relationships with competitor universities* (PJ-UE-P10).

*Top management **must have a commitment** with other cooperative universities to **maintain relationships with competitors*** (PJ-UA-P2).

While participants identified other subthemes that affect MC (see Table 4.4), the findings of this stage of the study confirmed that a compulsory commitment from universities was one of the most important subthemes related to MC because, as one of the participants stated:

*... **MC** is an essential factor, as without university MC, **there is not any opportunity** to cooperate with other universities. Therefore, the university **must be committed to cooperating with other competitors**. It is **vital to the** success of the relationship between universities* (PJ-UA-P1).

And MC should be for the long term with either formal or informal agreements:

> *MC should be a **long-term commitment with formal or informal agreement or at least a Memorandum of Understanding** between cooperative universities* (PJ-UA-P1).

Another participant particularly emphasised that the levels of commitment in competitive relationships are built around many things, for example:

> *Commitment levels or degrees in cooperative relationships are built around many things. For example, a **long-term commitment** is essential to the success of the relationship, it should take **a formal agreement or informal or at least a Memorandom of Understanding**. Also, **accepting each other** which means **accepting strengths and weakness points and complementarities** from each partner in order to sustain this relationship. Then, **reviewing relationships** in regular meetings can help make a successful collaboration. These factors help a university to be **highly committed** to this relationship* (PJ-UA-P2).

Therefore, one participant clearly summarized this theme:

> *MC could be seen by **long-term commitment, adopting strengths and weaknesses for each other, formal or informal agreement, and reviewing relationships*** (PJ-UB-P4).

4.6.2.1.2 Management Commitment (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the subthemes into two themes, Commitment and Management, (see Figure 4.2). Each theme, aggregating four or more subthemes, is represented by labelled circles as illustrated in Figure 4.2. For example, the dominant theme of *Commitment* has strong associations with all the other subthemes on the map (e.g. Cooperation, Competitors, Coopetition, Success, Factors and Universities), see Figure 4.2.

A comparison between the results from Leximancer and the thematic analysis found that both methods yielded nearly the same result and supported the notion of MC as a theme and its related subthemes might be important aspects in maintaining COS success between PJUs.
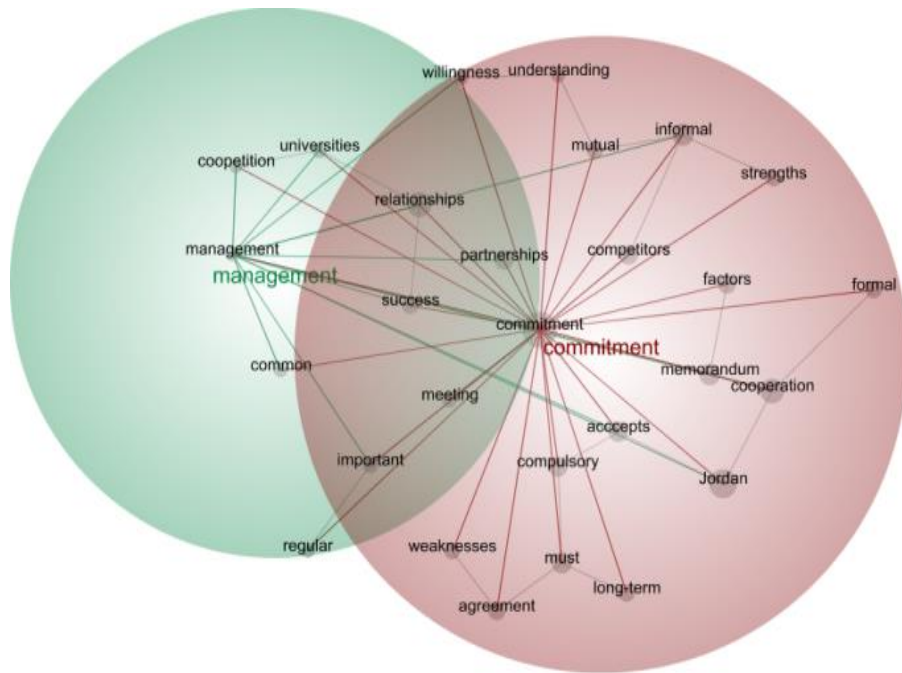
Figure 4.3: The relationships between themes (Commitment, Management) and subthemes in the map

4.6.2.1.3 Strategic Leadership (Process 1: Thematic Analysis)

Participants described Strategic Leadership (SL) as crucial theme for consideration regarding cooperation with competitors (see Table 4.5), as one participant said:

*The other factor university must consider when it planning to cooperate with other university is **leadership or SL** (PJ-UA-P1).*

Table 4-5: Strategic Leadership (n=18)

Theme	Number	Percent	Rank
Strategic Leadership	15	83	1
Subthemes			
▪ Vision and objectives	13	72	2
▪ Create strategy	12	66	3
▪ Problem solving	12	66	3
▪ Allocate resources	11	61	4
▪ Relations with stakeholders	11	61	4
▪ Create teamwork	3	16	5

The three main reasons for identifying these included:

1. SL creates clear and visible values and culture, compared with competitors and guides all cooperation activities of the organisation towards better performance. This view is captured in the following:

SL is a crucial factor to conduct cooperation relationship with your competitors *because it examines how top management create and sustain clear and visible values and culture, compared with their competitors.* Also, *SL is crucial to* **guide all cooperation activities of the organisation towards better performance** (PJ-UA-P2).

2. Professional SL may lead to enhanced reputation and higher quality:

SL is important and vital to success when working with other competitors *because* if you have real leaders, you can **get a good reputation, and provide services that are good quality** (PJ-UC-P5).

3. It motivates employees to work as a team and accept directions from top management to make this relationship successful:

Successful leadership is a crucial factor *to make the relationship among competitors a success* **because** *they can* **motivate the employees** *at all management levels to* **work as a team** *and try to* **accept the direction** *from top management to make this relationship a success* (PJ-UG-P13).

The participants identified other subthemes that affect SL (see Table 4.5) including vision and objectives, creating strategy, problem solving, allocating resources, relationships with stakeholders. For example:

SL *could be* **essential** *for a cooperative relationship if leaders support and create teamwork spirit; they should also* **have a clear vision,** *policy and* **strategy, clear objectives, making a clear action plan and** *have a strategic thinking* (PJ-UA-P2).

qualified leaders *... create a spirit of team work to achieve cooperative objectives...have* **a clear plan** *to apply in all cooperation phases accurately. At the same time, these leaders should have a* **clear strategy objective,** *thinking, and* **vision** *to formulate this strategy properly* (PJ-UD-P8).

Also proposed, was the ability to allocate and obtain resources, problem solving, and develop and maintain a good relationship with stakeholders:

Successful leadership has the **ability to get and allocate resources, build strong relationships with owners and stakeholsers, solve problems and develop** *cooperative relationship with competitors. These characteristics are essential to successful SL* (PJ-UG-P13).

4.6.2.1.4 Strategic Leadership (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the subthemes into two themes (Leadership and Relationships), see Figure 4.3. Each theme, aggregating four or more subthemes, is represented by labelled circles as illustrated in Figure 4.3. For example, the dominant theme of *Leadership* has strong associations with most of the subthemes on the map (e.g. Objectives, Strategic and Ideas), see figure 4.3.
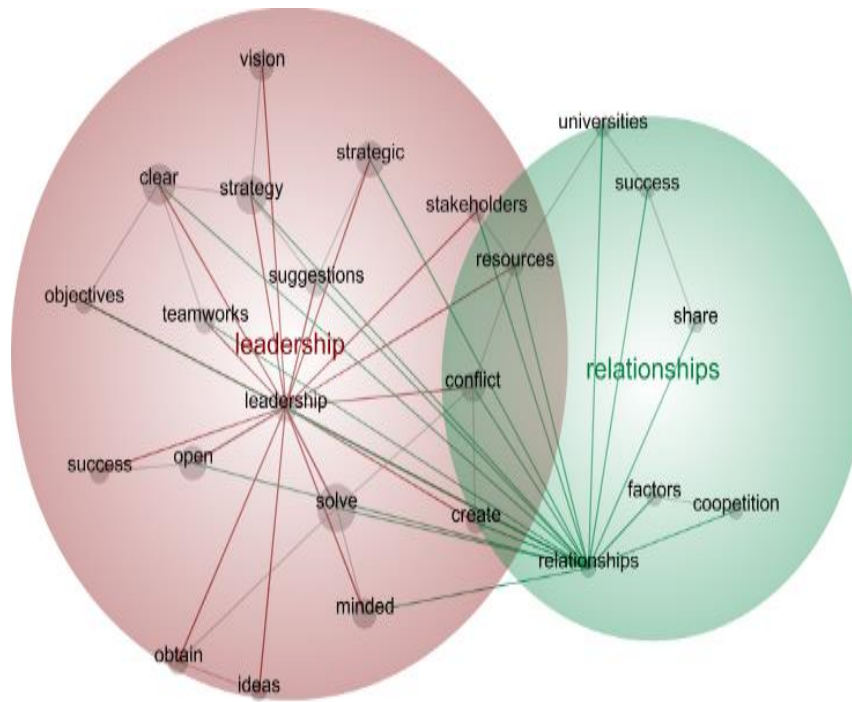
Figure 4.4: The relationships between themes (Leadership, Relationships) and subthemes in the map

The results from Leximancer and the thematic analysis revealed that both methods yielded nearly the same result and supported the view that SL as a theme, and its related subthemes, is considered to be important for COS success between PJUs.

4.6.2.1.5 Flexibility to Change (Process 1: Thematic Analysis)

This research confirmed that Flexibility to Change (FCH) is one of the significant themes that need to be considered in for the adoption COS (see Table 4.6). For example, participants highlighted the importance of this issue:

*Today's business world is very complex and the success of any project depends on organisation's **ability to respond to changes** in the business environment **quickly and flexibly.** Therefore, Universities have to recognise that FCH is an important factor for success in partnership projects* (PJ-UB-P4).

Table 4-6: Flexibility to Change (n=18)

Theme	Number	Percent	Rank
Flexibility to Change	13	72	1
Subthemes			
▪ Response to changes	12	66	2
▪ Managerial ability	11	61	3
▪ Cultural fit	10	55	4
▪ Reallocate resources	10	55	4
▪ Managing risk	9	50	5

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Other participants also mentioned that FCH is an important theme because of the high cost of failure if the university does not respond to environmental change in the educational sector:

> The **high cost of university failure** may lead universities to respond effectively to business change to ensure the university's survival, and growth in the educational sector. This is the main reason for the importance of this factor (PJ-UB-P4).

The participants identified other subthemes that affected FCH, including response to change, managerial ability, cultural fit, reallocation of resources and managing risk. In particular, the participants emphasised managerial ability and response to change, for example:

> Universities should deal with any exceptions and uncertainty and change in the education sector. **Response to change** could be seen in high FCH **in managerial ability** for strategy and structure as well as **the quickness of response to change in Jordan educational sector** (PJ-UC-P5).

And, as one of the participants declared:

> Change is required for responding to environmental threats by developing **managerial and financial cabability, managing risk effectively and the reallocation university resources** and developing the capability to support cooperative relationships. Universities have to respond to **environmental risks, like political or ecomonical risks,** to stay in the circle of competition in the Jordanian education sector. **High flexibility** at the university may lead to **modifications of the current strategy** from competition to cooperation, and from competition to a reduction in the level of competition and cooperation in getting resources (PJ-UD-P7).

Cultural fit is identified as an important subtheme in FCH. One of the participants mentioned this characteristic as follows:

> I think **understanding the values and culture of your partners is important to change in a university.** In this context, the extent of the **fit between different university cultures could help universities to work with each other** (PJ-UB-P3).

4.6.2.1.6 Flexibility to Change (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the subthemes into two themes (Change and Flexibility), see Figure 4.4. Each theme, aggregating four or more subthemes and represented by labelled circles, is illustrated in Figure 4.4. For example, the central theme of *Change* has strong associations with most other subthemes on the map (e.g. Response, Ability, Flexible, Resources, Culture, Strategic and Management), see Figure 4.4.
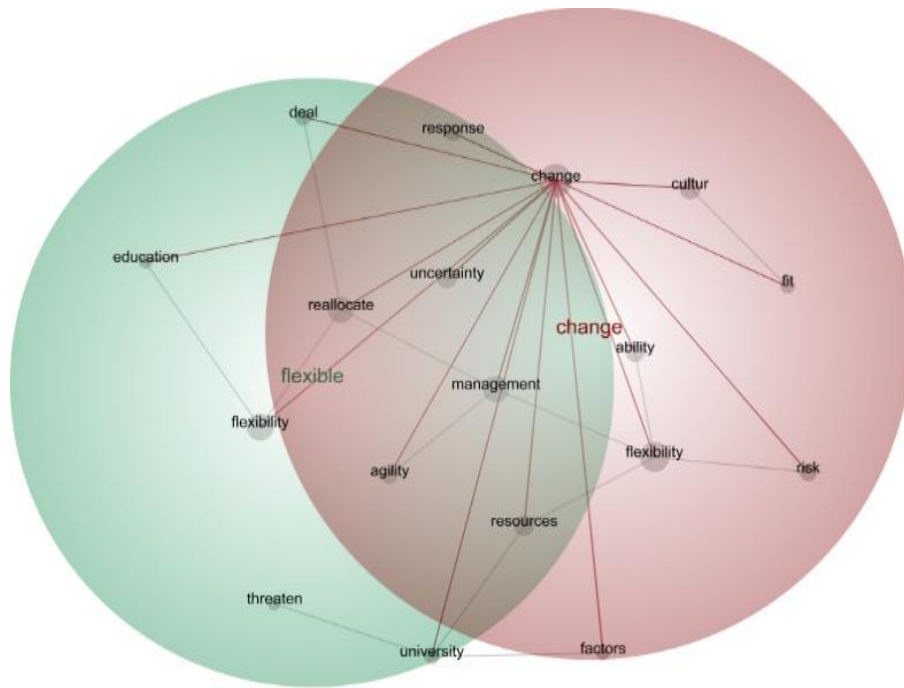
Figure 4.5: The relationships between themes (Change, Flexibility), and subthemes in the map

The results from Leximancer and the thematic analysis yielded nearly the same result and supported the notion that FCH as a theme and its related subthemes might be significant aspects in maintaining COS success between PJUs.

4.6.2.1.7 Management Perception (Process 1: Thematic Analysis)

After FCH, Management Perception (MP) was the most frequently mentioned theme (see Table 4.7).

Table 4-7: Management Perception (n=18)

Theme	Number	Percent	Rank
Management Perception	12	66	1
Subthemes			
▪ Belief in relationship	10	55	2
▪ Experience and knowledge	9	50	3
▪ Cooperative mind-set	9	50	3
▪ Good perception	8	44	4
▪ Aware of benefits	8	44	4
▪ Clear understanding	3	16	6

Analysis of data from the interviews indicates six main subthemes related to MP: Belief in the relationship; Experience and knowledge; Cooperative mindset; Good

perception; Awareness of benefits; and Clear understanding. For instance, one of the participants gave a clear view about MP and his belief in cooperative relationships:

> *MP for cooperation and competition relationship is important factor too.University have to believe in cooperation relationship with competitors to success this new stsrategy* (PJ-UB-P3).

Other participants mentioned that MP enables universities to have a good understanding of the new rules of relationships, as well as being aware of the benefits and requirements for the success of this relationship:

> *MP of a cooperative relationship with other universities can enable a university to get a good understanding of the new rules and regulation in the Jordanian educational sector. Also, it enables a university to be aware the benefits cooperation and the requirements of successful relationship* (PJ-UB-P4).

Clear understanding and good experience and knowledge are identified as important subthemes in managing successful relationships. One of the participants mentioned this characteristic as follows:

> *Top management should have the full picture or a clear understanding about the meaning of cooperation with competitors because, cooperation with your competitors is a complicated relationship. It is not easy when you cooperate with your competitors. Therefore, the perception of this relationship requires a good experience and knowledge to deal with other universities and to manage successful staregy for partnership* (PJ-UC-P6).

And this participant indicated that there was a need for a cooperative mindset, and as well as the ability to be aware of the anticipated benefits of cooperative relationships with your competitors:

> *The leaders of university have to have a cooperative mind to accept cooperation with competitors and the ability to be aware of the anticipated benefits from the partnership to take the right decision for partnership* (PJ-UC-P6).

4.6.2.1.8 Management Perception (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the subthemes into three themes (Perception, Factors, and Coopetition), see Figure 4.5. Each theme, aggregating four or more subthemes, is represented by labelled circles, as illustrated in Figure 4.5. The dominant theme of *Perception* has strong associations with all other subthemes on the map (e.g. Management, Cooperative, Awareness, benefits and Success), see Figure 4.5.
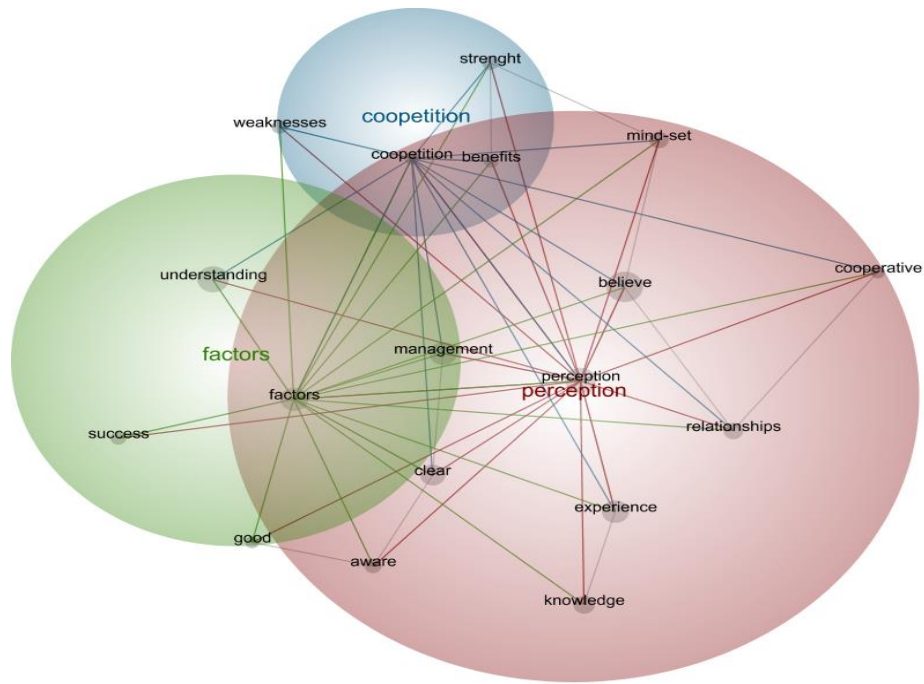
Figure 4.6: The relationships between themes Perception, Factors, Coopetition, and subthemes in the map

Thus, a comparison of the results from Leximancer and the thematic analysis found that both processes produced nearly the same result and supported the view that MP and its related subthemes might be important aspects for COS success between PJUs.

4.6.2.1.9 Top Management Support (Process: 1 Thematic Analysis)

Top Management Support (TMS) was considered a crucial theme by participants, as shown in Table 4.8. For instance, participants stated that TMS might enable universities to maintain cooperative relationships:

> **TMS** *is important to cooperation relationship; it describes what university intends to do in the future. It reflects management attitude toward partnership. TMS could be increased by willing to keep support for cooperation relationship with competitors* (PJ-UB-P4).

Table 4-8: Top Management Support (n=18)

Theme	Number	Percent	Rank
Top Management Support	11	61	1
Subthemes			
▪ Willing to take risk	9	50	2
▪ Provide resources	9	50	2
▪ Enthusiastic to support	8	44	3
▪ Clear objectives	8	44	3
▪ Make more effort	7	38	4
▪ Appropriate times and ways	2	11	8

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The participants were of the view that TMS, including a willingness to consider risk, provide resources, display enthusiasm in their efforts, and exhibit actual support at appropriate times and ways are important subthemes related to TMS. Also, TMS needs to be real and actual support, not just tokenistic:

> **TMS is** *an important factor to sustain this relationship, but it should be not just rhetorical, not just tokenistic,* ***it has to be real and actual behaviour.*** *You know, people can say "Yes, that is good." But it* ***is real*** *in the* ***sense of time and resources personnel****, so yes, it is important* (PJ-UB-P3).

Some participants also felt that the provision of resources contributed to strengthening relationships between competitors:

> *Top management* ***provides resources*** *through* ***money****, as they say, "****Money talks.****" That means just necessarily giving money, but I mean* ***investing funds through people and provide enough resources*** *to support partnership* (PJ-UB-P3).

Some participants believed that a willingness to adopt risk, and increase their efforts and investment are related to top management:

> *Sometimes top management* ***willing to adopt financial and managerial risk*** *and join to new projects with other universities to improve performance and increase their profits. They wish to* ***increase their efforts and investment*** *by joining new academic programs or provide new services to their students through cooperation with other universities* (PJ-UB-P3).

Another participant stressed that defining clear objectives and providing support at the right time, and in an appropriate manner, may help universities gain positive results in partnerships:

> *Top management may provide* ***appropriate objectives and structures*** *to achieve a successful relationship****. At the same time****,* ***the*** *university has to* ***support*** *common projects with other universities* ***at appropriate times and in ways to get positive results for partnership*** (PJ-UC-P5).

4.6.2.1.10 Top Management Support (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the subthemes into three themes (Management, Support and Competitors) and each theme, aggregating four or more subthemes and represented by labelled circles, is illustrated in Figure 4.6. The dominant theme of *Management* has strong associations with all other subthemes on the map for example, Top, Resources, Keep, Objectives, Ways, Time, Cooperation, Support, and Interest (see Figure 4.6).
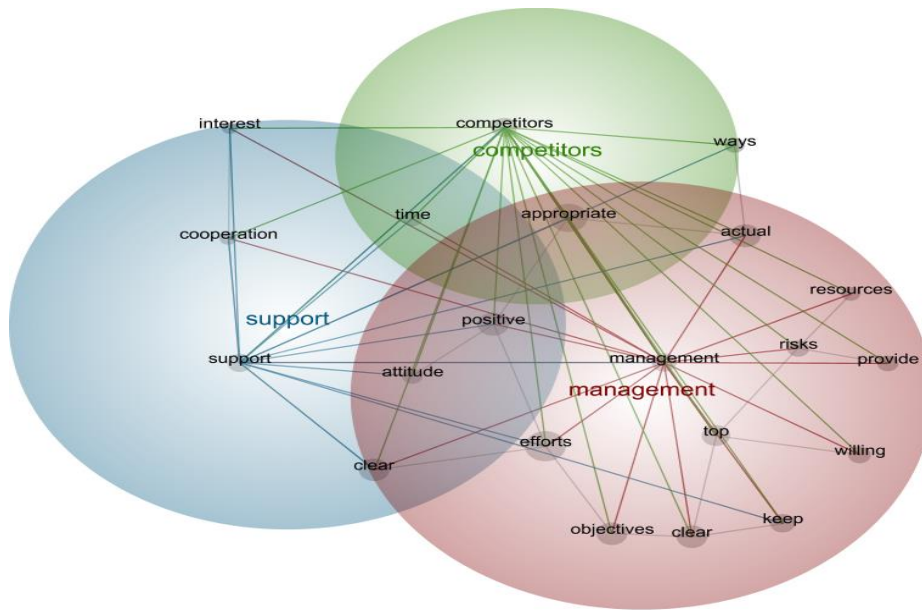
Figure 4.7: The relationships between themes Management, Support, Competitors and subthemes in the map

The results from Leximancer and the thematic analysis were found to be nearly the same. This result is seen in the importance of TMS and its related subthemes in sustaining COS success between PJUs.

4.6.2.2   Themes Related to Management Relationship Category

In the Management Relationship (MR) category, the data shows that participants identified five main themes influencing COS success, see Table 4.3. These include TD, MB, SRC, OL and CM. The most important of these was TD.

4.6.2.2.1   Trust Development (Process 1: Thematic Analysis)

Analysis of data from the interviews, indicates Trust Development (TD) as one of the most significant themes that require consideration for COR, as shown in Table 4.9. The essence of TD is captured in the comments from participants:

> *Regarding involvement in competition and cooperation strategy in our industry, it is so important to have **trust**, **to extend the trust** and I think this factor also is very critical* (PJ-UA-P1).

> *I think the most important factor in the cooperative relationship with other universities **is trust.** It is the **biggest problem** facing the success of cooperative relationships* (PJ-UA-P2).

Table 4-9: Trust Development (n=18)

Theme	Number	Percent	Rank
Trust Development	18	100	1
Subthemes			
▪ Interpersonal relationship	13	72	2
▪ Common goals	13	72	2
▪ Transparency and clarity	11	61	3
▪ Interdependence and harmony	11	61	3
▪ Honesty and willingness	9	50	4
▪ Intentions and confidence	3	16	5
▪ Responsibility and respect	2	11	6

Participants provided two main reasons for the importance of TD:

1. Lack of trust will lead to failed cooperation relationships and a decrease in confidence:

> *I think **trust is an essential factor because,** without trust, you **cannot work with anyone. You cannot cooperate with other Universities**, I am sure **lack of trust will lead to fail cooperation relationship and decrease confidence.** I think trust should be one of our values in University if our university intends to cooperate with our competitors (PJ-UC-P5).*

2. Trust enables partners to assist each other when any university experiences financial issues:

> ***Trust** is a significant factor for collaboration and competition relationship. This is **because** trust **enables** partners **to assist each others when any university has financial issues** (PJ-UC-P6)*

Participants identified other elements that affect TD, including developing interpersonal relationships, common objectives, transparency and clarity, interdependence and harmony, honesty and willingness, good intention and mutual confidence, common responsibilities and mutual respect (see Table 4.14). For example:

> ***Confidence** is a part of TD, which is associating with **honesty, mutual respect and responsibility**. Trust is crucial to success long-term relationships. It could be increased by developing a **common goal and developing interpersonal relations among leaders and staff** (PJ-UA-P2).*

Willingness, mutual respect, transparency and clarity are identified as important elements related to TD. Reflective of other comments by participants, one participant explained:

> ***Willingness, and mutual respect** with partners, are important aspects of **trust** among universities. It is essential for successful developing cooperative relationships. **Trust** also could be developed by **transparency and clarity** (PJ-UB-P4).*

Another stated:

> *Trust* *is a* *major factor* *for sustaining cooperative relationship* *because it* *develops long term relationships with competitors.* *Therefore, partners who* *intend to increase the degree of trust must* *develop personal relationships* *between leaders and owners,increase interdependency, make available good* *intentions and the willingness to work with other universities* (PJ-UG-P13).

Still another participant stressed that:

> *Good relationships* *refer to the progress in the* *relationship* *between competitors.* *It is important to develop* *durable and stable* *relationships to achieve partner's* *goals* (PJ-UB-P4).

4.6.2.2.2 Trust Development (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into three themes (Trust, Cooperation and Competition), see Figure 4.7. Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.7. The central theme of Trust has strong associations with all other concepts on the map (for example, Development, Interdependence, Cooperation, Success, Partnerships, Private, Universities and Honesty), see Figure 4.7.
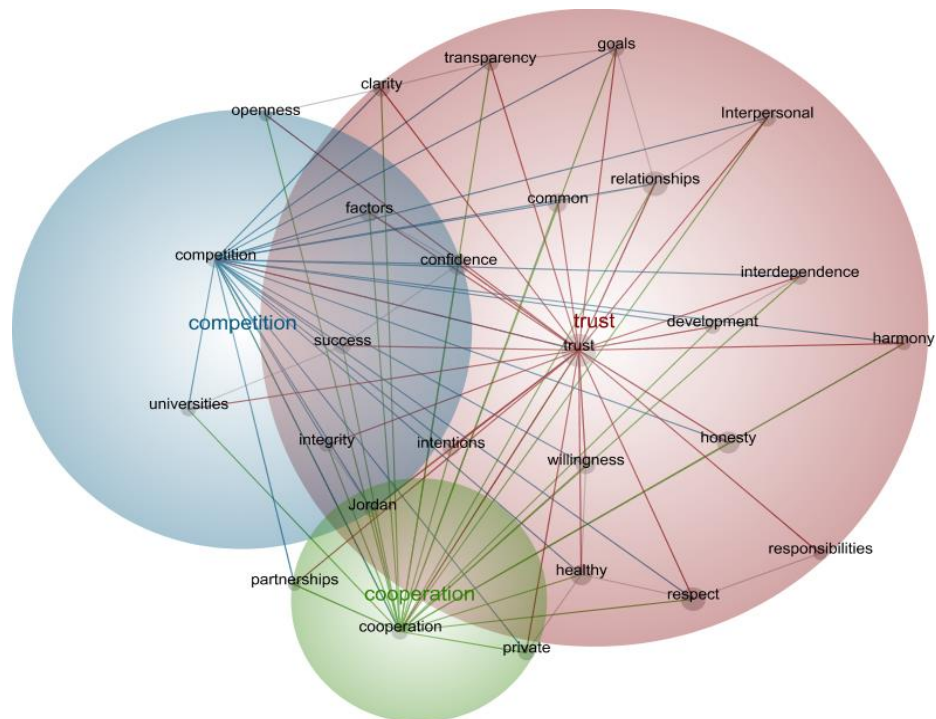
Figure 4.8: The relationships between themes (Trust, Cooperation and Competition)

After conducting a comparison of the results from Leximancer and the thematic analysis, it was found that both methods yielded nearly the same result and supported

the premise that TD and its related concepts are considered to be important themes for COS success between PJUs.

4.6.2.2.3 Mutual Benefit (Process 1: Thematic Analysis)

Mutual Benefit (MB) was identified as one of the most significant themes requiring consideration for relationships with competitors (see Table 4.10). The importance given to these characteristics is evidenced by the following statements made by two participants:

> ***MB** is an important factor among cooperative universities. I think all our partners will benefit if these factors will take into consideration. I can say this factor is CSFs for achieving a COS* (PJ-UA-P1).

> ***The MB or anticipated benefit** is a core requirement for the cooperation between two parties. It is a significant factor which lets cooperation occur between competitors* (PJ-UA-P2).

Table 4-10: Mutual Benefit (n=18)

Theme	Number	Percent	Rank
Mutual Benefit	14	77	1
Subthemes			
▪ Equal contribution	13	72	2
▪ Willing to share	12	66	3
▪ Benefits to all partners (Win - win strategy)	11	61	4
▪ Avoiding exploitive behaviour	11	61	4
▪ Mutual dependence	9	50	5

Participants emphasised the importance of mutual dependency, benefits to all partners (win-win approach) and equal contribution by partners:

> ***Mutual dependency** between cooperative universities is important to exchange benefits. Cooperative relationships must achieve **benefits for both parties.** Benefits **to all partners** should be satisfied to sustain the partnership. **Actual and equal contribution** between partners could increase the importance of MBs* (PJ-UA-P2).

The same participant also mentioned that a willingness to share benefits and the avoidance of opportunistic behaviour are important elements related to MB:

> *MB could be increased by **willing to share and exchange the benefits and avoid opportunistic behavior** between **partners** (PJ-UA-P2).*

Another participant echoed this view:

> *MB consideration should be given to the **equal contribution of all partners to the expected benefits** . Also, focus on **sharing benefits** away from the **opportunistic behavior of some parties.** MB is very important to all partners to develop cooperation in all areas* (PJ-UE-P9).

It appears that MB is important in maintaining cooperative relationships because partners expect that the increased benefits will outweigh any drawbacks. For instance, one of the participants voiced his concern as follows:

> *... To make this relationship a success, each university should offer **equal efforts and resources**. The **partners should be aware of the benefit** from this relationship. I am sure if **the cost of this relationship is more than the benefits, it will not continue***" (PJ-UC-P6).

4.6.2.2.4 Mutual Benefit (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into two themes (Benefits, Coopetition), see figure 4.8. Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.8. The dominant theme of *Benefits* has strong associations with all other concepts on the map for example, (Mutual dependence, Relationships anticipated, Partners and Coopetition), see Figure 4.8.
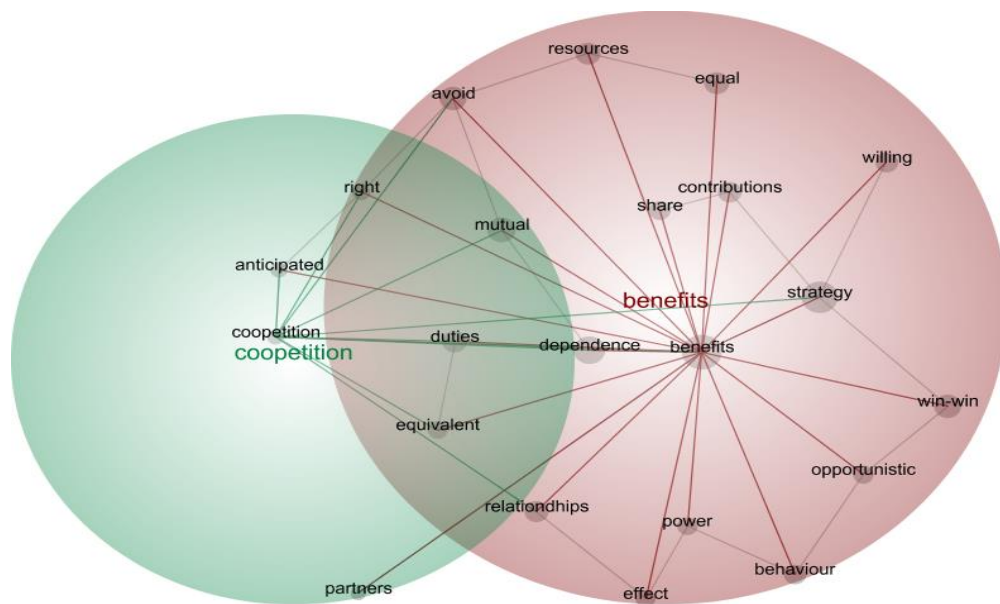
Figure 4.9: The relationships between themes Benefits, Coopetition and subthemes in the map

Thus, the results from Leximancer and the thematic analysis offered nearly the same result and supported the view that MB and its related concepts are regarded as important themes for COS success between PJUs.

4.6.2.2.5 Sharing Resources and Capabilities (Process 1: Thematic Analysis)

Sharing Resources and Capabilities (SRC) was described as one of the most significant themes in cooperative relationships in the Jordanian educational sector (Table 4.11).

Table 4-11: Sharing Resources and Capabilities (n=18)

Theme	Number	Percent	Rank
Sharing Resources and Capabilities	12	66	1
Subthemes			
▪ Complementary resources and capabilities	11	61	2
▪ Compatibility resources and capabilities	11	61	2
▪ Increase competitiveness	9	50	3
▪ Sharing experience, technology and skills	8	44	4
▪ Sharing knowledge and academic information	7	38	5
▪ Get benefits in cheap way	3	16	6

One of the participants said:

> *University resources and capabilities are essential for cooperative relationships with other universities. It has to be the main reason for cooperative relationships* (PJ-UA-P2).

Another participant confirmed that:

> *University resources and capabilities are also crucial to this relationship because, as I said, that is a clear indicator of how valued the partnership is* (PJ-UB-P3).

Participants also identified elements that affect SRC. These elements include complementarity and compatibility of resources, increased competitiveness, sharing, experience and technology, sharing knowledge and academic information, and gaining greater benefits in the cheapest possible way (see Table 4.11).

The participants considered that there is a strong link between complementarity and compatibility of resources and capabilities involved in sharing and working with each other which may lead to an increase in capabilities and competitiveness. This may well be the case, as suggested by two of the participants:

> *Cooperative universities are seeking **symmetry or consistency of resources** so that they can refresh their resources or reformulate their capabilities. **Supplementary or additional resources** may lead to an increase in the **university's capabilities, competitiveness, and** cooperative ability. Universities have different resources and capabilities so they need to **work together to complement** each other's"* (PJ-UE-P10).

> *The universities **are looking for a compatibility and complementary resources**. These two elements can support universities to **work together** without problems and help cooperative relationships to succeed, because sharing resources between partners can create mutual interdependence and **increase university competitiveness** (PJ-UA-P2).*

The same participant mentioned that diversity and similarity may help universities in obtaining new resources and developing their existing resources in an effective and cost-effective way:

> *Diversity and similarity in university resources are very useful to partners because it may help university to get new resources and develop their existing resources. At the same time, it may help universities to share resources by the most effective and cheapest method* (PJ-UA-P2).

Another participant further emphasised that universities should work together to obtain benefits in the most cost-effective way:

> *All resources and capabilities must be harnessed to serve cooperative objectives and complement the lack of existing resources or add new resources to university. Therefore, universities are stimulated to work together to obtain the greatest benefits by sharing resources in the cheapest ways* (PJ-UE-P9).

This researcher also observed that during the interviews, some participants specifically mentioned that sharing knowledge, information, technology experience and skills are very important elements for successful relationships. Four main reasons provided:

1. It will help universities to gain new knowledge and resources:

> *Knowledge sharing is essential to building a successful cooperation, and unfortunately, there is a big dilemma regarding this factor. There is no cooperation without knowledge sharing. We need to share information, technology experience and skills to get new knowledge and resources. I think knowledge sharing is still too important. Partners have seen the benefits of sharing knowledge* (PJ-UA-P1).

2. It adds value to each university and brings out the synergy effect, which is beneficial to all universities in a COS situation:

> *Knowledge sharing is an important objective for cooperative universities because it adds value to each university. The main objective for cooperative universities is sharing knowledge and academic information. Knowledge sharing can bring out a synergistic effect, which is beneficial to both universities under the CO situation* (PJ-UA-P2).

3. It can increase competitiveness and sustain competitive advantage:

> *SRC includes sharing information, experience, technology, skills, and knowledge. It can increase competitiveness because it may enrich the existing resources or to get new resources from cooperative relationship. Also, sharing can sustain a competitive advantage* (PJ-UB-P4).

4. It will encourage academics to work together in many areas:

> *Sharing, knowledge, information, and experience are significant factors because they will encourage the academics to work together in many areas such*

as research, teaching, participating in scientific conferences and developing themselves and their universities (PJ-UC-P6).

4.6.2.2.6 Sharing Resources and Capabilities (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into three themes (Resources, Sharing and Capabilities), see Figure 4.9. Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.9. The dominant theme of *Resources* has strong associations with all other concepts on the map (for example, Competitiveness, Academic, Complementary, Cheap, Factor, Universities, Experience and Information (see Figure 4.9).
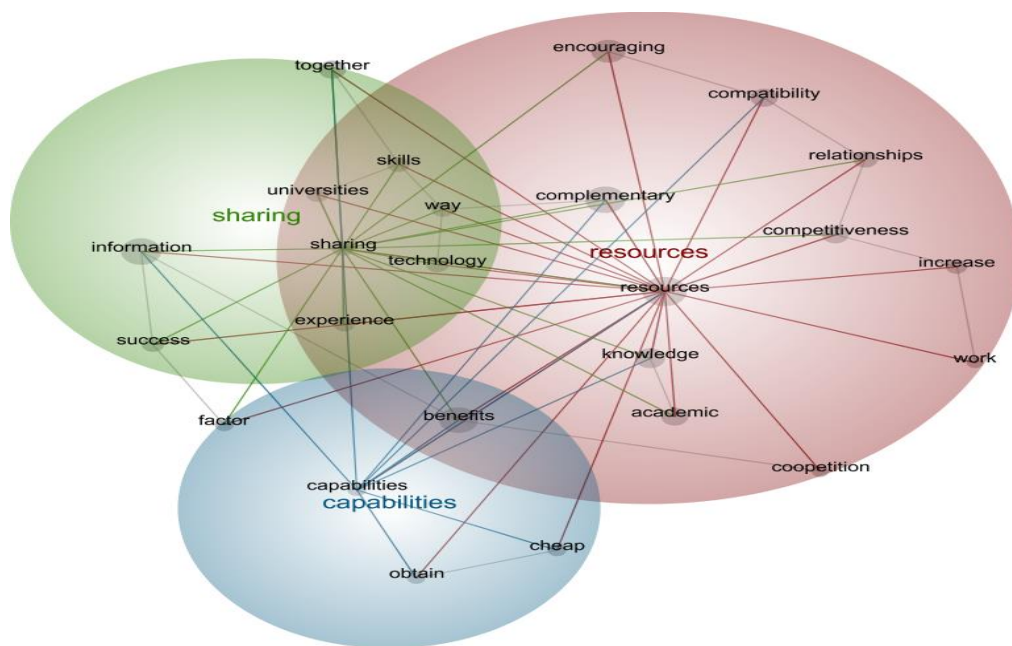
Figure 4.10: The relationships between themes Resources, Sharing, Capabilities and subthemes in the map

The results from Leximancer and the thematic analysis revealed nearly the same result and supported the viewpoint that SRC and its related concepts might be important themes for COS success between PJUs.

4.6.2.2.7 Organisational Learning (Process 1: Thematic Analysis)

The analysis of data indicated that Organisational Learning (OL) was one of the most important themes in effective relationships (Table 4.12). Participants' comments reveal that willingness and ability to learn, learning as investment, encourage learning, chance to learn, and culture of learning may have a strong influence on university learning (Table 4.12).

Table 4-12: Organisational Learning (n=18)

Theme	Number	Percent	Rank
Organisational Learning	11	61	1
Subthemes			
▪ Willing to learn	10	55	2
▪ Ability to learn	9	50	3
▪ Learning as investment	9	50	3
▪ Encouraging to learn	8	44	4
▪ Chance of learning	7	38	5
▪ Culture of learning	4	22	6

One of the participants commented that OL is an important theme in any partnership. Working with other universities in a learning environment and establishing a culture of learning will improve a university's reputation and ranking:

> *The **third factor and the most important factor from my view is OL. Universities need** to learn. They should be **working in a learning environment.** Universities should be **established in a culture of learning**. Therefore, universities need to **work with others** to learn and improve its reputation and ranking. This is a big issue for our universities in Jordan* (PJ-UA-P1).

The same participant also mentioned that universities have the ability and willingness to learn and build a culture of learning by sharing experience, ideas and acquiring knowledge and learning from partners:

> *Cooperating with other universities is essential to build **a culture of learning**. There is no learning without sharing. We have to be **able and willing to learn** because we know these are the key points to a US and the right way to learn. We need to share knowledge and **learning from partners** (PJ-UA-P1).*

Elements such as believing that learning is a university investment, encouraging people in universities to learn, and believing that working with your competitors is a good opportunity for learning are also mentioned by participants as being important components of OL. For example, one participant commented as follows:

> *OL is an individual and collective **willingness to learn** from your partners. You have to work in positive **learning environment**, **believe in learning as a way for the university to invest in its people**,by **encouraging people in the university to learn and work with competitors becaue it's a good chance to get learning** (PJ-UG-P13).*

Another participant echoed with similar remarks that top management in any university believes in a positive learning environment by continuing conversations and the spirit of teamwork for adopting friendly, culturally-based learning to benefit all partners:

> *Top management in university **have a cooperative culture and believe in creating a positive learning environment**. This is done by having conversations and in a*

*spirit of team-work for **adopting friendly cultural learning** and this has a positive impact on all partners. Working together will increase the understanding to cooperative across universities through **continued learning,** exchanging ideas and information in the new area of knowledge* (PJ-UD-P8).

4.6.2.2.8 Organisational Learning (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into three themes (Learning, Universities and Factors), see Figure 4.10. Each theme, aggregating four or more concepts, is represented by labelled circles as illustrated in Figure 4.10. The dominant theme of *Learning* has strong associations with most other concepts on the map (e.g., Ability, Learning, Investment, Willing, Universities, Competition, Success, Cooperation and Factors), see Figure 4.10.
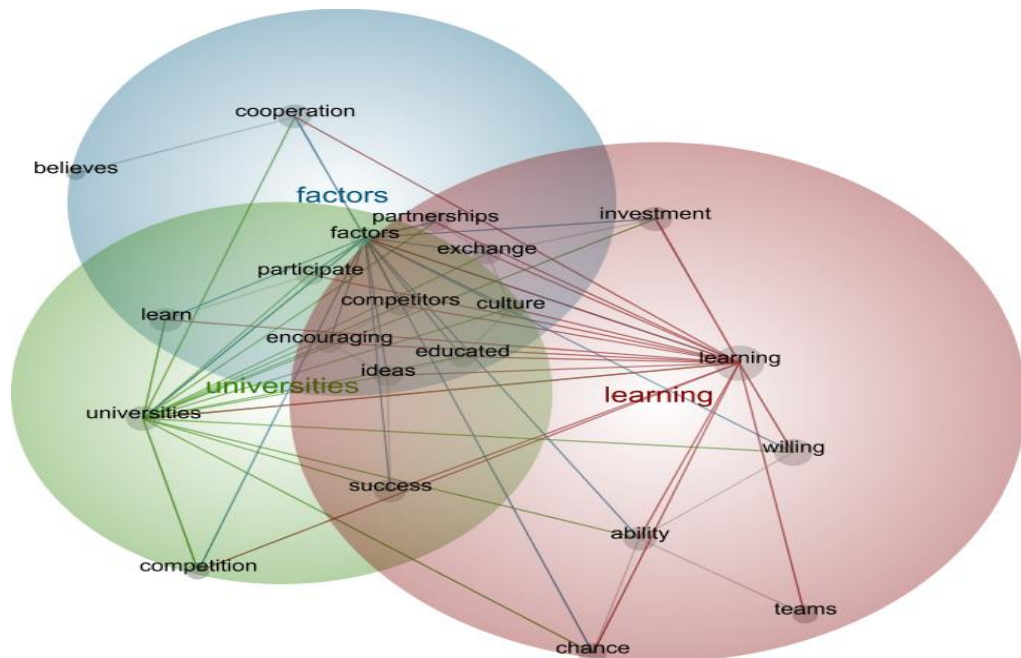
Figure 4.11: The relationships between themes Learning, Universities and Factors and subthemes in the map

After conducting a comparison between the results from Leximancer and the thematic analysis, it was found that both methods yielded nearly the same result and supported the concept that OL and its related concepts are seen as important themes for COS success between PJUs.

4.6.2.2.9 Communication Management (Process 1: Thematic Analysis)

Another theme put forward during the interviews was Communication Management (CM) (see Table 4.13).

Table 4-13: Communication Management (n=18)

Theme	Number	Percent	Rank
Communication Management	10	55	1
Subthemes			
▪ Effective information system	9	50	2
▪ Monitoring system	8	44	3
▪ Share information	8	44	3
▪ Informed of new development	7	38	4
▪ Information technology	6	33	5

For instance, one participant said:

> ***CM is also essential to this relationship*** *and so that is within university and among organizations. We are in an incredible age where we got Zoom, Skype, social media, and all sorts of ways of connecting electronically. I think that, put it this way* (PJ-UB-P3).

The participants, in their comments, linked CM with other elements including effective information systems, monitoring systems, sharing internal and external information, being kept informed of new developments, and implementation of information technology (see Table 4.13).

The participants particularly emphasised that the speed of conducting, implementing, and activating communications, using effective information systems and appropirate monitaring systems, are important elements for improving CM. For example, one of the participants expressed his thoughts as follows:

> *With the remarkable development of CM which is made the world as a small village at the **speed of conducting, implementing and activating communications**. ...university could exchange and coordinate information with partners by **using effective informational system.** University also must build **monitaring system to** diagnosis and solve problems with partners at the right time and methode* (PJ-UE-P9).

Other elements related to CM were linked to sharing internal and external information with competitors, applying new information technology, and keeping partners informed of new information. For instance, one participant stated:

> ***University is sharing internal and external information with competitors*** *to biuld healthy and strong relationship in long term. At te same time,to maintain speed and effeciency for exchanging information with partners university is **applying new information technology and keeping informed patners of new information and changes** may happened in university* (PJ-UE-P10).

The same participant indicated that the university intends to build an essential base for a monotoring system to solve problems between partners in an appropriate manner:

*University intends to **build an essential base for monotoring system to identify potential problems,** and put a methods of **solving problems in the right legal and scientific means** to support the common objectives for all parties* (PJ-UE-P9).

Other participants mentioned that in order to resolve problems between partners, universities need to communicate with partners effectively by exchanging information quickly and efficiently and transferring benefits to all partners:

*University needs to **communicate with partners effectively by exchanging information** and transfer the benefit for all partners. Meanwhile it should be known the **speed of information** transfer leads to **settle disputes quickly** to serve cooperation and competition strategy* (PJ-UH-P16).

4.6.2.2.10 Communication Management (Process 2: Leximancer Aanalysis)

In this analysis, Leximancer clustered the concepts into three themes (Communication, Management and Coopetition). Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.11. The dominant theme of *Communication* has strong associations with most other concepts on the map for example, System, Information, Monitoring, Support, Technology, Management, Efficiently and Solve (see Figure 4.11).
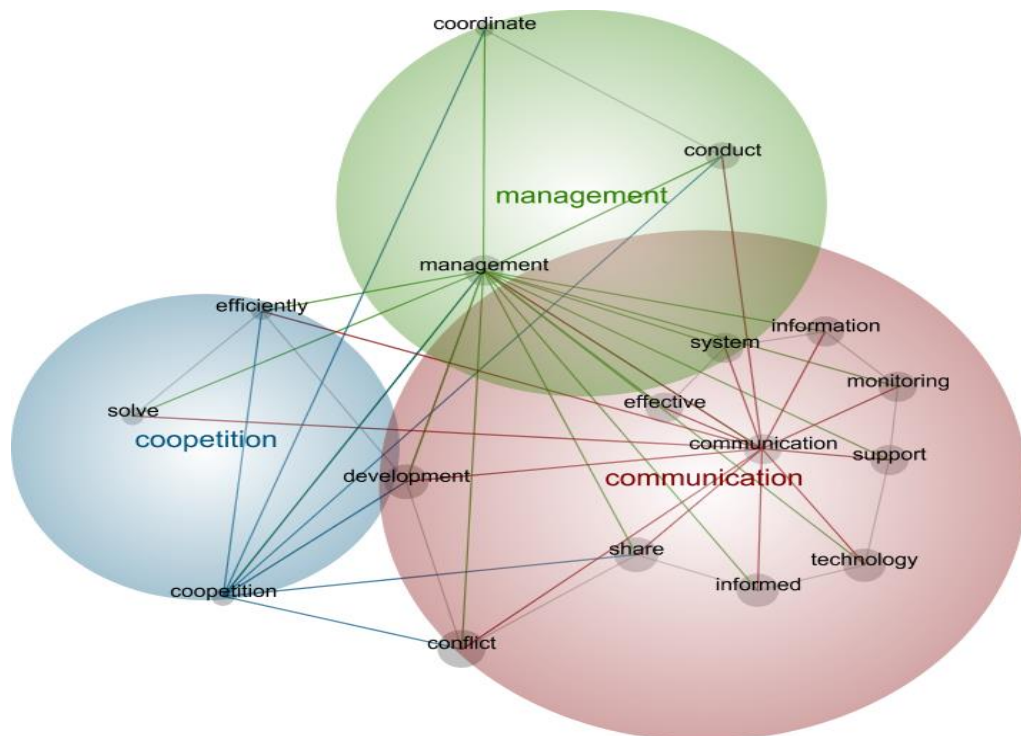
Figure 4.12: The relationships between themes Communication, Management and Coopetition and subthemes in the map

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The results from Leximancer and the thematic analysis produced nearly the same result and supported the view that CM and its related concepts are considered to be important themes for COS success between PJUs.

4.6.2.3 Themes Related to Supporting Factors Category

In Supporting Factors (SFs) category, the data shows that, participants identified three main themes that influence the COS success (as shown in Table 4.3). These included INS, MHE, and GP.

4.6.2.3.1 Institutionalisation (Process 1: Thematic Analysis)

In the SFs category, Institutionalisation (INS) was identified as one of the most significant themes that required consideration for successful COR (Table 4.14).

Table 4-14: Institutionalisation (n=18)

Theme	number	Percent	Rank
Institutionalisation	14	77	1
Subthemes			
▪ Mechanisms to control	13	72	2
▪ Published to society	13	72	3
▪ Routine action	12	66	4
▪ Institutional norms	12	66	5
▪ Authority to monitor	11	61	6

The importance given to this theme is evident in the following statements made, for example, by two participants:

> *In university, **Institutionalisation** is a basic condition to meet strategic learning objectives, to achieve our vision, and mission. What it has been happening, most of the rules in our life are the individualised rules; it is so of voice, it so impacts in our academic life. What we need is **the Institutionalisation** of the academic and the scientific life, and formal rules between cooperative universities* (PJ-UA-P1).

> ***Institutionalisation** is the foundation of a successful cooperative relationship between competitors. It is necessary to rely on a stable institutional system through and clear criteria and indicators for each party to be responsible for the success or failure of this strategy* (PJ-UD-P7).

Another participant made similar remarks that following INS criteria will increase the level of trust in local universities:

> ***Institutionalisation** is necessary to cooperative relationship with your competitors because universities need to **monitor and manage** partnership successfully by following **norms, rules and governance mechanism** .Following these **criteria** will increase the level of trust in our university locally* (PJ-UB-P3).

The participants identified other elements that affected INS. These elements include mechanisms to control, publishing to society, routine action, institutional norms, and authority to monitor.

The findings of this stage of the study confirmed that institutional norms and values, and publicity in the form of final reports to stakeholders are important elements related to INS in COS adoption. One of the participants commented:

> ***Institutionalisation*** *include many* ***institutional norms*** *and values like, transparency, accountability, and responsibility. These* ***norms*** *and values are enabling partners to audit cooperation activities regulary* ***by internal and external instiutions and publicity the final reports to stakeholders and society*** (PJ-UA-P1).

Formal status, obvious responsibilities, clear mechanisms and control are also cited by participants as important elements of INS. One of the participants commented as follows:

> ***Institutionalisation*** *mean the relationship with partners* ***is given a formal status and the partners have defined responsibilities clearly. So,*** *the University has a* ***clear mechanism of management and control*** *cooperative relationship to deal with the diversity of partners and structure* (PJ-UA-P2).

The same participants also emphasised the importance of routine procedures and processes through INS to manage successful partnerships and monitor cooperative activities properly.

> *The university normally has adopted different procedures and processes to* ***ensure that routinised actions occur in cooperation activities to manage successful partnerships and monitor cooperative activities properly*** (PJ-UA-P2).

Another participant further emphasised that university boards of directors and top-level councils have the full authority and responsibility to monitor and control cooperative activities:

> ***The board of directors and top-level councils for universities*** *have the full authority and responsibility to monitor and control cooperative activities for universities in Jordan* (PJ-UD-P7).

4.6.2.3.2 Institutionalisation (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into three themes (Institutionalisation, Relationship and Success), see Figure 4.12. Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.12. The dominant theme of *INS* has strong associations with most other

concepts on the map (e.g, Audit, Rules, Institutional, Cooperation, Relationships, Structures, Success, Factors, Partners, Authority and Activities), see Figure 4.12.
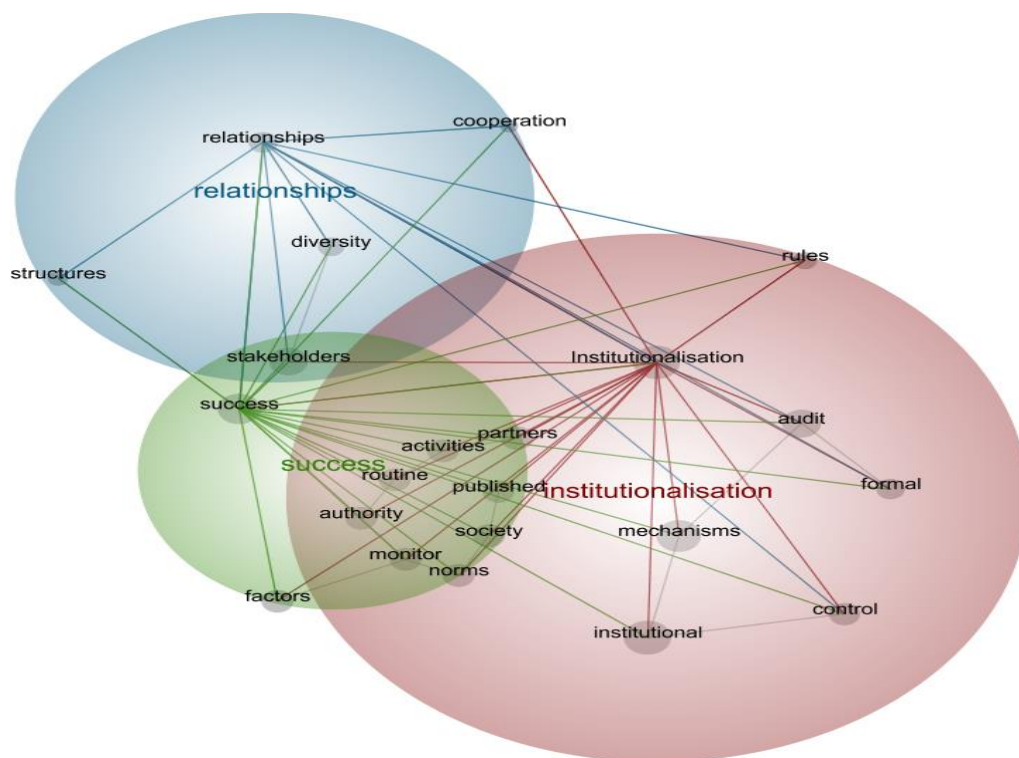
Figure 4.13: The relationships between themes Institutionalisation, Relationships and Success and subthemes on the map

After conducting a comparison of the results from Leximancer and the thematic analysis, it was found that both methods yielded nearly the same result and supported the view that INS and its related concepts are considered to be important theme for COS success between PJUs.

4.6.2.3.3 Ministry of Higher Education (Process1: Thematic Analysis)

Similar to INS, the Ministry of Higher Education (MHE) was considered to be an important theme influencing cooperative relationships (see Table 4.15).

Table 4-15: Ministry of Higher Education (n=18)

Theme	Number	Percent	Rank
Ministry of Higher Education	13	72	1
Subthemes			
▪ Apply instructions	12	66	2
▪ Authority to control	12	66	2
▪ Standards to evaluate	11	61	3
▪ Outlining regulations	11	61	4
▪ Approving budgeting plan	11	61	4
▪ Regular meetings	3	16	5

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For instance, one participant voiced this view:

> ***The Ministry of Higher Education*** *has a strong impact on all Jordan universities.It is formally responsible for HES. It is in charge of HE quality and develops a strategy for scientific research. The* ***forms of relationship*** *have* ***determined by the Ministry of Higher Education*** (PJ-UI-P18).

The participants identified other elements related to the MHE. These elements included applying instructions, authority to monitor, standards to evaluate, outlining regulations, approving budgeting plan, and regular meetings.

Applying instructions and rules are identified as an important element related to the MHE. One participant mentioned this element:

> *The universites* ***must apply all the instructions , rules and laws in educational sector.*** *University cooperates with partners in* ***the execution of ministerial decisions and guidance*** *through the instruction and law of the Ministry and the accreditation body* (PJ-UA-P1).

Another participant echoed:

> *Cooperation with other universities* ***must follow the directions and decisions,*** *which comes from the Ministry of Higher Education and the accreditation body. Cooperation exists in the field* ***of application of instructions, regulation, directives, and laws*** *issued by the Ministry of Higher Education and the accreditation body* (PJ-UB-P4).

The MHE has the authority to fully control universities, particularly regarding budgets, admission policies, legislation and quality assurance. It also has the authority to enforce strict standards. For example, one of the participants stated:

> *Ministry of Higher Education has* ***full authority to control*** *PJUs in many aspects, such as budget oversight, admission policies, legislation, and quality assurance. PJUs are following* ***strict instructions and standards*** *which are enforced by the Ministry of Higher Education* (PJ-UA-P1).

The MHE also uses a budgeting formula to increase its control and monitor universities:

> *The Ministry of Higher Education* ***uses a budgeting formula to*** *increase its* ***control over the PJUs*** *significantly* (PJ-UI-P17).

The participants' remarks suggest that the MHE has established standards to evaluate universities' performance annually. For instance, one participant declared:

> *The Ministry of Higher Education and its accreditation body* ***have criteria and standards to evaluate universities' activities.*** *The Ministry of Higher Education conducts regular and annual assessment of universities' performance and* ***monitored their policies and strategies*** *that govern cooperative relationships* (PJ-UD-P7).

This researcher also observed during the interviews that some participants directly mentioned that the role of the MHE in Jordan encompasses outlining new regulations and rules to universities. Regular meetings are occurring with top councils in universities to explain these rules. For instance, one participant said:

> *The role of Jordan's Ministry of Higher Education is **explained by outlining the regulations and laws** related to Jordanian Higher Education. So, the Ministry of Higher Education has **regular meetings** with top councils in universities at top management **level**. The purpose of these meetings was to cooperate in implementing **the new rules at the universities and explain the new regulations and instructions** (PJ-UE-P10).*

Some of the participants confirmed that approval of budgeting plans is under the auspices of the MHE. For example, two participants indicated:

> *The Ministry of Higher Education is **in charge of approving development and budgeting plans** for the universities in terms of their programs, educational performance and admission policies (PJ-UF-P11).*

> ***The budget procedures** have been established by the Ministry of Higher Education and all Private Jordanian Universities **are supposed to follow them** (PJ-UG-P13).*

4.6.2.3.4 Ministry of Higher Education (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into two themes (Ministry and Universities), see Figure 4.13. Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.13. The dominant theme of *Ministry* has strong associations with all other concepts on the map (e.g., Higher, Education, Authority, Instructions, Control, Evaluate, Annual, Assessment, Admission, System and Universities), see Figure 4.13.
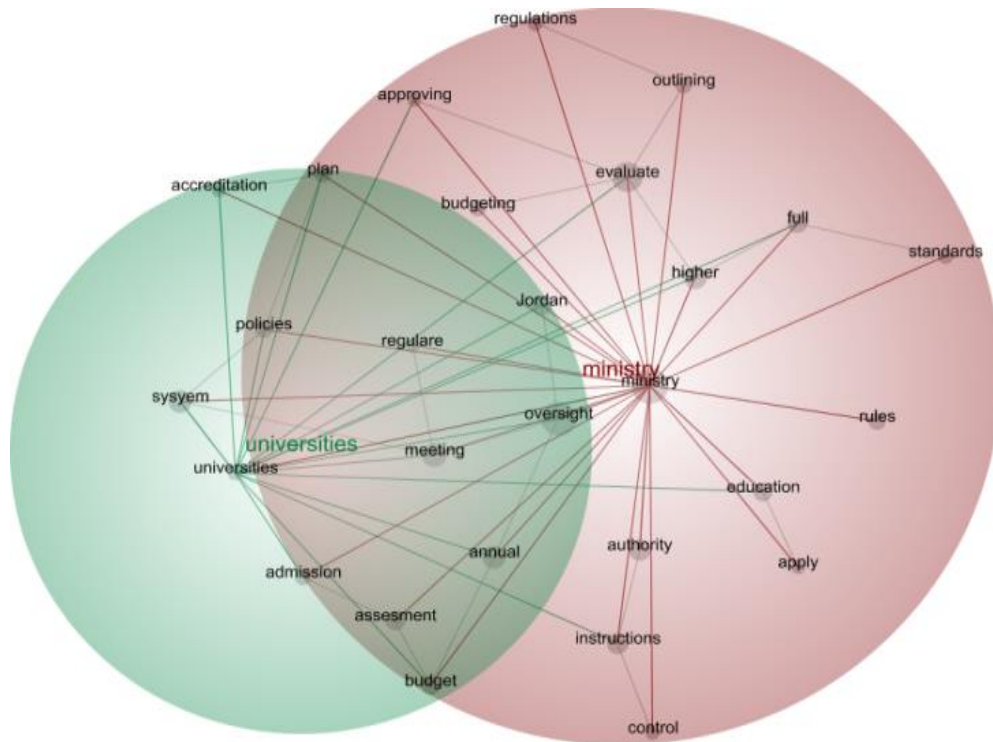
Figure 4.14: The relationships between themes Ministry and Universities and subthemes on the map

After performing a comparison between the results from Leximancer and the thematic analysis, it was found that both methods yielded nearly the same result and supported the notion that the MHE and its related concepts are considered to be important themes for COS success between PJUs.

4.6.2.3.5 Geographic Proximity (Process 1: Thematic Analysis)

After INS and MHE, Geographic Proximity (GP) was mentioned as an important theme for cooperative relationships between competitors (Table 4.16).

Table 4-16: Geographic Proximity (n=18)

Theme	Number	Percent	Rank
Geographic Proximity	9	50	1
Subthemes			
▪ Cooperate in infrastructures	7	38	2
▪ Cost of services	6	33	3
▪ Direct communications	6	33	3
▪ Development in future	5	27	4
▪ Long term relationships	5	27	4
▪ Increase societal activities	4	22	5

Two participants stated:

> *GP within the country **plays a significant role** in determining the direction of cooperation and competition between partners. For example, in Jordan, the private and government-owned universities have been divided into 12 governorates and three regions (north, center, and south). Most Universities are located in the central region and the capital Amman* (PJ-UD-P7).

> *Many of the Private Jordanian Universities are close to each other, especially as more than 70% of them fall within the centre, i.e. within the capital and its surrounds* (PJ-UF-P12).

It is evident from the participants' responses that providing infrastructure, scientific and athletic activities, and reducing the cost of services among partners are fundamental prerequisites given the GP between cooperative universities. The importance given to these elements is captured in the following statement made by one participant:

> *The universities which are located in nearby geographical areas may **cooperate in providing infrastructure** like transport services, adequate housing for students and staff, roads, buildings, health insurance, **scientific facilities and athletic activities share and thereby to reduce the cost of services** among partners* (PJ-UD-P7).

Participants' comments reveal that cooperative universities located in close proximity could reduce the cost of services by joining in new projects and increasing the degree of cooperation.

As one participant commented:

> *There are five Universities near to us, for one of these universities the distance is only one kilometer from here. Therefore, my university is looking to **reduce the cost of services through joining in new projects** with these nearby Universities and **increase the degree of cooperation*** (PJ-UC-P5).

Some participants felt that proximity between universities may increase the speed of information exchange, make communication more direct and effective, and increase the level of interaction. For example, one participant expressed this notion as follows:

> *GP is an important factor in a partnership because it enhances the relationships among universities in terms of the **speed in the exchange of information and experiences,** and the proximity **increases the level of interaction among universitie**s. It makes communication direct and effective among universities that are close to each other* (PJ-UH-P15).

Another participant made similar remarks:

> *GP creates a **high level of interaction among universities. It enhances the relationships through the speed of the exchange of information, experiences, and knowledge, which are transferred easily and quickly, making communication between partners direct and effective** to manage cooperative activities better* (PJ-UG-P13).

Another concept identified by participants was that GP between competitors could create a spirit of cooperation and maintain continuity in the long-term by joining in scientific service. For example, teaching and research and societal activities to increase benefits and eliminate problems. This may be the case, as suggested by a comment from one participant:

> *The GP was always in favour of the universities because it creates a **spirit of cooperation and maintains continuity long-term**. Many **scientific, service-based and societal activities** can take place between nearby universities to increase benefits on the one hand and eliminating problems on the other hand* (PJ-UH-P16).

The participants emphasised that the relationship with nearby universities might be mutually beneficial and that they expected such liaisons to develop into long-term relationships in the future:

> *Our interactions and relationships with nearby universities might be **mutually beneficial** and **satisfactory. We expect to be interacting with them far into the future. Maintaining a long-term relationship with nearby universities is important** to us because our business relationship with nearby universities could be described as more competitive more than cooperative. Therefore, we hope to **develop cooperative relationships** between nearby universities rather than arm's-length relationships* (PJ-UG-P14).

4.6.2.3.6 Geographic Proximity (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into two themes (Proximity and Geographic), see Figure 4.14. Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.14. For example, the dominant theme of Proximity has strong associations with all other concepts on the map (e.g., Competition, Universities, Long-term, Social, Infrastructures, Services, Effect, Geographic and Reduce), see Figure 4.14.
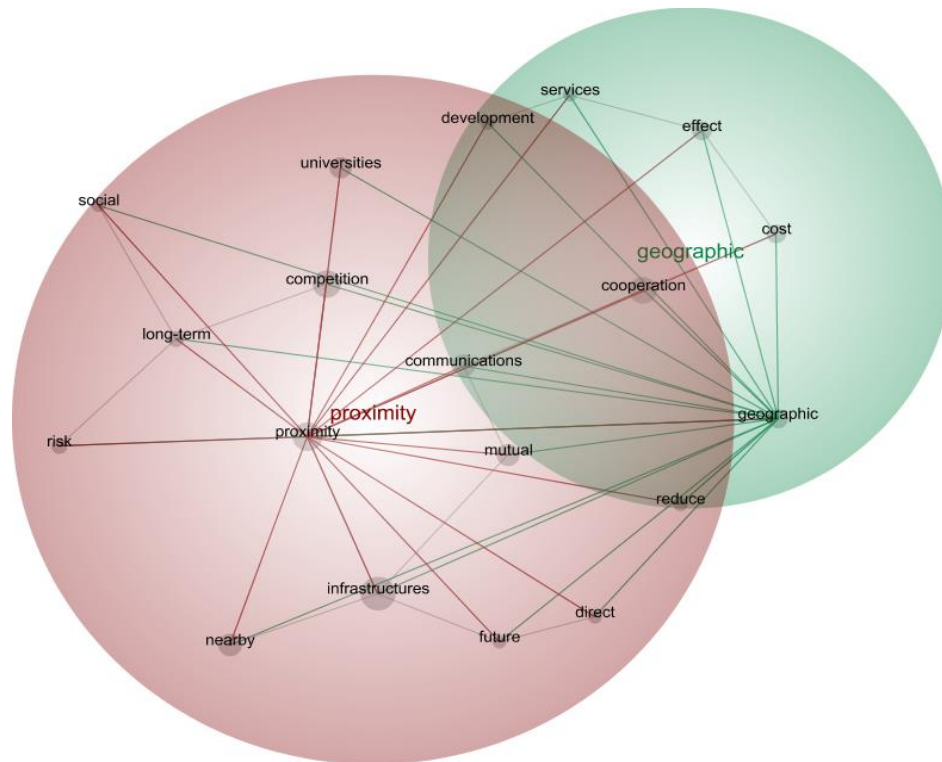
Figure 4.15: The relationships between themes Proximity, Geographic and subthemes on the map

The results from Leximancer and the thematic analysis found that both methods yielded nearly the same result supporting the view that GP and its related concepts are seen as important theme for COS success between PJUs.

4.7   Coopetition Success Indicators

This section presents details about the other central question for this research: *What are the indicators that the universities use to measure coopetition strategy success*? The data analysis explored ten indicators that participants considered important to COS success in universities based on their knowledge and experience in the Jordanian education sector. Thematic and Leximancer analysis were used to analyse the data for this question. The ten indicators are discussed in the following section.

4.7.1   Coopetition Success Indicators (Process 1: Thematic Analysis)

The overall analysis of data from the interviews for this question yields ten indicators for *Success* relating to the adoption COS by the university sector in Jordan (see Table 4.17). The indicators are Student and university satisfaction, Education services, Productivity and effectiveness, Cost and profits, University growth, Image and

reputation, Social responsibilities, Prestigious place, Quality assurance, Survive and continue. Each of the ten indicators are discussed in the following sections.

Table 4-17: Coopetition Success Indicators (n=18)

Coopetition Success Indicators	Number	Percent	Rank
Student and university satisfaction	13	72	1
Education services quality	11	61	2
Productivity and effectiveness	10	55	3
Cost and profits	9	50	4
University growth	8	44	5
Good image and reputation	7	38	6
Prestigious place	7	38	6
Social responsibilities	5	27	7
Obtain quality assurance	4	22	8
Survive and continuity	3	16	9

4.7.1.1 Student and University Satisfaction

Satisfaction was identified as one of the most significant indicators requiring consideration when measuring COS success. About 72% of participants agreed that universities and other stakeholders are influenced by university success (US) in adoption COS (see Table 4.17). For instance, one participant provides a clear view about this indicator:

> *… I think one of the most indicators for successful cooperation relationship with other universities in Jordan **is satisfaction** . Yes, generally speaking, satisfaction for stakeholders**, cooperative** universities and specifically speaking, levels of **student satisfaction** with education services* (PJ-UA-P1).

The same participant also mentioned that satisfaction is an important indicator to measure US because it enables the university to provide enhanced educational outcomes for students:

> *The **satisfaction of students** and other stakeholders are important because cooperative relationships with competitors enable the university to **provide better educational support for students** and to **improve their levels of satisfaction**. So, my **university** believes that the **perceived utility** of cooperative relationships with competitors is tangible* (PJ-UA-P1).

4.7.1.2 Service Quality

Approximately 61% of the participants indicated that education service quality is one of the significant indicators that must be considered when measuring COS success in universities (see Table 4.17). One participant mentioned this indicator:

> *I think **service equality** is also a good indicator measure for levels of cooperation success. **Quality as measured through scientific research, learning, teaching, the quality of our students and the university's outcomes.** Cooperative*

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relationships with competitors enable the university to provide high quality services according to the MHE standards and accreditation body in Jordan (PJ-UB-P3).

Another participant echoed this comment with similar remarks:

*For example, we are doing **shared research** to improve **research quality**, **common programs** in undergraduate and postgraduate courses to obtain better service quality standards for students and staff. We exist to provide a service, where there are tangible outcomes that are relevant to our university's mission. Working with other universities may help partners to **improve university service quality** (PJ-UB-P4).*

4.7.1.3 Productivity and Effectiveness

The importance of having improved university performance was voiced by approximately 55% (10/18) of the sample (see Table 4.17). Participants pointed out that working with other universities would improve productivity and effectiveness. For example:

*Cooperation with competitors helps the university to **improve its performance.** This is because it helps the university to provide new services to students and staff and increase its **productivity and effectiveness.** I think we are working with our partners in efficient ways* (PJ-UF-P12).

4.7.1.4 Cost and Profit

This research confirmed that cost savings and increased profits are significant indicators that must be considered for US in adoption COS. Approximately 50% (9/18) of the sample commented that this was an important indicator. Some participants highlighted the importance of cost savings and increased profits to measure COS success as follows:

Return on investment, or increase of profit and revenue *- these indicators are very important to all PJUs because **profits are a commercial way to measure success.** Cooperative relationships with competitors may help the university to **reduce costs and increase returns on investments and profits.** It helps the university to increase its price value in the stock market* (PJ-UA-P1).

Another participant echoed this:

*Working with other universities leads to **increased profits** , where the distribution of dividends to shareholders in the last three years has been between (10% - 30%) or over 30% in some universities through fixed capital. Working with high level of university education scientifically, regionally and internationally encourages students to join our universities, thereby increasing the number of admissions for non-Jordanians students. **Return on investment is** a commercial way that we measure success* (PJ-UC-P6).

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4.7.1.5 Growth in Size

Approximately 44% (8/18) of the sample highlighted that university growth was a significant indicator related to measuring COS success for PJUs. This indicator is highlighted in the following comments:

> *Growth in the university is an* indicator to measure our cooperation success *for universities in Jordan. Growth in post-graduate and undergraduate programs, growth in university size, as well as opening new programs, departments, colleges and attracting more students. It increases market share for the university in the Jordanian education sector. Currently, the university attracts more students from neighbouring and Arab countries* (PJ-UF-P11).

Another participant further confirmed that:

> *Working with competitors contributes by growing universities in size and increasing their market share. Expansion in the number of universities since 1991 was a good indicator of the increase in the number of universities in Jordan from 5 or 6 to more than 25 now. Where the most universities started with fewer than a thousand students, they now total more than seven thousand students* (PJ-UD-P8).

4.7.1.6 Good Reputation

Approximately 38% (7/18) of respondents stated that reputation is one of the significant indicators that must be considered for COS success.

This may be the case, as suggested by two participants:

> *Improving university rankings locally, regionally and internationally - these indicators are very important to measure a US because a university must maintain a good image and reputation to join in a successful relationship with competitors. Therefore, working with good competitors enables the university to establish a good image and impression in the Jordanian educational sector* (PJ-UE-P10).

Another participant emphasised that:

> *Stakeholders and owners have a good perception about the university's relationships with its competitors,because we are working with Universities which have good reputation. At the same time my university has distinctive features that may encourage competitors to cooperate with us. The university is financially and scientifically sound* (PJ-UH-P16).

4.7.1.7 Prestigious Place

Another participant emphasised that his/her university has successfully retained a prestigious position in the university ranking system as a result of working with other universities:

> *Our University has nationally known academic programs/departments/schools. It has good resources for students (computers, equipments, libraries,*

*transportation, etc.). It is well-managed and **successfully retains a prestigious place in the university ranking system due to working with other universities.** Therefore, building our scientific reputation enables the university to attract more partners and more students from other countries* (PJ-UD-P7).

4.7.1.8   Social Responsibilities

In this research, social responsibility is another major indicator found to be important when measuring COS success. Approximately 27% (5/18) of participants considered social responsibilities to be very important (see Table 4.17).For example, two participants stated:

> *The university is **a responsible member of the community**. It **is committed to providing social services** that are concerned with and involved with local community. **The university puts societal care as the top priority** as a result of relationships and responsiveness to our community* (PJ-UG-P13).

Another participant made similar remarks:

> *Working with other universities in **common projects to serve Jordanian society provides a good impression for cooperative universities** . The university is aware of its responsibility to society* (PJ-UE-P9).

4.7.1.9   Obtain Quality Assurance

Approximately 22% (4/18) of participants pointed out that obtaining quality assurance from the MHE and the accreditation body in Jordan was an important measurement in reaching university goals. Participants stressed this viewpoint by stating:

> ***Working with competitors enables the university to achieve the goals like obtaining quality assurance** from the MHE and its accreditation body in Jordan. It is an important indicator for measuring the US, or the levels of cooperative success for PJUs, because it enables the university to achieve the organisation's goals properly at the state level, winning the confidence of students and their parents via graduating highly qualified students and improving the university's reputation locally and internationally* (PJ-UA-P2).

Another participant further emphasised that:

> *Cooperation with the competitive universities would be successful if partners were able to apply **quality assurance** properly from the MHEJ because it means complying not only local standards for a good quality university but also international standards as well. At the same time, if a university **obtained quality assurance**, this would contribute in promoting Jordanian universities and increase educational tourism in Jordan by increasing levels of openness to Arab and international markets* (PJ-UD-P8).

4.7.1.10 Survival and Continuity

Survival and continuity emerged as important indicators to measure US of cooperation relationships with competitors. One participant commented as follows:

*When a University is responsive to change in the educational sector in Jordan, effectively that means it has the **ability to survive and have continuity** in that sector. That is a significant indicator of university success in terms of its relationship with competitors* (PJ-UI-P17).

Participants emphasised the importance of extensive experience and a strong record of successful relationships with competitors as good indicators for survival and continuity. For instance, one participant voiced his opinion as follows:

*My university has **long experience and a successful history** in cooperative relationships in the Jordanian educational sector. It achieves acceptable levels of trust to continue working with competitors. My university has a strong record of profitability and has been successful in competition and cooperation strategies with others since 2001* (PJ-UG-P14).

4.7.2 Coopetition Success Indicators (Process 2: Leximancer Analysis)

In this analysis, Leximancer clustered the concepts into three themes (Success, Coopetition and Strategy), see figure 4.15. Each theme, aggregating four or more concepts and represented by labelled circles, is illustrated in Figure 4.15. For example, the dominant theme of *Success* has strong associations with most other concepts on the map (e.g. Size, Growth, Services, Education, Quality, Productivity, Cost, Survive, Satisfied, Strategy, Cooperation, and Coopetition), see Figure 4.15.

Figure 4.16: The relationships between themes Success, Coopetition and Strategy and subthemes on the map

Comparison of the Leximancer analysis and Thematic analysis showed similar results. These results are considered important indicators for US in adopting a COS for PJUs. To conclude, Table 4.18 shows the summarised results for qualitative data analysis for COS themes, subthemes and COSI for PJUs.

Table 4-18: Summarises the key results of qualitative data analysis

Key questions	Categories	Themes	Subthemes
Coopetition Success factors	Management mindset	Management commitment	Compulsory commitment, Long term commitment, Formal or informal agreement, Mutual strength and weaknesses, Important relationship, Review relationships
		Strategic leadership	Vision and objectives, Create strategy, Solve the problem, Allocate resources, Relations with stakeholders, Create teamwork
		Flexibility to change	Response to changes, Managerial ability, Cultural fit, Reallocate resources, Managing risk
		Management perception	Belief in relationship, Experience and knowledge, Cooperative mind-set, Good perception, Aware of benefits, Clear understanding
		Top management support	Willing to take risk, Provide resources, Enthusiastic to support, Clear objectives, Make more effort, Appropriate times and ways
	Management relationship	Trust development	Interpersonal relationship, Common goals, Transparency and clarity, Interdependence and harmony, Honesty and willingness, Responsibility and respect
		Mutual benefit	Equal contribution, Willing to share, Benefits to all partners, Avoiding exploitive behaviour, Mutual dependence
		Sharing resources and capabilities	Complementary resources, Compatibility resources, Increase competitiveness, Sharing experience, Technology and skills, Sharing knowledge and academic information, Get benefits in cheap way
		Organisational learning	Willing to learn, Ability to learn, Learning as investment, Encouraging to learn, Chance of learning, Culture of learning
		Communication management	Effective information system, Monitoring system, Share information, Informed of new development, Information technology
	Supporting factors	Institutionalisation	Mechanisms to monitor, Published to society, Routine action, Institutional norms, Authority to monitor
		Ministry of Higher Education	Apply instructions, Authority to control, Standards to evaluate, Outlining regulations, Approving budgeting plan, Regulare meeting
		Geographic proximity	Cooperate in infrastructures, Cost of services, Direct communications, Development in future, Long term relationships, Increase societal activities
Coopetition Success Indicators			University satisfaction, Education services quality, Productivity and effectiveness, Cost and profits, University growth, Good image and reputation. Prestigious place, Social responsibilities, Obtain quality assurance, Survive and continuity

4.8 Development of Conceptual Framework

Based on the qualitative data analysis, a number of themes and sub-themes emerged, and these have been discussed in detail. These themes and sub-themes highlight the

factors that potentially influence COS success in PJUs, and the indicators for US in COS adoption. These themes and sub-themes were used to develop a model that was tested in the quantitative phase of the study.

The initial research model presented in Chapter 2 was refined according to the outcomes of the qualitative study. The refined research model included 14 constructs with 87 items. These findings were employed to develop the quantitative questionnaire statement based on the formulation of 13 hypotheses from the refined research model to answer the principal research questions of the study (see Figure 4.16). The rationale for this approach is to assist the researcher in testing the relationships that may exist between the variables of this study. Thus, the proposed research model has been constructed accordingly.
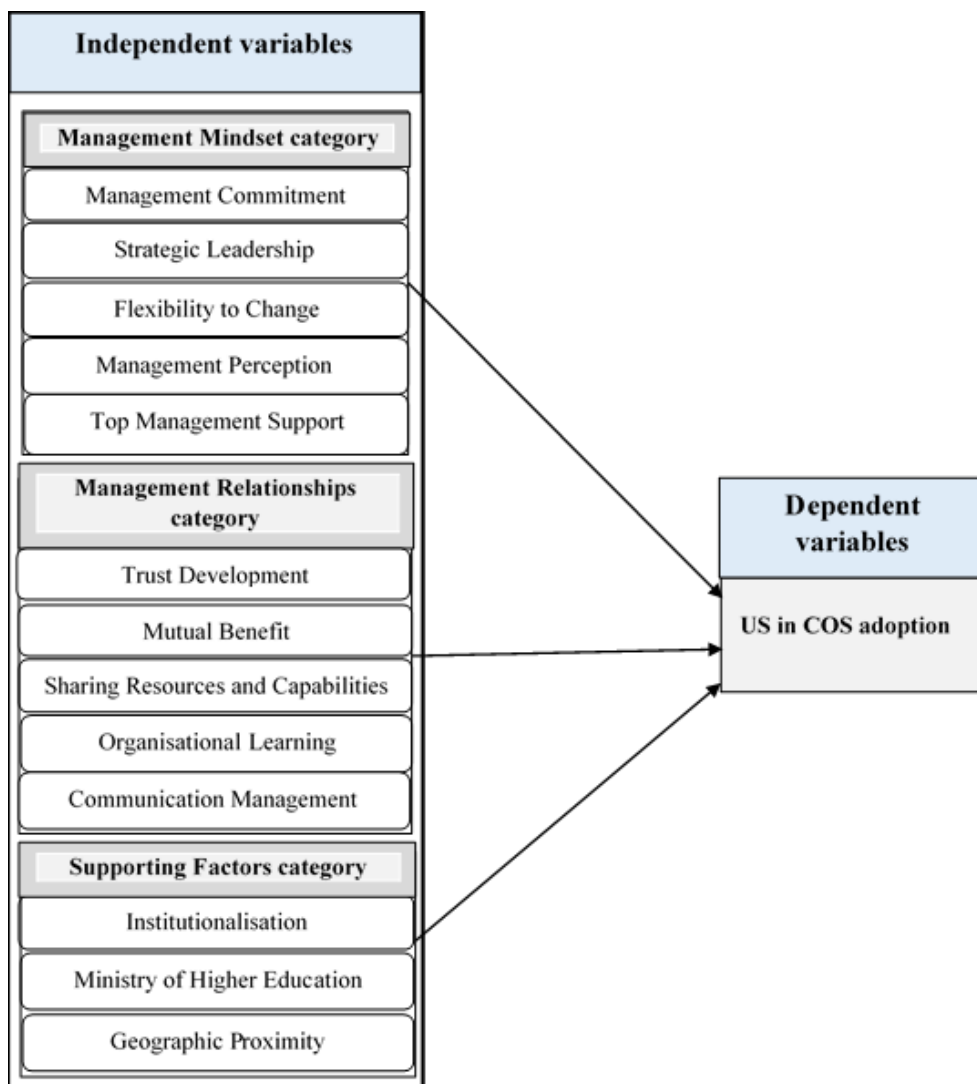
Figure 4.17: Proposed model

The research model shown in Figure 4.16 uses the following two main variables:

1. The first variable is an explanatory (independent) variable and it is represented as COSFs which include three groups and 13 constructs as follows:

1.1 MM category, which includes five constructs: MC, SL, FCH, MP and TMS

1.2 MR category, which involve five constructs comprising TD, MB, SRC, OL and CM

1.3 SFs category, comprising INS, MHE and GP

2. The second variable is an effector (dependent) variable and is linked to US in COS adoption.

Each construct in the proposed model includes some items, which are presented in Table 4.19.

The items, which emerged from the qualitative phase, as listed in Table 4.19, provide more in-depth understanding for this framework and, at the same time, help with future development of the framework for COSFs and indicators for US in COS adoption by the HESJ.

The direction of arrows in the model (Figure 4. 16) connects the variables of this study according to the relationships between them. The direction of arrows expresses the influence of each COS factor on US.

Table 4-19: Constructs and items that emerged from the qualitative phase

Coopetition Success Factors (Independent variable constructs)	Items
Management commitment	Compulsory commitment, Long term commitment, Formal or informal agreement, Mutual strength and weaknesses, Important relationships, Review relationships
Strategic leadership	Vision and objectives, Create strategy, Solve the problem, Allocate resources, Relations with stakeholders, Create teamwork
Flexibility to change	Response to changes, Managerial ability, Cultural fit, Reallocate resources, Managing risk
Management perception	Belief in relationship, Experience and knowledge, Cooperative mind-set, Good perception, Aware of benefits, Clear understanding
Top management support	Willing to take risk, Provide resources, Enthusiastic to support, Clear objectives, Make more effort, Appropriate times and ways
Trust development	Interpersonal relationship, Common goals, Transparency and clarity, Interdependence and harmony, Honesty and willingness, Responsibility and respect
Mutual benefit	Equal contribution, Willing to share, Benefits to all partners, Avoiding exploitive behaviour, Mutual dependence
Sharing resources and capabilities	Complementary resources, Compatibility resources, Increase competitiveness, Sharing experience, technology, and skills, Sharing knowledge and academic information, Get benefits in cheap way
Organisational learning	Willing to learn, Ability to learn, Learning as investment, Encouraging to learn, Chance of learning, Culture of learning
Communication management	Effective information system, Monitoring system, Share information, Informed of new development, Information technology
Institutionalisation	Mechanisms to monitor, Published to society, Routine action, Institutional norms, Authority to monitor
Ministry of Higher Education	Apply instructions, Authority to control, Standards to evaluate, Outlining regulations, Approving budgeting plan, Regular meeting
Geographic proximity	Cooperate in infrastructures, Cost of services, Direct communications, Development in future, Long term relationships, Increase societal activities
Coopetition Success Indicators (Dependent variable)	**Items**
US indicators	University satisfaction, Education services quality, Productivity and effectiveness, Cost and profits, University growth, Good image and reputation, Prestigious place, Social responsibilities, Obtain quality assurance, Survive and continuity

4.8.1 The Operational Definitions of Factors Used in the Proposed Research Model

This section provides the operational definitions of the research proposed model variables which emerged from the qualitative phase. According to (Creswell 2014) and (2018), researchers should define the terms of their research to assist in understanding by individuals who are outside their field of study. The main concepts of the constructs developed for this research are as follows.

4.8.1.1 MM Category:

Understanding the need for multiple strategic capabilities and being able to view problems and seek opportunities from both a local and global perspective to achieve strategic objectives in COS

- *MC:* The desire to maintain a valued and long-term relationship through ongoing investments, both financial and non-financial
- *SL:* The ability to establish a clear vision and objectives for the future, create a successful strategy to manage COS, and mobilise and focus resources to support relationships with competitor universities
- *FCH:* A university's ability to develop a strategy to respond quickly to environmental changes by effectively utilising its resources and capabilities, accepting new values and cultures to achieve cultural fit, and develop its managerial capability and flexible structure to adopt COS
- *MP:* A belief or opinion of university leaders in directing attention towards developing cooperative relationships with competitor universities through awareness of the anticipated benefits from cooperation with competitor universities
- *TMS*: The extent to which top managers in universities provide direction, authority, and resources to support cooperative activities.

4.8.1.2 MR Category:

The development and maintenance of beneficial and healthy relationships with other universities and other parties that will result in mutual exchanges and fulfilment of benefits

- *TD:* A function of the frequency, duration and diversity of experiences that affirm confidence in positive expectations about the actions of competitor universities over time
- *MB:* An agreement in which both cooperative universities gain some type of advantage or value by exchanging benefits to achieve a win - win approach for both parties
- *SRC*: The involvement of cooperative universities in the tangible or intangible assets and the combination of collective resources to maximise access to a large array of resources and capabilities to undertake CO activities effectively and achieve partnership goals

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- *OL:* A process in which universities learn and improve their actions through enhanced knowledge and understanding and dealing with new situations and problems which results in them being more skilled and experienced in a fast-changing environment

- *CM:* The systematic planning, implementing, monitoring and revision of all channels of communication within a university and between competitors.

4.8.1.3 SFs Category:

Essential internal and external elements for a university to keep it running successfully and to support cooperative activities, which are involved in the university's main business

- *INS:* A process which translates a university's code of conduct, mission, policies, vision and strategic plans into action guidelines applicable to the daily activities of its managers and employees or with competitor universities, and aims to integrate fundamental values and objectives into the university's culture and structure

- *MHE:* The authority of the Department of the Government for Education at an advanced degree level for HE institutions and the accreditation body which issues instructions, directions, rules, decisions, regulations, guidelines and laws to develop policies and strategies for Jordanian universities

- *GP*: The expression of the spatial or physical distance that separates two universities in geographical space.

4.8.1.4 University Success Indicators in Adoption Coopetition Strategy

- *US:* The achievement of desired or positive consequences as a result of adopting COS and the ability to do well enough in CO activities to maintain sustainable growth and continuity.

4.8.2 Development of Research Hypothesis:

Based on the findings of the qualitative phase of this study, 13 hypotheses were formulated to deal with new constructs to investigate whether these have an impact on COS success in the HESJ. Table 4.19 informed the development of these hypotheses and they are detailed in Figure 4.17. They were developed and tested in Phase 2 of this study which was designed to analyse the proposed conceptual research model aimed

at investigating the relationship between COSFs and US in COS adoption by PJUs, and to provide answers to the research questions.

4.8.2.1 Hypothesis 1 (H1) (Management Commitment)

Overall, 94% of all participants agreed that Management Commitment (MC) is an important factor and has a strong influence on COS success. These findings, which focused mostly on MC, prompted the researcher to postulate that MC has a positive impact on COS success and developed the following hypothesis:

H1 - *MC in universities will more likely have a significant positive influence on US in the adoption of a COS.*

4.8.2.2 Hypothesis 2 (H2) (Strategic Leadership)

The findings highlighted that Strategic Leadership (SL) has a crucial role to play in influencing US in COS adoption. This view was reported by 83% of the respondents. Thus, it is suggested that in terms of the relationships between SL and COS success, there is a positive impact on the decision to adopt COS. Hypothesis 2 aims to investigate this relationship.

H2 - *SL in universities is more likely to have a significant positive influence on US in the adoption of a COS.*

4.8.2.3 Hypothesis 3 (H3) (Flexibility to Change)

Overall, 72% of the respondents indicated that they were positively influenced by COS success. To investigate the relationship between Flexibility to Change (FCH) and its effect, the following hypothesis was constructed:

H3 - *FCH in universities is more likely to have a significant positive influence on the US in the adoption of a COS.*

4.8.2.4 Hypothesis 4 (H4) (Management Perception)

Management Perception (MP) was influenced by COS success and 66% of participants held that opinion. Thus, the following hypothesis was developed:

H4 - *MP in universities most likely has a significant positive impact on the US in relation to the adoption of a COS.*
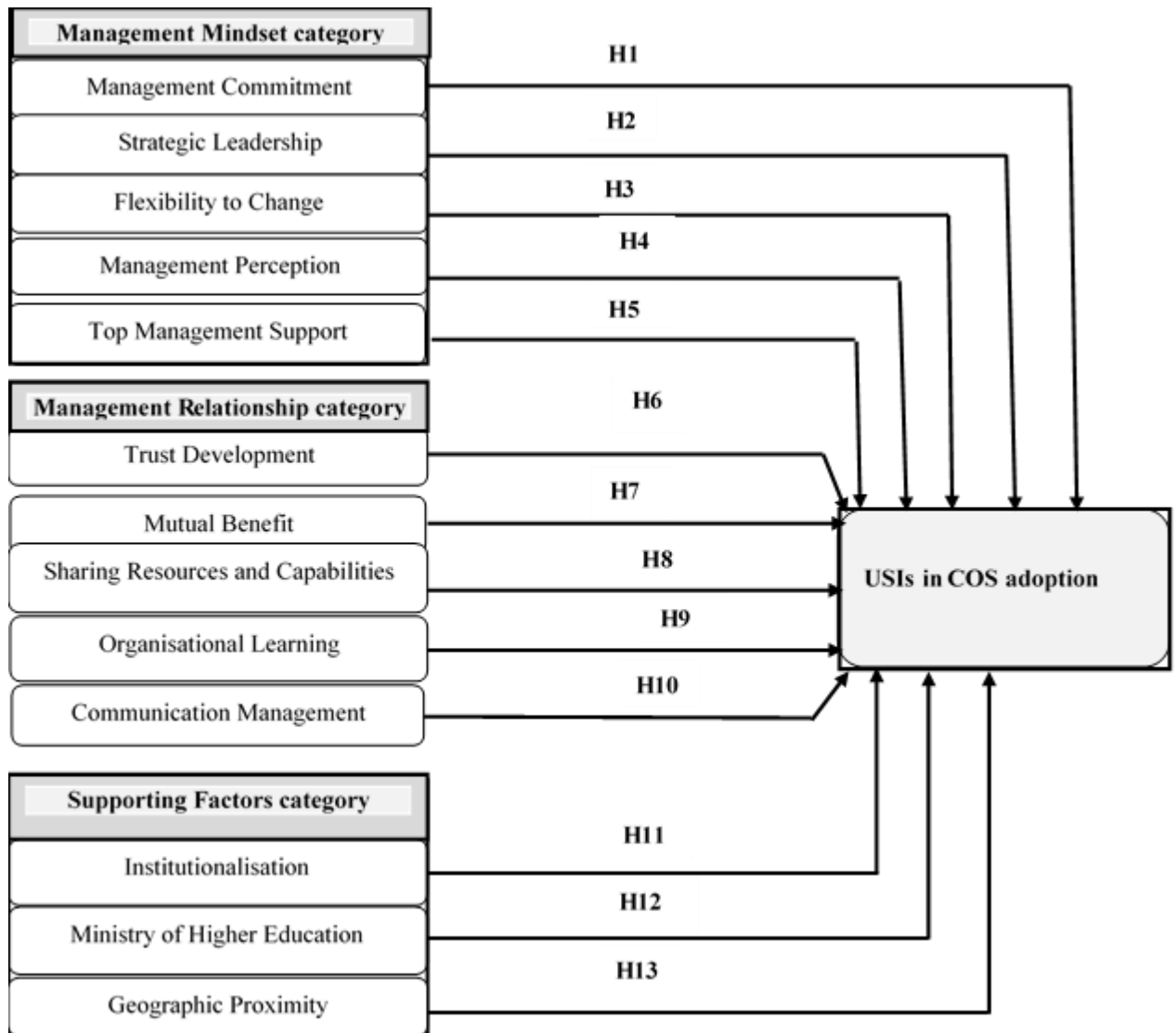
Figure 4.18: Research hypotheses

4.8.2.5 Hypothesis 5 (H5) (Top Management Support)

Overall, 61% of respondents stated that Top Management Support (TMS) is a key factor and will positively influence the COS success. This potential relationship between TMS and COS success has contributed to the development of the following hypothesis:

> **H5 -** *TMS most likely has a significant positive impact on the US in relation to the adoption of a COS.*

4.8.2.6 Hypothesis 6 (H6) (Trust Development)

All the respondents mentioned that Trust Development (TD) is important in maintaining cooperation with competitors. These findings resulted in the development of the following hypothesis:

H6 - *TD between universities most probably has a significant positive impact on the US in relation to the adoption of a COS.*

4.8.2.7 Hypothesis 7 (H7) (Mutual Benefit)

Overall, 77% of all participants stressed that universities should continue to agree to cooperate when there is a Mutual Benefit (MB) and demonstrate how it influences the COS success. These findings resulted in the development of the following hypothesis:

H7 - *MB between universities will presumably has a significant positive impact on COS success.*

4.8.2.8 Hypothesis 8 (H8) (Sharing Resources and Capabilities)

Findings indicate that 66% (12/18) of the participants described SRC as one of the most significant factors in cooperative relationships in the Jordanian education sector. This relationship informed the following hypothesis:

H8- *SRC will have a significantly positive impact on COS success.*

4.8.2.9 Hypothesis 9 (H9) (Organisational Learning)

Eleven of the participants (61%) commented that Organisational Learning (OL) was one of the most important factors in an effective cooperative relationship. Hypothesis 9 aims to investigate this relationship:

H9 - *OL most likely has a significant positive impact on COS success.*

4.8.2.10 Hypothesis 10 (H10) (Communication Management)

Overall, 55% of respondents indicated that Communication Management (CM) has a positive influence on a COS. To investigate the relationship, the following hypothesis was developed:

H10- *CM will most likely have a significant positive impact on COS success.*

4.8.2.11 Hypothesis 11 (H11) (Institutionalisation)

Overall, 77% (14/18) of the sample agreed that Institutionalisation (INS) influenced the level of COS adoption. The following hypothesis has been developed:

H11- *INS in universities' relationships will most likely have a significant positive impact on COS success.*

4.8.2.12 Hypothesis 12 (H12) (Ministry of Higher Education)

Seventy-two percent of participants viewed the Ministry of Higher Education (MHE) as an important element influencing the cooperation relationship. These findings informed the development of the following hypothesis:

H12- *The MHE undoubtedly has a significant positive impact on COS success.*

4.8.2.13 Hypothesis 13 (H13) (Geographic Proximity)

Fifty percent of participants indicated Geographic Proximity (GP) as one of the important factors for successful cooperative relationships between competitors. These findings resulted in the development of the following hypothesis.

H13- *GP is most likely to have a significant positive impact on COS success.*

4.9   Chapter Summary

This chapter has detailed the outcomes of the qualitative findings in Phase 1, and based on these findings a proposed research model and relevant hypotheses have been developed. These outcomes determined the areas used to develop a survey for the second phase of this study through the development of 13 hypotheses. The following chapter reports on the results of the Structural Equation Model (SEM) with path coefficient relationships and the testing of all hypotheses. The outcomes of Chapter 4 results will inform and refine the conceptual model developed as a result of this stage of the research.

5 CHAPTER FIVE: QUALITATIVE DATA PRESENTATION, ANALYSIS, AND FINDINGS

5.1 Chapter Overview

The previous chapter provided a qualitative analysis related to the main research question: **What are the critical factors that determine the success of COS in PJUs?** These factors have been used to develop the proposed research model and hypothesis. To address this question, the research sub-questions are used to establish COS relationships and factors contributing to success. This chapter outlines the results of the quantitative data analysis in seven sections. The chapter begins with an overview of the chapter in Section 5.1 and then presents the descriptive data analysis for all for all the questionnaire content in Section 5.2, and the measurement scale validation is discussed in Section 5.3. Section 5.4 explains the measurement development for the proposed research model in relation to Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), and the measurement model tests used for the validity and reliability statistical techniques. Structure Equation Model (SEM) testing follows in Section 5.5, while Section 5.6 examines the hypothesis results. Finally, Section 5.7 offers the chapter summary.

5.2 Descriptive Data Analysis

In this study, after preparing the data for analysis, descriptive statistics were used to calculate the degree of correlation intensity of the data using Statistical Package for the Social Sciences (SPSS) 25 (Collis & Hussey 2013; Majhi et al. 2016; Leavy 2017; Rajagopalan 2021). The descriptive statistical techniques used were frequency, mean and standard deviation:

5.2.1 Relationships in Universities

Relationships in the PJUs data include: current relationship, COS levels and COS types. Each of these sets of relationship data will be addressed next.

5.2.1.1 Current Relationships between Universities

Table 5.1 represents the current relationships in the PJUs under study. The table indicates that the majority of participants 273 (90.1%) reported that the current relationships in PJUs were simultaneously cooperative and competitive, while 21 of

the respondents (6.9%) reported that the current relationships were competitive, and the lowest level in the current relationships were cooperation as reported by nine of the respondents (3.0%).

Table 5-1: Current relationships in PJUs

Current Relationship	Frequency	Percent %	Cumulative %
Cooperation	9	3.0%	3.0%
Competition	21	6.9%	9.9%
Both	273	90.10%	100%
Total	**303**	**100**	

These results indicate that PJUs are more likely to use cooperation and competition relationships simultaneously. Accordingly, Coopetition Relationships (COR) already exist between PJUs.

5.2.1.1.1 Cooperation Aspects

Cooperation between PJUs involves four areas: academic activities, sharing interests, applying government policy and cooperation in university services. These areas were explored in the qualitative phase of the study and confirmed in the quantitative stage (see Table 5.2).

The Academic activities involving collaborative teaching, research and supervision were the most frequent activities performed by 98.2% of the respondents with a mean of 6.151 and standard deviation of 0.707, followed by Sharing interest which includes sharing knowledge, experiences, publications and course materials by 93.2% of the respondents with a mean of 5.986 and standard deviation of 0.864. Government policy comprised of laws, instructions and regulations was mentioned by 92.3% of respondents with a mean of 5.785 and standard deviation of 1.031. Finally, University services which encompasses health insurance, social and physical services and community services was the lowest cooperation action performed between universities with 86.8% and a mean of 5.458 and standard deviation of 1.227.

Table 5-2: Cooperation areas among PJUs

Cooperation areas	Score	Frequency	Percent %	Overall agreement %	Cumulative %	Mean	Standard deviation
Academic activities	Moderate	5	1.6%		1.3%	6.151	0.707
	Slightly agree	43	14.1%	98.2	15.8%		
	Agree	157	51.8%		67.7%		
	Strongly agree	98	32.3%		100%		
	Total	**303**	**100**				
Sharing interest	Moderate	23	7.5%		7.6%	5.986	0.864
	Slightly agree	46	15.1%	92.3	22.8%		
	Agree	144	47.5		71.0%		
	Strongly agree	90	29.7		100%		
	Total	**303**	**100**				
Government policy	Strongly disagree	2	0.66%		0.7%	5.785	1.031
	Disagree	5	1.6%		2.3%		
	Slightly disagree	4	1.3%		3.6%		
	Moderate	9	2.9%		6.6%		
	Slightly agree	68	22.4%	93.2	29.4%		
	Agree	149	49.1%		78.9%		
	Strongly agree	66	21.7%		100%		
	Total	**303**	**100**				
University services	Strongly disagree	8	2.6%		2.6%	5.458	1.227
	Disagree	7	2.3%		5.0%		
	Slightly disagree	9	2.9%		7.9%		
	Moderate	16	5.2%		13.2%		
	Slightly agree	71	23.4%	86.7	33.7%		
	Agree	168	55.4%		91.7%		
	Strongly agree	24	7.9%		100%		
	Total	**303**	**100**				

Figure 5.1 illustrates the importance of cooperation areas among PJUs.
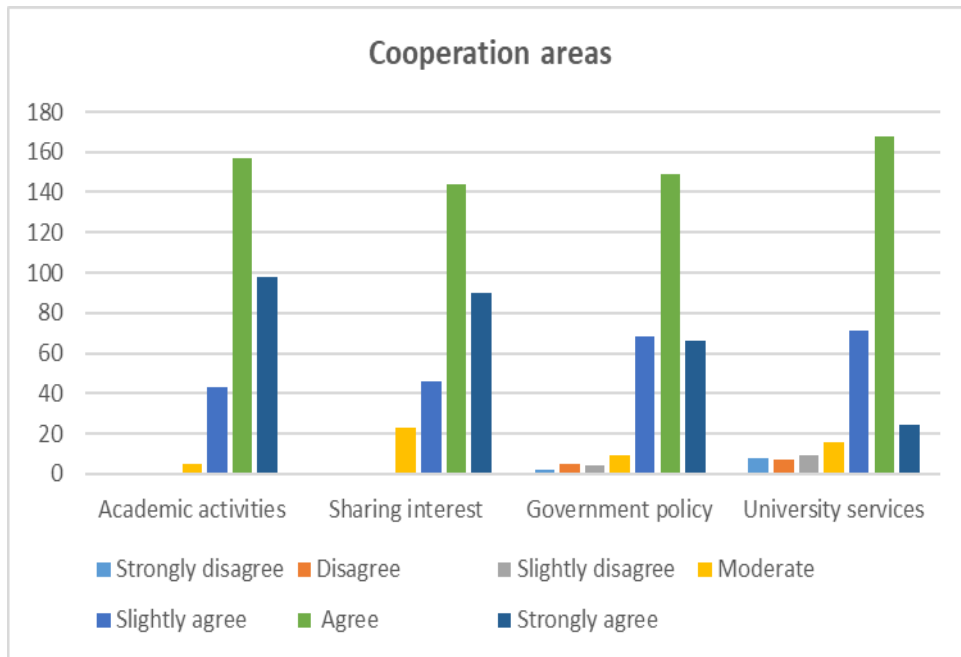
Figure 5.1: Importance of cooperation areas between PJUs

5.2.1.1.2 Competition Aspects

Competition aspects in PJUs encompass three areas including Students, Higher revenue and Reputation. These areas were explored in the qualitative phase of the study and confirmed in the quantitative phase (see Table 5.3).

Table 5-3: The competition areas among universities

Competition areas	Score	Frequency	Percent %	Overall agreement %	Cumulative %	Mean	Standard deviation
Students	Slightly agree	9	2.9%	100%	3.0	6.508	0.557
	Agree	130	42.9%		46.2		
	Strongly agree	164	54.1%		100.0		
	Total	**303**	**100**				
Higher revenue	Slightly agree	26	8.5%	100%	8.6	6.442	0.647
	Agree	116	38.2%		47.2		
	Strongly agree	161	53.1%		100.0		
	Total	**303**	**100**				
Reputation	Slightly agree	14	4.62%	100%	4.6	6.346	0.565
	Agree	168	55.4%		60.7		
	Strongly agree	121	39.9%		100.0		
	Total	**303**	**100**				

Table 5.3 demonstrates that all respondents agreed Students, Higher revenue, and Reputation are important aspects to competition areas between PJUs. The responses related to Students included opening new programs and colleges, offering quality services, and competitive fees was the highest competition area between universities with a mean of 6.346 and standard deviation of 0.565, followed by the practice of competition to get higher revenue with mean of 6.442 and standard deviation of 0.647. However, while impotent, the practice of competition to improve universities reputation, compromised of quality assurance, university ranking, university image and brand was the lowest competition action performed between universities with a mean of 6.346 and standard deviation of 0.565. Figure 5.4 illustrates the importance of competition areas among PJUs.
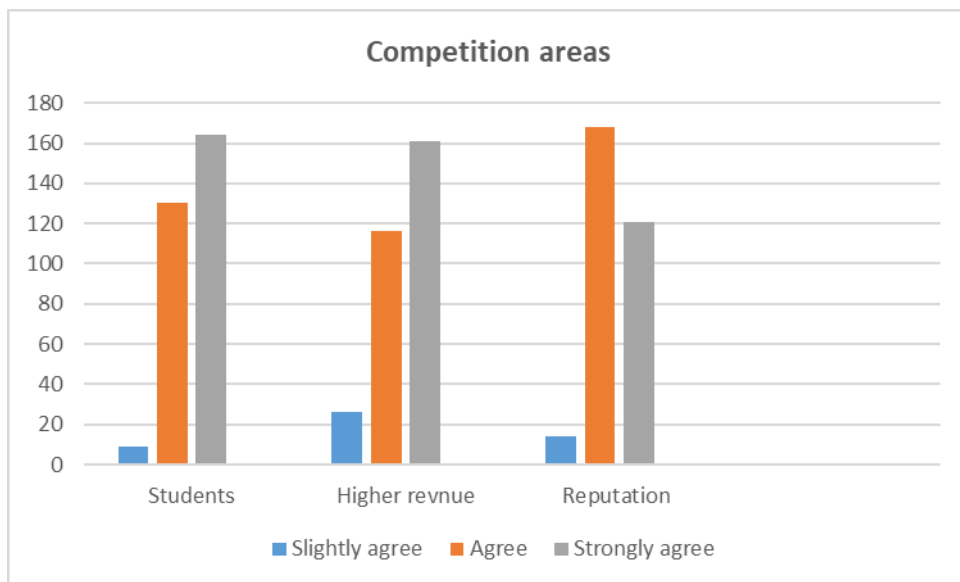
Figure 5.2: Important competition areas among PJUs

5.2.1.1.3 Cooperation Levels

Coopetition areas, in Table 5.2, is used as the criteria to identify the level of cooperation between PJUs (see Table 5.4).

Table 5.4 shows that Academic activities, Sharing interest, Government policy and university services were at a low level of cooperation. These results are supported by the values of means for these cooperation criteria: 2.201, 2.178, 2.132, and 2.069 respectively. The overall responses ranged from university services 94.7%, sharing interests 92.8%, applying government policy 89.1%, and academic activities 69.7%.

Table 5-4: The level of cooperation between universities

Cooperation criteria's	Cooperation level	Frequency	Percent %	Overall low level %	Cumulative %	Mean	Standard deviation
Academic activities	Very Low	145	47.9%	69.7	47.9%	2.201	1.426
	Low	64	21.1%		69.0%		
	Slightly Low	2	0.7%		69.6%		
	Moderate	82	27.1%		96.7%		
	Slightly High	9	3.0%		99.7%		
	High	1	0.3%		100%		
	Total	**303**	**100**				
Sharing interest	Very Low	63	20.8%	92.8	20.8%	2.178	0.842
	Low	145	47.9%		68.6%		
	Slightly Low	73	24.1%		92.7%		
	Moderate	22	7.3%		100%		
	Total	**303**	**100**				
Government policy	Very Low	72	23.8%	89.1	23.8%	2.132	0.914
	Low	154	50.8%		74.6%		
	Slightly Low	44	14.5%		89.1%		
	Moderate	31	10.2%		9.9%		
	Slightly High	2	0.7		100%		
	Total	**303**	**100**				
University services	Very Low	67	22.1%	94.7	22.1%	2.069	0.864
	Low	169	55.8%		77.9%		
	Slightly Low	51	16.8%		94.7%		
	Moderate	16	5.3%		100%		
	Total	**303**	**100**				

Therefore, the cooperation between universities is still at a low level as demonstrated in Figure 5.3.
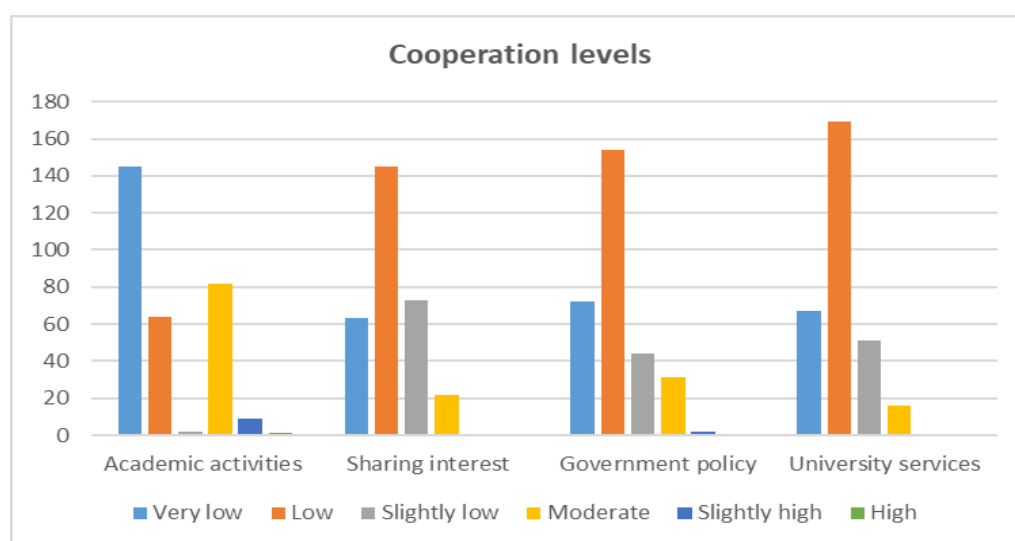
Figure 5.3: Cooperation levels in PJUs

5.2.1.1.4 Competition Levels

Competition aspects in Table 5.4 are used as criteria to identify the level of competition between PJUs (see Table 5.5).

Table 5-5: The level of competition between universities

Cooperation criteria	Cooperation level	Frequency	Percent %	Overall high level %	Cumulative %	Mean	Standard deviation
Students	Slightly Low	1	0.3%		0.3%	6.013	0.833
	Moderate	17	5.6%		5.9%		
	Slightly High	46	15.2%	94.1	21.7%		
	High	152	50.2%		71.3%		
	Very High	87	28.7%		100%		
	Total	**303**	**100**				
Higher revenue	Low	4	1.3%		1.3%	5.996	1.011
	Slightly Low	1	0.3%		1.7%		
	Moderate	28	9.2%		10.9%		
	Slightly High	25	8.3%	89.2	19.1%		
	High	146	48.2%		67.3%		
	Very High	99	32.7%		100%		
	Total	**303**	**100**				
Reputation	Very Low	3	1%		1%	5.838	1.102
	Low	2	0.7%		1.7%		
	Slightly Low	2	0.7%		2.3%		
	Moderate	32	10.6%		12.9%		
	Slightly High	39	12.9%	87.2	25.7%		
	High	142	46.9%		72.6%		
	Very High	83	27.4%		100%		
	Total	**303**	**100**				

Table 5.5 shows that competition to attract more students is the highest level by 94.1% of the respondents with 6.013 mean and 0.833 standard deviation, followed by Higher revenue at 89.2% of respondents with a mean of 5.996 and 1.011 standard deviation, and Reputation with nearly 87.2% of respondents and a mean of 5.383 and 1.102 standard deviation. Therefore, the competition between universities is intensive and at a high level as demonstrated in Figure 5.4.
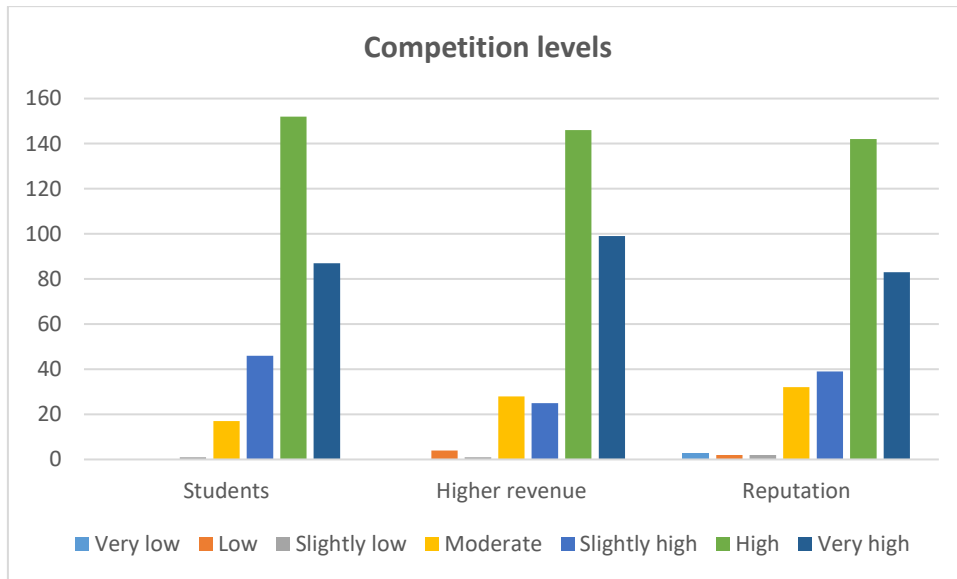
Figure 5.4: Competition levels for PJUs

5.2.1.1.5 Coopetition Type

According to Chin et al. (2008), the COS involves four types, namely mono player (Type 1), contender (Type 2), partner (Type 3) and adapter (Type 4) (see Chapter 4 COS types Section 4.5). Table 5.6 indicates that most participants 284 with (93.7%) reported that Type 2 (contender) dominated the relationships between PJUs, whereas seven of the respondents (2.3 %) reported that Type 3 (partner) was the current type for universities. Furthermore, Type 1 (mono player) and Type 4 (adapter) have the lowest level of current relationship, which was reported by six of the respondents (2.0%). These results indicate that PJUs are more likely to use Type 2, which is a Contender model with high levels of competition and low levels of cooperation, because the local market of the HESJ is still limited and universities are competing with each other to increase their profits and market share.

Table 5-6: Coopetition strategy types

Coopetition Strategy	Frequency	Percent%	Cumulative%
Type 1: Mono player - Low cooperation & low competition	6	2.0%	2.0%
Type 2: Contender - High competition & low cooperation	284	93.7%	95.7%
Type 3: Partner - High cooperation & low competition	7	2.3%	98.0%
Type 4: Adapter - High cooperation & high competition	6	2.0%	100%
Total	**303**	**100%**	

Figure 5.5 illustrates the domination of Type 2 Contender among PJUs.
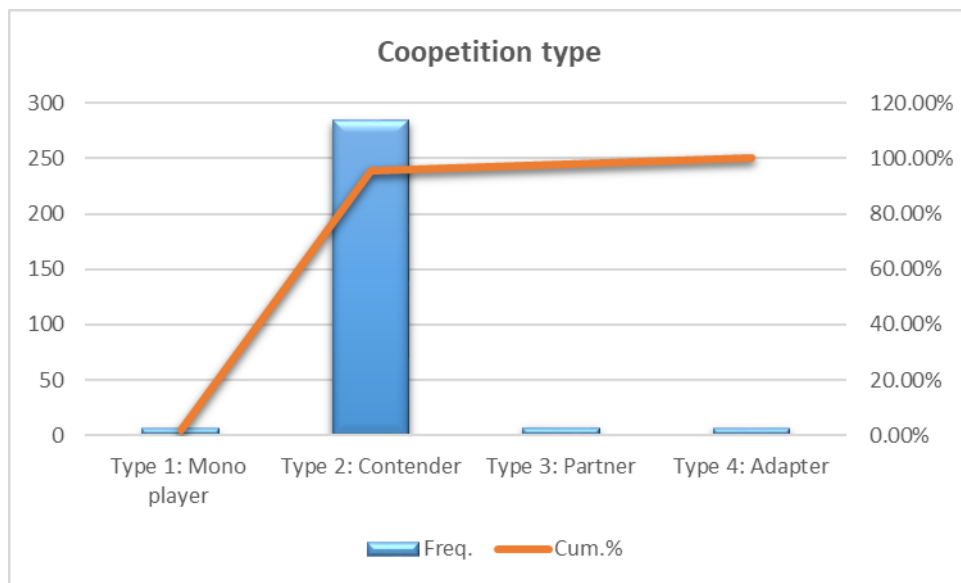
Figure 5.5: Coopetition strategy types

5.2.2 Univariate Data Analysis

The study determined the level of responses in terms of mean and standard deviation according to the category in the proposed research model (see Chapter 4 Section 4.8 Figure 4.16). Four categories were examined, namely, MM, MR, SFs and US in the adoption of COS. These categories were measured using a 7-point Likert scale. The value of 7 indicates the highest score "Strongly agree"; while 1 indicates the lowest score scale "Strongly disagree". Descriptive analyses were carried out on individual items for each of the research model constructs by reporting the central tendency measures (mean) and variability (standard deviation) (Pala et al. 2008; Dash 2010; Akinpelu et al. 2013; Mohd et al. 2017; Nyokabi et al. 2017). In this process, Statistical Package for the Social Sciences (SPSS) Statistics 25 was used to calculate the means and standard deviations on the research model variables represented in the research survey. The categories addressed were as MM, MR, SFs and US in adoption of COS.

5.2.2.1 Management Mindset Category

Management Mindset Category (MM) included five constructs consisting of MC, SL, FCH, MP, and TMS. Each of these constructs was measured by five items utilising a seven-point Likert scale. The respondents indicated their frequency of action on the MM constructs and items. Descriptive statistics for MM constructs are shown in Table 5.7.

Table 5-7: Descriptive statistics for Management Mindset constructs (MM)

Code	Constructs and Scale Items	Mean	Std. Dev.
Management Commitment Construct (MC)			
MC1	University must be committed to support cooperative relationships with competitor universities.	5.48	0.88
MC2	University has a long-term commitment to competitor universities	5.74	0.98
MC3	University has a formal or informal agreement with competitor universities.	5.59	1.01
MC4	University accepts mutual strengths and weaknesses to maintain cooperative relationship with competitor universities.	5.46	0.90
MC5	Relationships with competitor universities are very important to my university.	5.42	0.89
Strategic Leadership Construct (SL)			
SL1	I can establish a clear vision, and mission to sustain cooperative relationships with competitor universities.	5.42	0.86
SL2	I can create strategy to manage successful collaborative relationships with competitor universities.	5.43	0.85
SL3	I can solve conflict arising from collaborative relationships with competitor universities.	5.40	0.85
SL4	I can obtain and allocate new resources to support collaborative relationships with competitor universities.	5.42	0.87
SL5	I engage with stakeholders regularly for their feedback to enhance collaborative relationships with competitor universities.	5.34	0.81
Flexibility to Change Construct (FCH)			
FC1	Flexibility in response to requests for changes is a characteristic of the university's relationships with competitor universities.	5.39	0.82
FC2	University has the managerial capabilities to adopt collaborative relationships with competitor universities.	5.50	0.87
FC3	University accepts new values to achieve a cultural fit with competitor universities.	5.28	0.79
FC4	University re-allocates resources effectively to support collaborative relationships with competitor universities.	5.44	0.99
FC5	University strategy reflects a high level of flexibility in managing risks to maintain collaborative relationships with competitor universities.	5.57	0.96
Management Perception Construct (MP)			
MP1	University leaders believe in cooperative relationships with competitor universities.	5.47	1.01
MP2	University leaders have good experience about managing successful collaboration with competitor universities.	5.72	1.00
MP3	University leaders have coopetive mindset to establish successful cooperative relationships with competitor universities.	5.54	1.02
MP4	University leaders have a good perception about change in the educational sector in regards to competition and cooperation regulations.	5.57	0.82
MP5	University leaders are aware of the anticipated benefits from collaboration with competitor universities.	5.71	0.94
Top Management Support Construct (TMS)			
TMS1	Top management is willing to take risks involved in adopting cooperative relationships with competitor universities.	5.53	0.84

TMS2	Top management provides resources to support collaboration relationships with competitor universities.	5.57	0.99
TMS3	Top management is enthusiastic to keep supporting collaborative relationships with competitor universities.	5.54	0.82
TMS4	Top management provides clear objectives to support collaborative relationships with competitor universities.	5.41	0.82
TMS5	Top management is willing to make more efforts to build successful collaborative relationships with competitor universities.	5.70	0.94

From the table, it can be seen that the practice of MC2 in MC construct was the highest frequent action performed by the respondents with a mean of 5.74 and standard deviation of 0.89, while the practice of FC3 in FCH construct was the lowest action performed with a mean of 5.28 and a standard deviation 0.79. These results confirm that respondents tend to agree about the importance of MM construct and its related items for COR between PJUs.

5.2.2.2 Management Relationships Category

Management Relationships Category (MR) includes five constructs: TD, MB, SRC, OL, and CM. The respondents indicated their frequency of action on the MR constructs and items as shown in Table 5.8.

Table 5.8 shows that the item means for MR constructs are between 5.95 for OL5 in OL constructs and 5.22 for SRC4 in SRC constructs. The means of items confirms that respondents tend to accept these items and agree on the importance of MR constructs and related items for COR between universities.

Table 5-8: Descriptive statistics for Management Relationships constructs (MR)

Code	Constructs and Scale Items	Mean	Std. Dev.
	Trust Development Construct (TD)		
TD1	University encourages academics and staff to develop an interpersonal relationship with competitor universities.	5.44	0.84
TD2	University adopts common goals to enhance the relationships with competitor universities.	5.57	1.00
TD3	University relies on transparency and clarity to develop collaborative relationships with competitor universities.	5.65	1.00
TD4	University has a strong interdependence and harmony to sustain trust with competitor universities.	5.56	1.00
TD5	Honesty, and willingness are essential to developing collaborative relationships with competitor universities.	5.39	0.83
	Mutual Benefit Construct (MB)		
MB1	Success relationships with competitors occur when cooperative universities provide actual and equal contributions.	5.25	0.76
MB2	University is willing to share resources to get into collaborative relationships with competitor universities.	5.30	0.81
MB3	University is ready to avoid opportunistic behaviour to get into collaborative relationships with competitor universities.	5.46	0.84
MB4	Success relationships with competitors occur when expected benefits come to all cooperative universities.	5.62	0.87
MB5	University has mutually dependent relationships with competitor's universities to increase mutual benefits.	5.53	0.85
	Sharing Resources and Capabilities Construct (SRC)		
SRC1	University looks for complementary resources and capabilities to enhance cooperative relationships with competitor universities.	5.45	0.86
SRC2	Compatible resources and capabilities enable the university to collaborate successfully with competitor universities.	5.57	0.86
SRC3	Sharing resources and capabilities with competitor universities enables the university to increase competitiveness	5.53	0.84
SRC4	Sharing experience, technology, and skills with competitor universities enables the university to reconfigure resources and capabilities.	5.22	0.72
SRC5	University is willing to establish collaborative relationships with competitor universities to share knowledge and academic information.	5.37	0.81
	Organisational Learning Construct (OL)		
OL1	University is willing to learn via collaborating with competitor universities.	5.49	0.83
OL2	University agrees that the ability to learn is the key to a successful collaboration with competitor universities.	5.45	0.88
OL3	University believes that willingness to learn from competitor universities is an investment to improve performance.	5.53	0.82
OL4	University encourages academics and staff to learn from collaborative relationships with competitor universities.	5.30	0.83
OL5	University believes that working with competitor universities increases the chance of learning.	5.96	0.89
	Communication Management Construct (CM)		
CM1	University has effective information support system to coordinate information with competitor universities.	5.36	0.83
CM2	University has an appropriate conflict management system to solve problems with competitor universities	5.37	0.84

Code	Constructs and Scale Items	Mean	Std. Dev.
CM3	University is willing to share internal and external information with competitor universities.	5.51	0.80
CM4	University frequently keeps informed of new developments within competitor universities.	5.38	0.78
CM5	University uses information technology to exchange information with competitor universities.	5.51	0.93

5.2.2.3 Supporting Factors Category

Supporting Factors Category (SFs) included three constructs: INS, MHE laws in Jordan and GP. Each of these constructs was measured by five items, with the responses are shown in Table 5.9.

Table 5-9: Descriptive statistics for Supporting Factors constructs (SFs)

Code	Constructs and Scale Items	Mean	Std. Dev.
Institutionalisation Construct (INS)			
Ins1	University has a mechanism to deal with the diversity of partners within a standardised structure.	5.71	0.95
Ins2	The results of cooperation with competitor universities are published into society.	5.66	0.84
Ins3	University adopts the process of ensuring that routinised actions occur in cooperative activities with partners.	5.76	0.95
Ins4	University relies on institutional norms to achieve successful cooperative relationships with competitor universities.	5.57	0.79
Ins5	University's board of directors has the authority to monitor cooperative activities with competitor universities.	5.77	0.97
Ministry of Higher Education Construct			
MHE1	The Ministry of Higher Education in Jordan obligates universities to apply the instructions and rules in the higher education.	5.69	0.98
MHE2	The Ministry of Higher Education in Jordan has a full authority to control private universities in Jordan.	5.46	0.86
MHE3	The Ministry of Higher Education has established standards to facilitate the evaluation of universities' performances.	5.47	0.86
MHE4	The role of the Ministry of Higher Education is explained by outlining the regulations, which are related to private universities.	5.44	0.82
MHE5	The Ministry of Higher Education is in charge of approving budgeting plans in terms of their programs, performance and admission policies.	5.48	0.84
Geographical Proximity Construct			
GP1	The universities, which are located in nearby geographical areas, cooperate in providing infrastructure for students and staff at the universities.	5.88	1.08
GP2	Cooperative relationships among nearby universities reduce the cost of services.	5.87	1.12
GP3	Geographic proximity among universities makes communication among them direct.	5.78	0.98
GP4	University's interactions with nearby universities are expected to be far into the future.	5.38	1.13
GP5	Maintaining a long-term relationship with nearby universities is important to my university.	5.76	0.95

Descriptive statistics for SFs constructs illustrates that the items' means were between the highest mean 5.88 for GP1 and standard deviation 1.08 and the lowest mean for GP4 at 5.38 and standard deviation of 1.13. These averages of items confirm that respondents tend to accept the importance of SFs constructs and items for COR between universities.

5.2.2.4 University Success Category

The University Success (US) construct measured US in the adoption of COS in PJUs. The US construct was measured by 10 items and the responses are shown in Table 5.10.

Table 5-10: Descriptive statistics for University Success construct (US)

Code	University Success Construct and Scale Items	Mean	Std. Dev.
US1	Working with competitors enables the university to provide educational needs to students.	5.82	1.01
US2	Collaboration with competitor universities provides supporting factors to improve education services' quality.	5.78	0.94
US3	Collaborative relationships with competitors help the university to enhance its productivity and effectiveness.	5.79	0.99
US4	Collaborative relationships with competitors help the university to save costs and increase profits.	5.54	1.08
US5	Working with competitors enables the university to grow in size.	5.65	0.96
US6	Collaboration with competitors enables the university to maintain a good image and reputation in the Jordanian education sector.	5.75	1.03
US7	The university has a social responsibility.	5.79	1.07
US8	The university successfully retains a prestigious place in various university ranking systems.	5.62	1.00
US9	Working with competitors enables the university to obtain quality assurance from the accreditation body in Jordan.	5.54	1.10
US10	The university response to change effectively to survive and continue in Jordanian educational sector.	5.60	1.02

From Table 5.10, the respondents agreed with US1 with the highest mean of 5.82 and standard deviation 1.01. They were, however, less agreed on US4 and US9 with means of 5.54, 5.54 and standards deviations of 1.08, 1.10 respectively. The mean values confirm that respondents tend to accept the importance of US in the adoption of COS between PJUs.

5.3 Measurement Scale Validation

The aim of this section is to check the procedures that have been implemented to validate the measurement scale used in this study. Reliability coefficients were obtained for all the factors. IBM SPSS Statistics 25 was employed to conduct this test, and is explained in the following section.

5.3.1 Reliability of the Scale

Reliability is an assessment of the degree of consistency between multiple measurements of a variable (Hair et al. 2010). It is an indication of the stability and consistency with which the instrument measures a concept and helps to assess the goodness of a measure (Sekaran & Bougie 2016). The reliability of a scale is determined by the consistency of the items on the scale. This is commonly determined in terms of the internal consistency of the scales based on how well the items of the scale correlate (Hair et al. 2006). The aim of this test is to reduce the measurement error and prevent further errors from occurring in data analysis. However, this study is primarily concerned with the internal consistency of the scales as determined by the reliability coefficient. The most widely used reliability coefficient measure is Cronbach's alpha (Hair et al. 2014). Hair et al. (2010) and Pallant (2013) stated that the lower limit of Cronbach's Alpha value should be above 0.7 to be reliable. Thus, all measurement items must be reliable and consistent to produce accurate results (Hair et al. 2010). According to Hair et al. (2014), "we must rely on a series of diagnostic measures to assess internal consistency" (p 123). Therefore, the following section presents the steps followed to assess the reliability of the scale, and then presents the results.

5.3.1.1 Item-Total Correlation

Item-total correlation indicates the degree of correlation of an item with a composite of other items that shape a specific scale (De Vet et al. 2011). It estimates how each item is related to other items in the scale (Molland et al. 2018). The main purpose of performing item-total correlation analysis is to filter a measure by removing items that are considered redundant (Belafsky et al. 2008; Wang et al. 2017). The value of the item-total correlation should be greater than 0.5 and the inter-item correlations should exceed 0.3 (Field 2013; Hair et al. 2014). Results of the item-total correlation for research items scale (item total statistic) are presented in Appendix C1 Table 8.

5.3.1.2 Internal Consistency

The internal consistency of measures is indicative of the homogeneity of the items in the measure that taps the construct (Sekaran & Bougie 2020). Internal consistency reliability is the degree to which responses are consistent across the items within a measure (Kline 2015). Internal consistency involves correlating the responses to each

question in the questionnaire with others in the questionnaire (Zikmund et al. 2013; Viladrich et al. 2017) and, therefore, measures the consistency of responses across either all the questions or a sub-group of the questions in the questionnaire (Saunders et al. 2009). There are varieties of methods for calculating internal consistency and one of the most frequently used is Cronbach's alpha (Streiner 2003; Adamson & Prion 2013; Davenport et al. 2015; Thigpen et al. 2017; Vaske et al. 2017; Viladrich et al. 2017; Wang et al. 2017; Bujang et al. 2018). The internal consistency for a set of items is considered excellent if the value of Cronbach's alpha is around 0.9; very good if it is around 0.8; and adequate if it is around 0.7 which is suggested to be an accepted cut-off (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014). Table 5.11 shows the value of Cronbach's alpha for each scale. All the values of the alpha coefficient were greater than 0.7 between (0.790 - 0.960). Therefore, no item was deleted in this stage.

Table 5-11: Cronbach's alphas for the measurement internal consistency

Constructs	Number of Items	Cronbach Alpha
Management commitment (MC)	5	.880
Strategic leadership (SL)	5	.937
Flexibility to change (FCH)	5	.886
Management perception (MP)	5	.906
Top management support (TMS)	5	.960
Trust development (TD)	5	.942
Mutual benefit (MB)	5	.791
Sharing resources and capabilities (SRC)	5	.873
Organisational learning (OL)	5	.793
Communication management (CM)	5	.906
Institutionalisation (INS)	5	.905
Ministry of Higher Education (MHE)	5	.895
Geographic proximity (GP)	5	.886
University success (US)	10	.845
Total	**75**	

5.4 Measurement Development of the Proposed Research Model

To measure the fit of the proposed conceptual framework, a factor analysis (FA) test is used to check the scales' validity and establish the loading for each item within the same construct (Petkov et al. 2010; Flora & Flake 2017; Becker et al. 2018; Lambie et al. 2018; Wan et al. 2018). Factor analysis (FA) is a significant instrument which is employed in improvement, assessment of tests, and scales (Williams et al. 2010; Tella 2011; Hoque & Awang 2016). This technique comprises Exploratory Factor Analysis (EFA), followed by Confirmatory Factor Analysis (CFA). Then, reliability and

validity testing of the scale are used to find the most appropriate observed variables (measurement items) pertaining to each latent variable (measurement dimensions).

5.4.1 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is an extensively utilised statistical methodology used in the fields of Information Systems, Education and Social Sciences (Williams et al. 2010; Ali et al. 2020).

The aim of the EFA is to meet the four main objectives (Thompson 2007; Hair et al. 2010). Firstly, it is utilised to identify the correlation between either respondents or variables. Secondly, the aim is to identify representative variables from a large set of variables. Thirdly, it is employed to create a new smaller set of variables to replace the original set of variables. Finally, it is used to develop theoretical constructs and to prove or disprove proposed theories. However, in this research, the survey items are employed to determine the major constructs of the proposed research model. All the items were taken from the qualitative phase of the research, as illustrated in Chapter 4. Hence, EFA was used in this research (Lloret et al. 2017; Watkins 2018; Goretzko et al. 2019).

To determine the initial number of retained factors, the following main criteria should be considered when using EFA (Hair et al. 2010; Fabrigar & Wegener 2012; Field 2013; Osborne 2014; Roever & Phakiti 2018):

- Measurement items must have a correlation coefficient greater than 0.3 (Tabachnick et al. 2007; Tabachnick & Fidell 2019)
- The value of Bartlett's test of sphericity of each variable set should be significant ($p < .05$) (Pallant 2020)
- The value of Kaiser-Meyer-Olkin (KMO) must greater than 0.6 for a good EFA (Pallant 2020)
- The factors with an eigenvalue greater than 1.0 are considered significant and should be retained for further analysis (Hair et al. 2009)
- The communality values should be greater than 0.3, otherwise the items should be deleted (Pallant 2013)
- The factor loading of each measurement item should be above 0.5 in order to generate a more reliable factor. Therefore, measurement items with a factor loading less than 0.5 should be eliminated (Hair et al. 2009)

- Sampling adequacy should exist.

For this point, Hair et al. (2014) recommended that the sample size of EFA should be greater than 100 cases while (Rouquette & Falissard 2011; Tabachnick & Fidell 2019) suggested a minimum of 300 cases. Other researchers mentioned that 200 is fair sample size (Fabrigar & Wegener 2012; Osborne 2014), and 300 a good sample size for EFA (Osborne & Costello 2004; De Winter et al. 2009; Pearson & Mundform 2010; Kyriazos 2018). The sample size used in this research is approximately 303 cases which means that this sample is a good size and suitable for EFA.

5.4.1.1 Management Commitment (MC)

Five items were used to measure MC. Details are presented in Table 5.12 and illustrate the correlation matrix for MC items. Table 5.12 shows that the correlation coefficients of MC items are greater than 0.3, which confirms the suitability for FA of these items (Hemphill 2003; Bowling & Ebrahim 2005; Tabachnick et al. 2007). The factor loading should be greater than 0.5 and, as shown in Table 5.12, the loading of MC items is greater than 0.5, which goes beyond the cut-off level recommended (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-12: Correlation matrix for Management Commitment

Correlation Matrix					
Items	**MC1**	**MC2**	**MC3**	**MC4**	**MC5**
MC1	1.000				
MC2	0.518	1.000			
MC3	0.645	0.781	1.000		
MC4	0.598	0.552	0.742	1.000	
MC5	0.558	0.450	0.551	0.555	1.000
Loading	0.805	0.806	0.912	0.843	0.745
Communality	0.647	0.650	0.832	0.710	0.554

Table 5.13 presents the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity. The value of the KMO is about 0.816, which is greater than the acceptable range of 0.5 (Kaiser 1974; Hair et al. 1995, 1998; Bryman & Cramer 2001). The Bartlett's Test of Sphericity is highly significant with p<0.05 (Tabachnick et al. 2007; Pallant 2010; Karahan et al. 2014). The provided data for this construct is suitable for FA.

Table 5-13: KMO and Bartlett's Test for Management Commitment

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.816
Bartlett's Test of Sphericity	Approx. Chi-Square	854.758
	df	10
	Sig	0.000

Table 5.14 indicates that there is only one component with an eigenvalue of 3.393. As demonstrated in Figure 5.8, the scree plot confirms the results of the eigenvalue (Walsh 1990; Hayton et al. 2004; Thompson 2004).

Table 5-14: Eigenvalue for Management Commitment

Variables	Eigenvalue	Difference	% of variance	Cumulative %
MC1	3.393	2.778	0.678	0.678
MC2	0.615	0.185	0.123	0.801
MC3	0.430	0.030	0.086	0.888
MC4	0.399	0.239	0.080	0.968
MC5	0.160	.	0.032	1.000

Extraction Method: Principal Component Analysis.
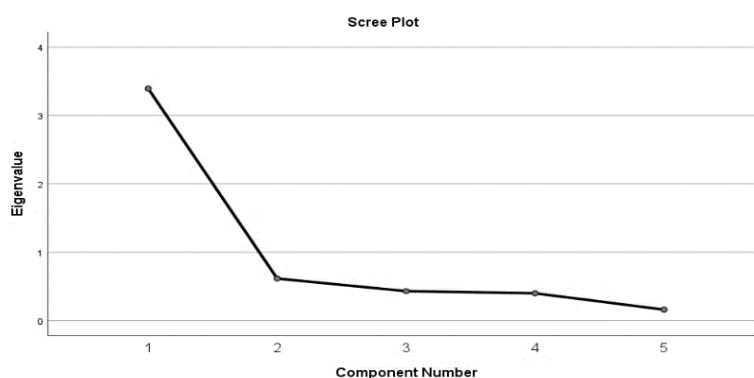
Figure 5.6: Scree plot for Management Commitment

The results of earlier evaluations suggest that all the items of MC are unidimensional.

5.4.1.2 Strategic Leadership (SL)

Five items were used to measure SL. Details presented in Table 5.15 illustrate the correlation matrix for SL items and shows that the correlation coefficients of SL items are greater than 0.3, therefore confirming the suitability for FA of these items (Field 2013; Tabachnick & Fidell 2019; Salas & Cardona 2020). The factor loading should be greater than 0.5 and, as shown in Table 5.13, the loading of SL

items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-15: Correlation matrix for Strategic Leadership

Correlation Matrix					
Items	SL1	SL 2	SL 3	SL 4	SL 5
SL1	1.000				
SL2	0.800	1.000			
SL3	0.693	0.753	1.000		
SL4	0.693	0.768	0.782	1.000	
SL5	0.735	0.793	0.755	0.725	1.000
Loading	0.876	0.921	0.890	0.887	0.897
Communalities	0.767	0.849	0.793	0.787	0.804

Both the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were determined and shown in Table 5.16. The value of the KMO is about 0.894, which is greater than the acceptable range of 0.5 (Bryman & Cramer 2001; Barrett & Morgan 2005; Tabachnick et al. 2007). The Bartlett's Test of Sphericity is highly significant with $p < 0.05$ (Noorizan et al. 2016; Owan et al. 2020; Pallant 2020). The data provided for this construct is suitable for FA.

Table 5-16: KMO and Bartlett's Test for Strategic Leadership

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.894
Bartlett's Test of Sphericity Approx. Chi-Square		1286.770
df		10
Sig		0.000

Table 5.17 indicates that there was only one component with an eigenvalue of 3.999. As shown in Figure 5.9, the scree plot confirms the results of the eigenvalue (Kaiser 1970; Suhr 2005; Hair et al. 2006).

Table 5-17: Eigenvalue for Strategic Leadership

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
SL1	4.000	3.6462	0.799	0.799
SL2	0.353	0.0943	0.070	0.870
SL3	0.259	0.044	0.051	0.922
SL4	0.214	0.0410	0.042	0.965
SL5	0.173	.	0.034	1.000

Extraction Method: Principal Component Analysis
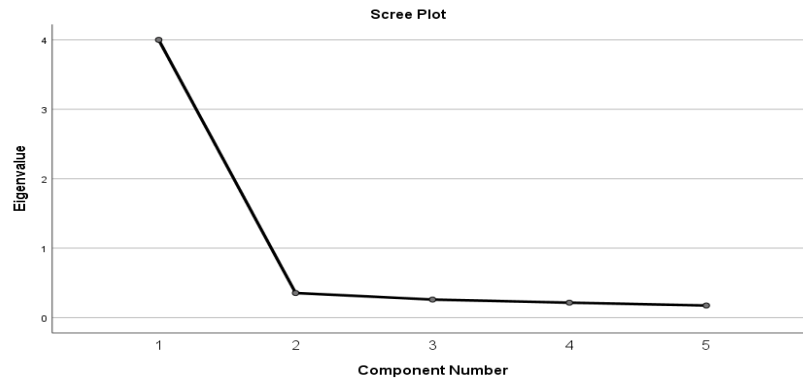
Figure 5.7: Scree plot for Strategic Leadership

The results of earlier evaluations suggest that all the items of SL are unidimensional.

5.4.1.3 Flexibility to Change (FCH)

Five items were used to measure FCH. The details presented in Table 5.18 illustrate the correlation matrix for FCH items, showing that the correlation coefficients of FCH items greater than 0.3 are suitable for FA of flexibility of these items (Tabachnick et al. 2007; Field 2009; Sharma et al. 2020). The factor loading should be greater than 0.5, and, as shown in Table 5.18, the loading of FCH items is greater than 0.5 which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-18: Correlation matrix for Flexibility to Change

Correlation Matrix					
Items	**FC1**	**FC2**	**FC3**	**FC4**	**FC5**
FC1	1.000				
FC2	0.473	1.000			
FC3	0.716	0.530	1.000		
FC4	0.596	0.451	0.744	1.000	
FC5	0.659		0.658	0.759	1.000
Loading	0.787	0.736	0.886	0.865	0.864
Communalities	0.620	0.543	0.786	0.749	0.748

Both KMO and Bartlett's Test of Sphericity were determined and are shown in Table 5.19. The value of the KMO is 0.772, which is greater than the acceptable range of 0.5 (Çokluk et al. 2010; Hair et al. 2010; Williams et al. 2010). The Bartlett's Test of Sphericity is highly significant with p<0.05 (Karahan et al. 2014; Noorizan et al. 2016; Wicaksana et al. 2020). The data provided for this construct is suitable for FA.

Table 5-19: KMO and Bartlett's Test for Flexibility to Change

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.772
Bartlett's Test of Sphericity Approx. Chi-Square		939.093
	df	10
	Sig	0.000

Table 5.20 indicates that there is one component with an eigenvalue of 3.445. As demonstrated in Figure 5.10, the scree plot confirms the results of the eigenvalue (Henson & Roberts 2006; Hair et al. 2009; Laher 2010).

Table 5-20: Eigenvalue for Flexibility to Change

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
FC1	3.445	2.799	0.689	0.689
FC2	0.646	0.135	0.129	0.818
FC3	0.510	0.278	0.102	0.920
FC4	0.232	0.068	0.046	0.967
FC5	0.164	.	0.032	1.000

Extraction Method: Principal Component Analysis.
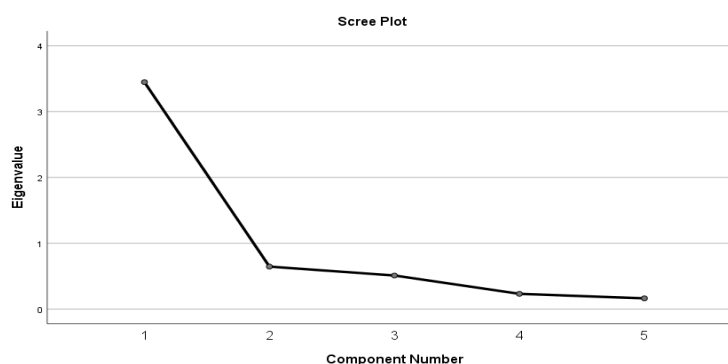
Figure 5.8: Scree plot for Flexibility to Change

The results of earlier evaluations suggest that all the items of FCH are unidimensional.

5.4.1.4 Management Perception (MP)

Five items were used to measure MP. The details presented in Table 5.21 illustrate the correlation matrix for MP items and suggest that all the correlation coefficients of MP items are greater than 0.3, which shows the suitability for FA of MP items (Hemphill 2003; Bowling & Ebrahim 2005; Tabachnick & Fidell 2019). The factor loading should be greater than 0.5 and, as shown in Table 5.21, the loading of

these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-21: Correlation matrix for Management Perception

Correlation Matrix					
Items	**MP1**	**MP2**	**MP3**	**MP4**	**MP5**
MP1	1.000				
MP2	0.507	1.000			
MP3	0.778	0.606	1.000		
MP4	0.641	0.441	0.673	1.000	
MP5	0.741	0.755	0.815	0.635	1.000
Loading	0.864	0.768	0.913	0.789	0.929
Communalities	0.746	0.590	0.834	0.623	0.862

It can be seen from Table 5.22 that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is 0.749, which is greater than the acceptable range of 0.5 (Field 2013; Leech et al. 2013; Bechtold & Abdulai 2014). The Bartlett's Test of Sphericity is highly significant with $p < 0.05$ (Tabachnick et al. 2007; Pallant 2010; Owan et al. 2020). The provided data of this construct is suitable for FA.

Table 5-22: KMO and Bartlett's Test for Management Perception

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.834
Bartlett's Test of Sphericity Approx. Chi-Square		1097.571
	df	10
	Sig	0.000

Table 5.23 suggests that there is one component with an eigenvalue of 2.980. As demonstrated in Figure 5.11, the scree plot confirms the results of the eigenvalue (Hair et al. 2010; Akdemir & Arslan 2013; Głuszak & Leśniak 2015).

Table 5-23: Eigenvalue for Management Perception

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
MP1	3.656	2.863	0.731	0.731
MP2	0.617	0.634	0.123	0.854
MP3	0.371	0.233	0.074	0.928
MP4	0.210	0.080	0.041	0.970
MP5	0.146	.	0.029	1.000
Extraction Method: Principal Component Analysis.				
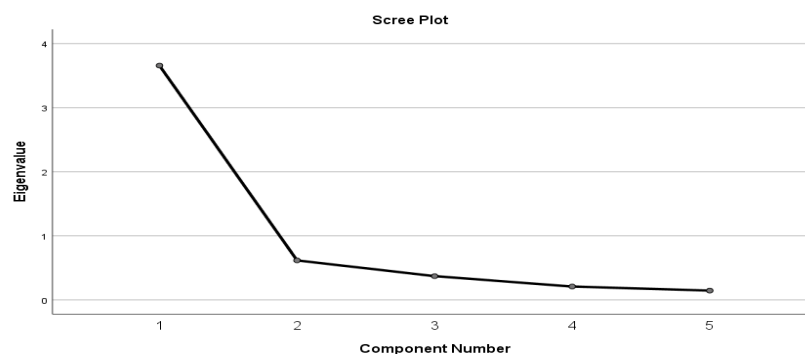
Figure 5.9: Scree plot for Management Perception

The results of earlier evaluations suggest that all the items of MP are unidimensional.

5.4.1.5 Top Management Support (TMS)

Five items were used to measure TMS and details presented in Table 5.24 illustrate the correlation matrix for TMS items. This table indicates that all the correlation coefficients of TMS items are greater than 0.3, which shows the suitability for FA of these items (Tabachnick & Fidell 2019; Salas & Cardona 2020). The factor loading should be greater than 0.5 and, as shown in Table 5.24, the loading of TMS items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2009).

Table 5-24: Correlation matrix for Top Management Support

Correlation Matrix					
Items	**TMS1**	**TMS2**	**TMS3**	**TMS4**	**TMS5**
TMS1	1.000				
TMS2	0.808	1.000			
TMS3	0.868	0.747	1.000		
TMS4	0.834	0.881	0.825	1.000	
TMS5	0.844	0.842	0.809	0.806	1.000
Loading	0.937	0.921	0.915	0.936	0.935
Communalities	0.881	0.850	0.838	0.878	0.859

Table 5.25 indicates that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is about 0.861, which is greater than the acceptable range of 0.5 (Hair et al. 2010; Alihodžić & Grabus 2020; Vejju & Sridevi 2020). The Bartlett's Test of Sphericity is highly significant with p<0.05 (Pallant 2010; Tabachnick & Fidell 2019). The data provided for this construct is suitable for FA.

Table 5-25: KMO and Bartlett's Test for Top Management Support

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.861
Bartlett's Test of Sphericity Approx. Chi-Square	1777.358
df	10
Sig	0.000

Table 5.26 indicates that there was one component with an eigenvalue of 4.306. As demonstrated in Figure 5.12, the scree plot confirms the results of the eigenvalue (Hair et al. 2014; Matsumoto 2017; Amerioun et al. 2018).

Table 5-26: Eigenvalue for Top Management Support

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
TMS1	4.306	3.341	0.861	0.861
TMS2	0.282	0.138	0.564	0.917
TMS3	0.198	0.094	0.039	0.957
TMS4	0.127	0.090	0.025	0.982
TMS5	0.087	.	0.017	1.000

Extraction Method: Principal Component Analysis.
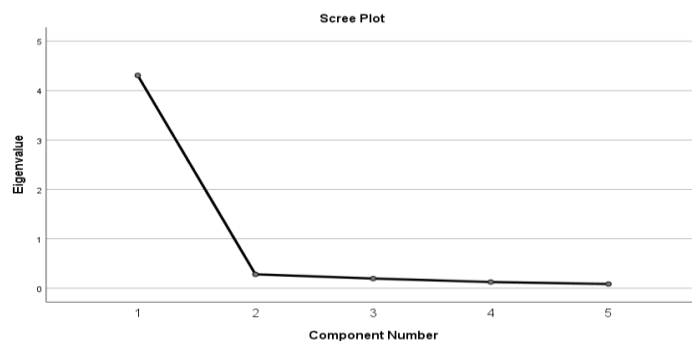
Figure 5.10: Scree plot for Top Management Support

The results of earlier evaluations confirm that all the items of TMS are unidimensional.

5.4.1.6 Trust Development (TD)

Five items were used to measure TD. Details presented in Table 5.27 illustrate the items used in the correlation matrix for TD items. Table 5.27 indicates that all the correlation coefficients of TD items are greater than 0.3, which shows the suitability for FA of these items (Tabachnick & Fidell 2019; Sharma et al. 2020). The factor loading should be greater than 0.5 and, as shown in Table 5.27, the loading of TD

items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2010; Hair et al. 2014).

Table 5-27: Correlation matrix for Trust Development

Correlation Matrix					
Items	TD1	TD2	TD3	TD4	TD5
TD1	1.000				
TD2	0.871	1.000			
TD3	0.860	0.924	1.000		
TD4	0.858	0.960	0.928	1.000	
TD5	0.904	0.837	0.799	0.836	1.000
Loading	0.945	0.968	0.950	0.966	0.920
Communalities	0.893	0.937	0.903	0.923	0.846

It can be seen from Table 5.28 that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is 0.862, which is greater than the acceptable range of 0.5 (Kaiser 1974; Barrett & Morgan 2005). The Bartlett's Test of Sphericity is highly significant with $p<0.05$ (Pallant 2010; Owan et al. 2020). The provided data of this construct is suitable for FA.

Table 5-28: KMO and Bartlett's Test for Trust Development

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.862
Bartlett's Test of Sphericity Chi-Square	Approx.	2379.184
	df	10
	Sig	0.000

Table 5.29 indicates that there was one component with an eigenvalue of 4.512. As demonstrated in Figure 5.13, the scree plot confirms the results of the eigenvalue (Nguyen et al. 2019a; Nguyen et al. 2020).

Table 5-29: Eigenvalue for Trust Development

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
TD1	4.512	3.836	0.902	0.902
TD2	0.273	0.232	0.054	0.956
TD3	0.106	0.029	0.021	0.978
TD4	0.071	0.063	0.014	0.992
TD5	0.038	.	0.007	1.000

Extraction Method: Principal Component Analysis.
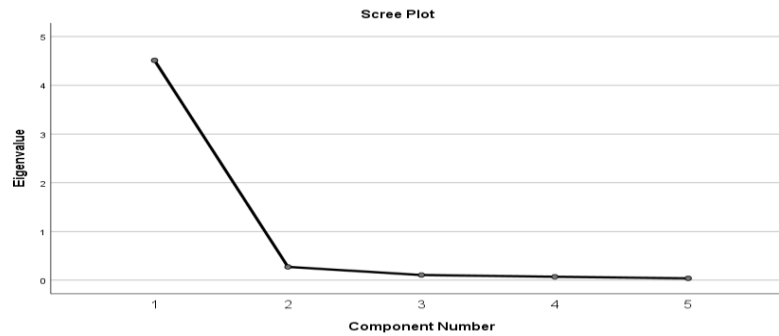
Figure 5.11: Scree plot for Trust Development

The results of earlier evaluations confirm that all the items of TD are unidimensional.

5.4.1.7   Mutual Benefit (MB)

Five items were used to measure MB. Details presented in Table 5.30 illustrate the correlation matrix for MB items and indicate that all the correlation coefficients of MB items are greater than 0.3, which shows the suitability for FA of these items (Hemphill 2003; Sharma et al. 2020). The factor loading should be greater than 0.5 and, as shown in Table 5.3, the loading of MB items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2014).

Table 5-30: Correlation matrix for Mutual Benefit

Correlation Matrix					
Items	**MB1**	**MB2**	**MB3**	**MB4**	**MB5**
MB1	1.000				
MB2	0.872	1.000			
MB3	0.768	0.847	1.000		
MB4	0.728	0.729	0.843	1.000	
MB5	0.685	0.698	0.602	0.493	1.000
Loading 1	0.916	0.952	0.919	0.874	0.772
Communalities	0.839	0.906	0.845	0.763	0.596

It can be seen from Table 5.31 that both KMO and Bartlett's Test of Sphericity were determined and the value of the KMO is 0.857, which is greater than the acceptable range of 0.5 (Tabachnick et al. 2007; Williams et al. 2010). The Bartlett's Test of Sphericity is highly significant with p<0.05 (Owan et al. 2020; Pallant 2020). The data provided for this construct is considered suitable for FA.

Table 5-31: KMO and Bartlett's Test for Mutual Benefit

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.857
Bartlett's Test of Sphericity Approx. Chi-Square		1433.456
	df	10
	Sig	0.000

Table 5.32 shows that there is one component with an eigenvalue of 3.949. As demonstrated in Figure 5.14, the scree plot confirms the results of the eigenvalue (Thompson 2004; Henson & Roberts 2006).

Table 5-32: Eigenvalue for Mutual Benefit

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
MB1	3.949	2.044	0.789	0.789
MB2	0.556	0.664	0.111	0.900
MB3	0.240	0.158	0.048	0.948
MB4	0.149	0.072	0.029	0.978
MB5	0.106	.	0.021	1.000

Extraction Method: Principal Component Analysis.
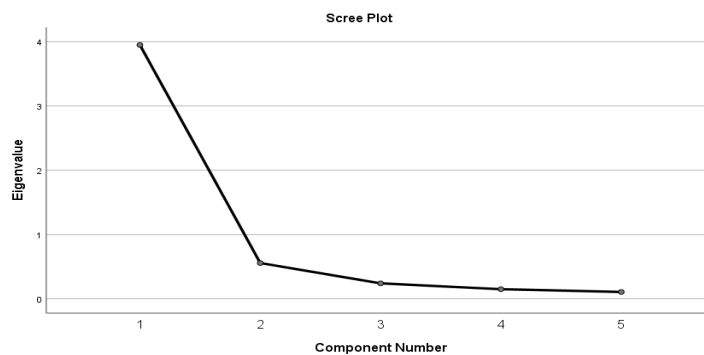
Figure 5.12: Scree plot for Mutual Benefit

The results of earlier evaluations confirm that all the items of MB are unidimensional.

5.4.1.8 Sharing Resources and Capabilities

Five items were used to measure SRC. Details presented in Table 5.33 illustrate the correlation matrix for SRC items and indicate that all the correlation coefficients of these items are greater than 0.3, which shows the suitability for FA of SRC items (Hemphill 2003; Tabachnick et al. 2007). The factor loading should be greater than 0.5 and, as shown in Table 5.33, the loading of these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-33: Correlation matrix for Sharing Resources and Capabilities

Correlation Matrix					
Items	SRC1	SRC2	SRC3	SRC4	SRC5
SRC1	1.000				
SRC2	0.625	1.000			
SRC3	0.599	0.791	1.000		
SRC4	0.570	0.523	0.504	1.000	
SRC5	0.335	0.670	0.615	0.627	1.000
Loading	0.742	0.894	0.860	0.782	0.793
Communalities	0.551	0.800	0.739	0.611	0.628

Table 5.34 illustrates that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is 0.707, which is greater than the acceptable range of 0.5 (Kaiser 1974; Hair et al. 1995, 1998; Bryman & Cramer 2001). The Bartlett's Test of Sphericity is highly significant with p<0.05 (Tabachnick et al. 2007; Pallant 2010; Karahan et al. 2014). The data provided for this construct is suitable for FA.

Table 5-34: KMO and Bartlett's Test for Sharing Resources and Capabilities

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.707
Bartlett's Test of Sphericity Approx. Chi-Square		900.676
	df	10
	Sig	0.000

Table 5.35 shows that there is one component with an eigenvalue of 3.330. As demonstrated in Figure 5.15, the scree plot confirms the results of the eigenvalue (Amerioun et al. 2018; Nguyen et al. 2019a; Nguyen et al. 2020).

Table 5-35: Eigenvalue for Sharing Resources and Capabilities

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
SRC1	3.330	2.708	0.665	0.665
SRC2	0.694	0.086	0.138	0.804
SRC3	0.584	0.345	0.116	0.921
SRC4	0.239	0.091	0.047	0.969
SRC5	0.153	.	0.030	1.000

Extraction Method: Principal Component Analysis.
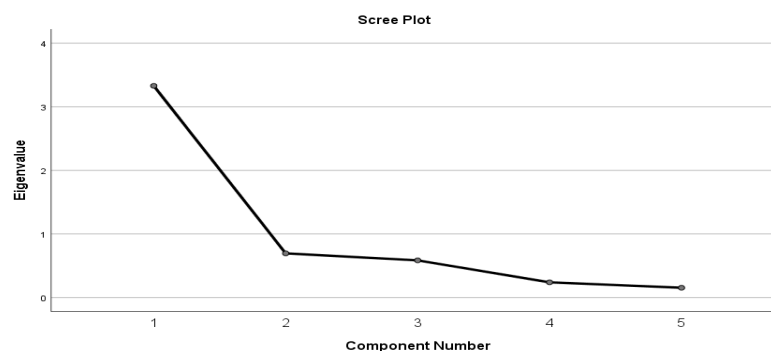
Figure 5.13: Scree plot for Sharing Resources and Capabilities

The results of earlier evaluations confirm that all the items of SRC are unidimensional.

5.4.1.9   Organisational Learning (OL)

Five items were used to measure OL. Details presented in Table 5.36 illustrate the correlation matrix for OL items and indicate that all the correlation coefficients of OL

items are greater than 0.3, which shows the suitability for FA of OL items (Hemphill 2003; Bowling & Ebrahim 2005; Tabachnick et al. 2007). The factor loading should be greater than 0.5 and, as shown in Table 5.36, the loading of these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010).

Table 5-36: Correlation matrix for Organisational Learning

Correlation Matrix					
Items	**OL1**	**OL2**	**OL3**	**OL4**	**OL5**
OL1	1.000				
OL2	0.832	1.000			
OL3	0.755	0.772	1.000		
OL4	0.798	0.805	0.783	1.000	
OL5	0.526	0.503	0.4747	0.591	1.000
Loading	0.897	0.899	0.925	0.911	0.752
Communalities	0.805	0.807	0.855	0.830	0.566

It can be seen from Table 5.37 that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is 0.847, which is greater than the acceptable range of 0.5 (Barrett & Morgan 2005; Tabachnick et al. 2007; Çokluk et al. 2010). The Bartlett's Test of Sphericity is highly significant with $p<0.05$ (Noorizan et al. 2016; Owan et al. 2020; Pallant 2020). The data provided for this construct is suitable for FA.

Table 5-37: KMO and Bartlett's Test for Organisational Learning

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.847
Bartlett's Test of Sphericity Approx. Chi-Square		1315.711
	df	10
	Sig	0.000

Table 5.38 indicates that there is one component with an eigenvalue of 3.862. As demonstrated in Figure 5.16, the scree plot confirms the results of the eigenvalue (Hayton et al. 2004; Thompson 2004; Suhr 2005).

Table 5-38: Eigenvalue for Organisational Learning

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
OL1	3.862	1.772	0.772	0.772
OL2	0.612	0.809	0.122	0.894
OL3	0.201	0.048	0.040	0.935
OL4	0.180	0.031	0.036	0.971
OL5	0.144	.	0.028	1.000

Extraction Method: Principal Component Analysis.
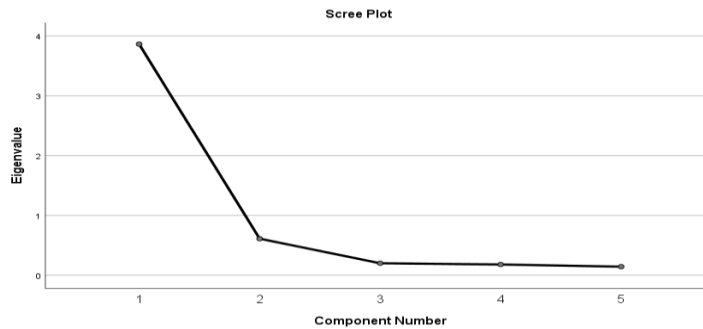
Figure 5.14: Scree plot for Organisational Learning

The results of earlier evaluations confirm that all the items of OL are unidimensional.

5.4.1.10 Communication Management (CM)

Five items were used to measure CM. Details presented in Table 5.39 illustrate the correlation matrix for CM items. Table 5.39 indicates that all the correlation coefficients of CM items are greater than 0.3, which shows the suitability for FA of CM items (Tabachnick & Fidell 2019; Salas & Cardona 2020; Sharma et al. 2020). The factor loading should be greater than 0.5 and, as shown in Table 5.39, the loading of these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-39: Correlation matrix for Communication Management

Correlation Matrix					
Items	**CM1**	**CM2**	**CM3**	**CM4**	**CM5**
CM1	1.000				
CM2	0.783	1.000			
CM3	0.504	0.550	1.000		
CM4	0.673	0.786	0.597	1.000	
CM5	0.648	0.696	0.521	0.814	1.000
Loading	0.849	0.901	0.725	0.914	0.868
Communalities	0.721	0.812	0.526	0.835	0.754

Table 5.40 shows that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is 0.837, which is greater than the acceptable range of 0.5 (Bryman & Cramer 2002; Williams et al. 2010). The Bartlett's Test of Sphericity is highly significant with p<0.05 (Karahan et al. 2014; Pallant 2020). The data provided for this construct is suitable for FA.

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Table 5-40: KMO and Bartlett's Test for Communication Management

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.837
Bartlett's Test of Sphericity	Approx. Chi-Square	1066.197
	df	10
	Sig	0.000

Table 5.41 indicates that there is one component with an eigenvalue of 3.649. As demonstrated in Figure 5.17, the scree plot confirms the results of the eigenvalue (Keshav et al. 2021; Keskin et al. 2021).

Table 5-41: Eigenvalue for Communication Management

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
CM	3.649	3.087	0.729	0.729
CM2	0.561	0.147	0.112	0.842
CM3	0.413	0.182	0. 082	0.924
CM4	0.231	0.085	0.046	0.970
CM5	0.145	.	0.029	1.000

Extraction Method: Principal Component Analysis.
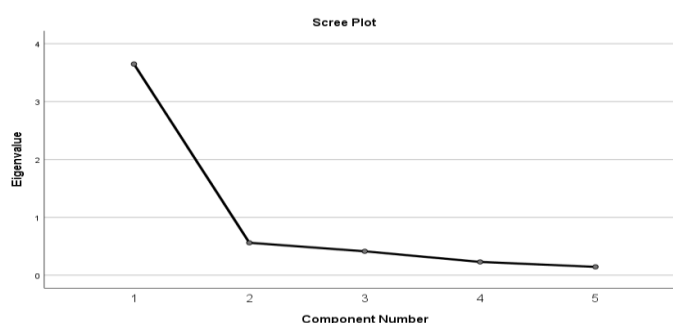
Figure 5.15: Scree plot for Communication Management

The results of earlier evaluations confirm that all the items of CM are unidimensional.

5.4.1.11 Institutionalisation (INS)

Five items were used to measure INS. Details presented in Table 5.42 illustrate the correlation matrix for INS items and indicate that all the correlation coefficients of INS items are greater than 0.3, which shows the suitability for FA of INS items (Tabachnick & Fidell 2019; Salas & Cardona 2020). The factor loading should be greater than 0.5 and, as shown in Table 5.42, the loading of these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010).

Table 5-42: Correlation matrix for Institutionalisation

Correlation Matrix					
Items	**INS1**	**INS2**	**INS3**	**INS4**	**INS5**
INS1	1.000				
INS2	0.738	1.000			
INS3	0.829	0.694	1.000		
INS4	0.636	0.665	0.654	1.000	
INS5	0.530	0.599	0.510	0.694	1.000
Loading	0.883	0.871	0.872	0.855	0.772
Communalities	0.779	0.758	0.760	0.732	0.597

Table 5.43 shows that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is 0.835, which is greater than the acceptable range of 0.5 (Field 2013; Leech et al. 2013). The Bartlett's Test of Sphericity is highly significant with $p < 0.05$ (Pallant 2020; Wicaksana et al. 2020). The data provided for this construct is suitable for FA.

Table 5-43: KMO and Bartlett's Test for Institutionalisation

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.835
Bartlett's Test of Sphericity Chi-Square	Approx.	1033.483
	Df	10
	Sig	0.000

Table 5.44 indicates that there were two components with an eigenvalue of 3.626. As demonstrated in Figure 5.18, the scree plot confirms the results of the eigenvalue (Akdemir & Arslan 2013; Matsumoto 2017; Nguyen et al. 2021).

Table 5-44: Eigenvalue for Institutionalisation

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
INS1	3.626	3.004	0.725	0.725
INS2	0.622	0.308	0.124	0.849
INS3	0.313	0.037	0.062	0.912
INS4	0.276	0.113	0.055	0.967
INS5	0.163	.	0.032	1.000

**Extraction Method:** Principal Component Analysis.
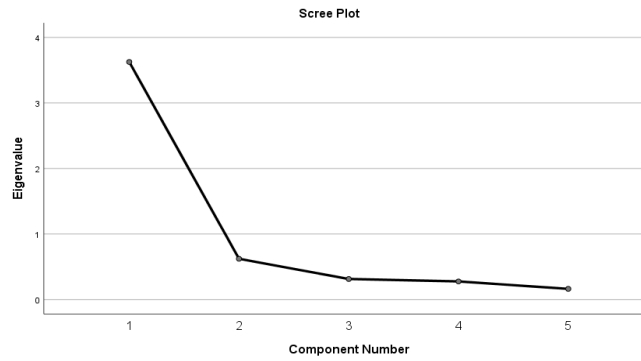
Figure 5.16: Scree plot for institutionalisation

The results of earlier evaluations confirm that all the items of INS are unidimensional.

5.4.1.12 Ministry of Higher Education Laws (MHEL)

Five items were used to measure MHEL. Details presented in Table 5.45 illustrate the correlation and loading matrix for MHEL items. The table indicates that all the correlation coefficients of MHEL items are greater than 0.3, which shows the suitability for FA of MHE items (Hemphill 2003; Bowling & Ebrahim 2005; Tabachnick et al. 2007). The factor loading should be greater than 0.5 and, as shown in Table 5.45, the loading of these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-45: Correlation matrix for Ministry of Higher Education

Correlation Matrix					
Items	**MHEL1**	**MHEL2**	**MHEL3**	**MHEL4**	**MHEL5**
MHEL1	1.000				
MHEL2	0.611	1.000			
MHEL3	0.608	0.890	1.000		
MHEL4	0.589	0.906	0.917	1.000	
MHEL5	0.561	0.876	0.890	0.940	1.000
Loading	0.717	0.949	0.954	0.966	0.948
Communalities	0.513	0.900	0.910	0.933	0.898

It can be seen from Table 5.46 that both KMO and Bartlett's Test of Sphericity were determined and the value of the KMO is 0.892, which is greater than the acceptable range of 0.5 (Çokluk et al. 2010; Williams et al. 2010; Field 2013). The Bartlett's Test of Sphericity is highly significant with p<0.05 (Tabachnick et al. 2007; Owan et al. 2020; Pallant 2020). The data provided for this construct is suitable for FA.

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Table 5-46: KMO and Bartlett's Test for Ministry of Higher Education

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.892
Bartlett's Test of Sphericity Chi-Square	Approx.	1913.313
	df	10
	Sig	0.000

Table 5.47 indicates that there was one component with an eigenvalue of 4.154. As demonstrated in Figure 5.19, the scree plot confirms the results of the eigenvalue (Hayton et al. 2004; Thompson 2004; Henson & Roberts 2006).

Table 5-47: Eigenvalue for Ministry of Higher Education

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
MHEL1	4.154	2.808	0.830	0.830
MHEL2	0.559	0.626	0.111	0.942
MHEL3	0.127	0.034	0.025	0.968
MHEL4	0.105	0.078	0.021	0.989
MHEL5	0.054	.	0.010	1.000

Extraction Method: Principal Component Analysis.
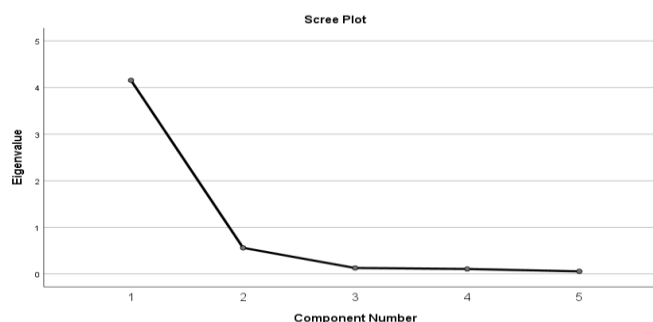
Figure 5.17: Scree plot for Ministry of Higher Education

The results of earlier evaluations confirm that all the items of MHEL are unidimensional.

5.4.1.13 Geographical Proximity (GP)

Five items were used to measure GP and the details presented in Table 5.48 illustrate the correlation matrix for GP items. Table 5.48 shows the correlation coefficients of GP items are greater than 0.3, which shows the suitability for FA of GP items (Bowling & Ebrahim 2005; Tabachnick & Fidell 2019). The factor loading should be greater than 0.5 and, as shown in Table 5.48, the loading of these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-48: Correlation matrix for Geographical Proximity

Correlation Matrix					
Items	**GP1**	**GP2**	**GP3**	**GP4**	**GP5**
GP1	1.000				
GP2	0.471	1.000			
GP3	0.779	0.634	1.000		
GP4	0.435	0.678	0.617	1.000	
GP5	0.541	0.555	0.746	0.632	1.000
Loading	0.776	0.802	0.916	0.809	0.842
Communalities	0.602	0.643	0.839	0.654	0.708

It can be seen from Table 5.49 that both KMO and Bartlett's Test of Sphericity were determined, with the value of the KMO is 0.793, which is greater than the acceptable range of 0.5 (Kaiser 1974; Barrett & Morgan 2005; Vejju & Sridevi 2020). The Bartlett's Test of Sphericity is highly significant with $p<0.05$ (Karahan et al. 2014; Owan et al. 2020). The data provided for this construct is suitable for FA.

Table 5-49: KMO and Bartlett's Test for Geographical Proximity

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.793
Bartlett's Test of Sphericity Approx. Chi-Square		934.075
	df	10
	Sig	0.000

Table 5.50 indicates that there was only one component with an eigenvalue of 3.446. As demonstrated in Figure 5.20, the screen plot confirms the results of the eigenvalue (Keskin et al. 2021; Nguyen et al. 2021).

Table 5-50: Eigenvalue for Geographical Proximity

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
GP1	3.446	2.207	0.689	0.689
GP2	0.683	0.468	0.136	0.825
GP3	0.427	0.118	0.085	0.913
GP4	0.294	0.106	0.058	0.970
GP5	0.149	.	0.029	1.000

Extraction Method: Principal Component Analysis.
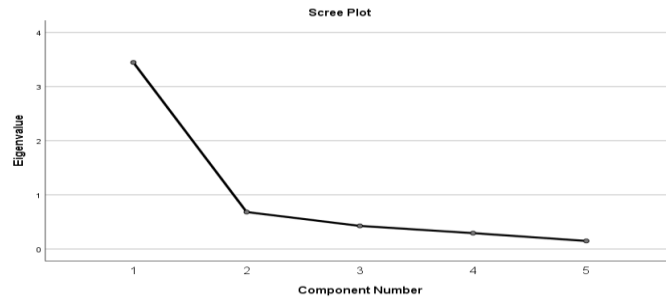
Figure 5.18: Scree plot for Geographical Proximity

The results of earlier evaluations suggest that all the items of GP are unidimensional.

5.4.1.14 University Success (US) in Adoption of Coopetition Strategy (COS)

Ten items were used to measure US. Details presented in Table 5.51 illustrate the correlation matrix for US items. The table shows that the correlation coefficients of US items are greater than 0.3, which shows the suitability for FA of US items (Tabachnick et al. 2007; Field 2013; Tabachnick & Fidell 2019). Factor loading should be greater than 0.5 and, as shown in Table 5.51, the loading of these items is greater than 0.5, which goes beyond the cut-off level (Hair et al. 2006; Hair et al. 2010; Hair et al. 2014).

Table 5-51: Correlation matrix for University Success

Correlation matrix										
Items	US1	US2	US3	US4	US5	US6	US7	US8	US9	US10
US1	1.000									
US2	0.726	1.000								
US3	0.603	0.721	1.000							
US4	0.443	0.598	0.687	1.000						
US5	0.553	0.564	0.623	0.718	1.000					
US6	0.598	0.594	0.672	0.629	0.762	1.000				
US7	0.551	0.650	0.689	0.684	0.592	0.615	1.000			
US8	0.648	0.670	0.574	0.585	0.697	0.682	0.577	1.000		
US9	0.507	0.594	0.536	0.549	0.437	0.364	0.622	0.599	1.000	
US10	0.540	0.612	0.520	0.439	0.552	0.484	0.474	0.554	0.719	1.000
Loading	0.773	0.845	0.834	0.796	0.817	0.806	0.811	0.827	0.736	0.731
Communalities	0.597	0.715	0.695	0.633	0.668	0.650	0.657	0.684	0.541	0.535

It can be seen from Table 5.52 that both KMO and Bartlett's Test of Sphericity were determined. The value of the KMO is 0.872, which is greater than the acceptable range of 0.5 (Bryman & Cramer 2001; Williams et al. 2010; Alihodžić & Grabus 2020). The Bartlett's Test of Sphericity is highly significant with $p<0.05$ (Owan et al. 2020;

Pallant 2020; Wicaksana et al. 2020). The data provided for this construct is suitable for FA.

Table 5-52: KMO and Bartlett's Test for University Success

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.872
Bartlett's Test of Sphericity Approx. Chi-Square		2378.536
	df	45
	Sig	0.000

Table 5.53 indicates that there was one component with an eigenvalue of 6.374. As demonstrated in Figure 5.21, the scree plot confirms the results of the eigenvalue (Thompson 2004; Henson & Roberts 2006; Hair et al. 2014).

Table 5-53: Eigenvalue for University Success

Variables	Eigenvalue	Difference	% of Variance	Cumulative %
US1	6.374	2.808	0.637	0.637
US2	0889	0.330	0.089	0.727
US3	0.662	0.104	0.066	0.793
US4	0568	0.362	0.056	0.850
US5	0.396	0.112	0.039	0.889
US6	0.312	0.068	0.031	0.921
US7	0.263	0.042	0.026	0.947
US8	0.227	0.104	0.022	0.970
US9	0.182	0.095	0.018	0.988
US10	0.118	.	0.011	1.000

Extraction Method: Principal Component Analysis.
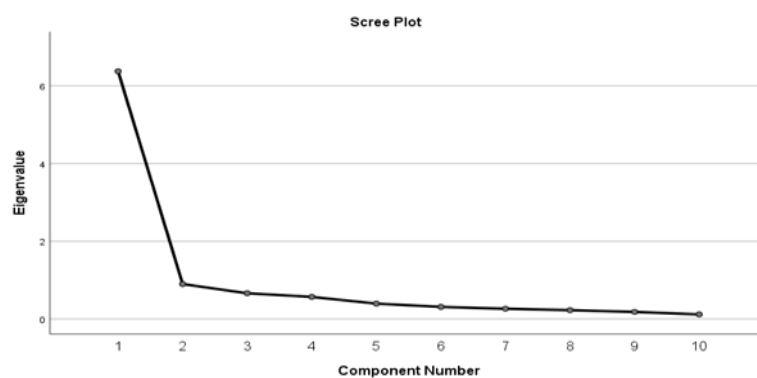
Figure 5.19: Scree plot for University Success

The results of earlier evaluations suggest that all the items of US in adoption of COS are unidimensional. Thus, Table 5.54 summaries the significant results of the Exploratory Factor Analysis (EFA).

Table 5-54: Summary of Exploratory Factor Analysis results

Scale	Factor No.	KMO	Eigen value	Factor loading										% of variance	Chi-Square
				Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10		
Management Commitment	1	0.816	3.393	0.805	0.806	0.912	0.843	0.745						0.678	854.758
Strategic Leadership	1	0.894	3.999	0.876	0.921	0.890	0.887	0.896						0.799	1286.770
Flexibility to Change	1	0.772	3.445	0.787	0.736	0.886	0.865	0.864						0.689	939.093
Management Perception	1	0.834	3.656	0.864	0.768	0.913	0.789	0.929						0.731	804.862
Top Management Support	1	0.861	4.306	0.937	0.921	0.915	0.936	0.935						0.861	1157.914
Trust Development	1	0.862	4.512	0.945	0.968	0.950	0.966	0.920						0.902	1874.861
Mutual Benefit	1	0.857	3.949	0.916	0.952	0.919	0.874	0.772						0.789	861.388
Sharing Resources and Capabilities	1	0.707	3.330	0.742	0.894	0.860	0.782	0.793						0.665	935.441
Organisational Learning	1	0.847	3.862	0.897	0.899	0.925	0.911	0.752						0.772	707.753
Communication Management	1	0.837	3.649	0.849	0.901	0.725	0.914	0.868						0.729	1066.197
Institutionalisation	1	0.835	3.626	0.883	0.871	0.872	0.855	0.772						0.725	1033.483
Ministry of Higher Education	1	0.892	4.154	0.717	0.949	0.954	0.966	0.948						0.830	1305.324
Geographic Proximity	1	0.793	3.446	0.776	0.802	0.916	0.809	0.842						0.689	735.561
University Success	1	0.872	6.374	0.773	0.845	0.834	0.796	0.817	0.806	0.811	0.827	0.736	0.731	0.637	1262.485

The results of EFA confirmed that the items of the constructs MC, SL, FCH, MP, TMS, TD, MB, SRC, OL, CM, INS, MHEL, GP and US are unidimensional and eligible to represent their constructs. Therefore, the constructs are eligible for CFA testing, which is addressed in the next section.

5.4.2 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is a method for testing how well measured variables represent a smaller number of constructs (Hair et al. 2014; Jeon 2015). It is a powerful statistical tool for examining the nature of, and relationships between, latent constructs (Jackson et al. 2009). CFA explicitly tests a priori hypotheses about relationships between observed variables and latent variables or factors (Schreiber et al. 2006; Brown 2015). It is often the analytic tool of choice for developing and refining measurement instruments, assessing construct validity, identifying method effects, assessing the quality of the measurement model and evaluating factor invariance across time and groups (DiStefano & Hess 2005; Hair et al. 2014; Brown 2015; Lewis 2017). CFA is considered a part of Structure Equation Model (SEM) (Gallagher & Brown 2013; Schumacker & Lomax 2015). Consequently, this research study used Analysis of Moment Structure (AMOS) software to conduct CFA and SEM analysis.

CFA is applied to test the extent to which a researcher's a-priori, theoretical pattern of factor loadings on pre-specified constructs (variables loading on specific constructs) represents the actual data (Hair et al. 2010; Brown & Moore 2012). Thus, CFA statistics tell us how well our theoretical specification of the factors matches reality (the actual data) (Hair et al. 2017). In essence, Hair et al. (2014) stated that CFA is a tool that enables us to either "confirm" or "reject" our preconceived theory (p. 603). Thus, the measurement items and construct are tested based on the factors generated in EFA results (Hair et al. 2010; Orçan 2018). Therefore, this study employed CFA to confirm that the measurement items are in fact measuring the construct extracted by EFA, using the AMOS software.

This study applied the following criteria to determine which items should be retained in the constructs or factors of the research model:

- The items should load on the same factor after both exploratory and confirmatory analysis (Stevens 2009; Flora & Flake 2017)
- The item loadings should exceed 0.5 as accepted in exploratory studies (Hair et al. 2010; Hair et al. 2014)

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- Each factor is required to have at least three measurement items to enable the development of congeneric factors (Byrne 2011; Hair et al. 2014)
- It is required in determining the goodness of model fit criteria for CFA and SEM (Byrne 2001; Holmes et al. 2006; Schreiber et al. 2006; Jackson et al. 2009; Hair et al. 2010; Holmes 2011).

The following sections present the Goodness of Fit (GOF) indices that the current study has adopted for the CFA and SEM analyses.

5.4.2.1 Measure of Model Fit

The goodness or fit of a structural model can be assessed by interpreting the GOF indices (Schumacker & Lomax 2015). CFA was used to assess the measurement model for this study (De Villiers 2012; Han & Hyun 2012). CFA, as a specific case of SEM, provides a comprehensive picture of how well the measured items represent the variables (Hair et al. 2014; Jeon 2015). The measurement of fitness of the model for CFA and the structural model can be justified by three main types of indices: absolute fit indices, incremental fit indices and parsimony fit indices (Hooper et al. 2008; Hair et al. 2014; Schumacker & Lomax 2015).

An absolute fit indices technique is employed to measure the overall fit of the measurement and the structural model (Hair et al. 2014). It comprises Chi-square probability level (X²); Normed Chi-square (CMIN/df); Goodness of Fit Index (GFI); Root Mean Square Error of Approximation (RMSEA), Root Mean Square Residual (RMR), and Standardized Root Mean Residual (SRMR) indices (Harrington 2009; Hair et al. 2010). *An incremental fit indices technique* is employed to measure Goodness of Fit (GOF) by comparing the standard hypothesised model with the hypothesised model (Byrne 2011). It comprises the Tucker Lewis Fit Index (TLI); Bentler's Comparative Fit Index (CFI), the Normed Fit Index (NFI), Incremental-Fit-Index (IFI) and the Relative Non Centrality Index (RNI) (Hair et al. 2010; Hair et al. 2014). These measures are used to indicate an improvement in the overall fit of the hypothesised model with respect to the null model. *Parsimony fit indices* are used to identify the hypothesised model that represents the best fit when compared to other competing hypothesised models (Hair et al. 2014). Typically, a more complex model would appear to be a better fit (Hair et al. 2010; Hair et al. 2014). It includes the Adjusted Goodness of Fit Index (AGFI) and the Parsimony Normed Fit Index (PNFI).

It is, however, important to note that, for suitability, there are a variety of fit indices and several rules based on practice regarding the minimum range of value in these types of measurement

(Byrne 2001). It is not necessary to include every index in the software output (Hooper et al. 2008). In this research, Normed Chi Square/Degree of Freedom (CMIN/DF), Root Mean Square Residual (RMR), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Square Error of Approximation (RMSEA), Incremental Index of Fit (IFI), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) (see Table 5.55) are taken into account for this analysis because these indices are employed frequently and are mentioned in the literature, e.g. (Byrne 2001; Holmes et al. 2006; Hooper et al. 2008; Hair et al. 2014; Kline 2015; Schumacker & Lomax 2015). To ensure the measurement model's quality, the indices reported in this study are illustrated in Table 5.55.

The basic objective of these fit indices is to evaluate the initial measurement models and the final structural model outlined in the next sections. However, for this study, three stages were employed to assess the measurement model: (1) CFA for single-composite variable measurement model, (2) CFA for all exogenous and endogenous variables individually, and (3) CFA for the overall measurement model.

Table 5-55: Summary of Goodness of Fit indices reported in this research

Name of category	Name of index and abbreviations	Acceptable Level	Fit Measures' Indications	Sources
Absolute fit	Root Mean Square Error of Approximation **(RMSEA)**	≤0.08	Value ≤ 0.1.	Holmes et al. (2006); Dion (2008); Hair et al. (2010); Holmes-Smith (2011); Bagozzi and Yi (2012); Byrne (2013); Wong et al. (2018); Mueller and Hancock (2019)
	Goodness of Fit Index **(GFI)**	≥0.90	A value close to 0 is a poor fit; a value close to 1 is a perfect fit	Schumacker and Lomax (2004); Hair et al. (2006); Shah and Goldstein (2006); Chan et al. (2007); Hooper & Coughlan (2008a); Morris and Shakespeare (2011); Byrne (2013); Kline (2015).
	Root Mean Square Residual **(RMR)**	<0.06	A value < 0.06 is a perfect fit	Hooper et al. (2008); Byrne (2011); Hair et al. (2010); Holmes (2011); Kline (2015); Schumacker and Lomax (2015); Byrne (2016); Venkatesan and Venkataraman (2018).
	Normed Chi Square **(CMIN)**	≤ 5.0	A value ≥ 1.0, is a lower limit; a value 3.0 - 5.0 is an upper limit	Tabachnick et al. (2007); Byrne (2011); Holmes (2011); Malek (2011); Naliboff et al. (2012) ; Hair et al. (2014); Schumacker and Lomax (2015); Kline (2015); Gopinath (2020b)
Incremental fit	Comparative Fit Index **(CFI)**	≥0.90	A value close to 1 is a good fit	Hair et al. (2014); Byrne (2016); Chen et al. (2017); Vatankhah et al. (2017); Hosseinabadi and Etemadinezhad (2018); Yun and Kang (2018); Abrahim et al. (2019) ; Xia and Yang (2019)
	Tucker-Lewis Index **(TLI)**	≥0.90	A value close to 1is a good fit.	Byrne (2001); Singh (2009); Hair et al. (2010); Holmes (2011); Tabachnick and Fidell (2019); Xia and Yang (2019); Mustafa et al. (2020)
	Incremental Index of Fit **(IFI)**	≥0.90	A value close to 1 is a good fit.	Yap and Khong (2006); Byrne (2013); Hair et al. (2014); Jenatabadi and Ismail (2014); Kline (2015); Wang and Liu (2015); Haba and Dastane (2018)
Parsimonious fit	Adjusted Goodness of Fit Index **(AGFI)**	≥0.80	A value close to 0 is a poor fit; a value close to 1 is a perfect fit.	De Jonge and Schaufeli (1998); Tanewski et al. (2003); Shaw and Shiu (2002); Hooper et al. (2008); (Byrne 2011); Hair et al. (2010); Nair and Das (2012) ; Hair et al. (2017a)

5.4.2.2 Stage 1: Initial Measurement and Modification of CFA for Single-Composite Variable Measurement Model

This part of the analysis confirms the major findings related to the initial measurement fit with CFA. In this stage CFA was used to evaluate unidimensional composite variables through alteration, simplification and any essential modification in the measurement model (Holmes et al. 2006; Holmes 2011; Byrne 2016). CFA was also used to validate the model fit by examining modification goodness indices which include variance, covariance, and regression weight and standardised loadings in the AMOS output, even though model identification is pre-requisite

of the CFA. However, these indices determine the direction of the model modification (Mueller & Hancock 2019; Collier 2020).

The one-factor congeneric measurement model was undertaken with each construct separately using CFA. In this study, the CFA procedures for each composite variable in the measurement model were calculated to obtain load factors. Regression weights between a particular composite variable and its items were calculated in this stage. During this stage, the data set being used consisted of 75 items that measured fourteen composite variables (construct measures), see Table 5.56.

Table 5-56: Constructs and items in Confirmatory Factor Analysis

Constructs	Items codes	Number of items
Management Commitment (MC)	MC1, MC2, MC3, MC4, MC5.	5
Strategic Leadership (SL)	SL1, SL2, SL3, SL4, SL5	5
Flexibility to Change (FCH)	FCH1, FCH2, FCH3, FCH4, FCH5	5
Management Perception (MP)	MP1, MP2, MP3, MP4, MP5	5
Top Management Support (TMS)	TMS1, TMS2, TMS3, TMS4, TMS5	5
Trust Development (TD)	TD1, TD2, TD3, TD4, TD5	5
Mutual Benefit (MB)	MB1, MB2, MB3, MB4, MB5	5
Sharing Resources and Capabilities (SRC)	SRC1, SRC2, SRC3, SRC4, SRC5	5
Organisational Learning (OL)	OL1, OL2, OL3, OL4, OL5	5
Communication Management (CM)	CM1, CM2, CM3, CM4, CM5	5
Institutionalisation (INS)	INS1, INS2, INS3, INS4, INS5	5
Ministry of Higher Education (MHE)	MHE1, MHE2, MHE3, MHE4, MHE5	5
Geographical Proximity (GP)	GP1, GP2, GP3, GP4, GP5	5
University Success (US)	US1, US2, US3, US4, US5, US6, US7, US8, US9, US10	10
14		75

The initial measurement models for each construct measure are discussed in the next sections.

5.4.2.2.1 Management Commitment: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure MC. The initial CFA results of the MC model fit revealed that the model was a poor fit to the data because the cut-off range of several fit indices was not within acceptable levels (for more details see Table 5.56). The initial CFA findings presented in Table 5.56 demonstrate that the MC model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-57: Management Commitment initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
MC1	University must be committed to support cooperative relationships with competitor universities	.69	.74	11.10
MC2	University has a long-term commitment to competitor universities	.80	.67	9.93
MC3	University has a formal or informal agreement (at least a memorandum of understanding) with competitor universities	.95	.87	12.39
MC4	University accepts mutual strengths and weaknesses to maintain cooperative relationship with competitor universities	.78	.84	12.17
MC5	Relationships with competitor universities are very important to my university	.61	.66	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	9.735	.934	.802	.023	.949	.897	.949	.170
Final CFA Findings	2.783	.985	.945	.009	.992	.979	.992	.077

The researcher found that the main reason for the poor fit of the MC model is the high standardised residual covariance between MC2 and MC3 (between *e3* and *e4*) which was 10.378. According to Byrne (2016) and Holmes (2011), correlating the error covariance approach can be justified both statistically and substantively. As a result, the researcher made covering error variance terms of both items (MC2 and MC3), for more details see Figure 5.22. The results of this iteration confirmed that the model was a good fit. As shown in Table 5.56, the CFA final findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.

Figure 5.20: Congeneric model of Management Commitment

5.4.2.2.2 Strategic Leadership: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure SL. The initial CFA results of the SL model fit revealed that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for

more details see Table 5.57). The CFA initial findings presented in Table 5.57 demonstrate that the SL model does not fit and needs some modification to reach an acceptable level of fit.

Table 5-58: Strategic Leadership CFA initial findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
SL1	I can establish a clear vision, and objectives to sustain cooperative relationships with competitor universities.	.84	.85	19.78
SL2	I can create strategy to manage successful collaborative relationships with competitor universities.	.91	.92	22.83
SL3	I can solve conflict arising from collaborative relationships with competitor universities.	.85	.83	18.74
SL4	I can obtain and allocate new resources to support collaborative relationships with competitor universities.	.85	.83	18.67
SL5	I engage with stakeholders regularly for their feedback to enhance collaborative relationships with competitor universities.	.87	.87	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	5.650	.962	.887	.008	.982	.964	.982	.124
Final CFA Findings	2.164	.988	.956	.004	.996	.991	.996	.062

The researcher found that the main reason for the poor fit of the complexity model is the high standardised residual covariance between SL3 and SL4 '(between *e2* and *e3*) which was 16.343. According to Byrne (2001) and Holmes et al. (2006), correlating the error covariance approach can be justified both statistically and substantively. As a result, the researcher made covering error variance terms of both items (SL3 and SL4), for more details see Figure 5.23. The results of this iteration confirmed that the model was a good fit. As shown in Table 5.57, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.

Figure 5.21: Congeneric model of strategic Leadership

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5.4.2.2.3 Flexibility to Change: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure FCH. The initial CFA results of the FCH model fit established that the model was a poor fit to the data because the cut-off range of several fit indices was not in acceptable levels (for more details see Table 5.58). The initial CFA findings presented in Table 5.58 demonstrate that the FCH model does not fit and needs some modification to reach an acceptable level of fit.

Table 5-59: Flexibility to Change initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
FC1	Flexibility in response to requests for changes is a characteristic of the university's relationships with competitor universities.	.72	.63	11.51
FC2	**University has the managerial capabilities to adopt collaborative relationships with competitor universities**	**.63**	**Removed**	
FC3	University accepts new values to achieve a cultural fit with competitor universities.	.86	.80	15.72
FC4	University re-allocates resources effectively to support collaborative relationships with competitor universities.	.86	.93	17.27
FC5	University strategy reflects a high level of flexibility in managing risks to maintain collaborative relationships with competitor universities.	.82	.82	
Fit Indices				

	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	24.780	.874	.622	.026	.874	.746	.873	.281
Final CFA Findings	1.474	.998	.976	.003	.999	.996	.999	.040

To improve the model fit, two iterations were made: the first iteration was an examination of the items loading which indicated that the regression weight of FC2 was the lowest among the other items with 0.63. Based on this, FC2 was eliminated (Hair et al. 2010; Hair et al. 2014, Hair et al. 2014a). The results still showed that the FCH model did not achieve a good fit. The second iteration found that FC1 had a high residual covariance with other items, and especially with FC3. The value of the residual covariance for FC1 and FC3 (between *e3* and *e5*) was 33.482. The researcher made covering error variance terms of both items (FC1 and FC3) by applying correlating the error covariance approach (Byrne 2011; Holmes 2011), (see Figure 5.24). The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.58, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit, and all the different indicators that were reported in this research met the recommended levels.
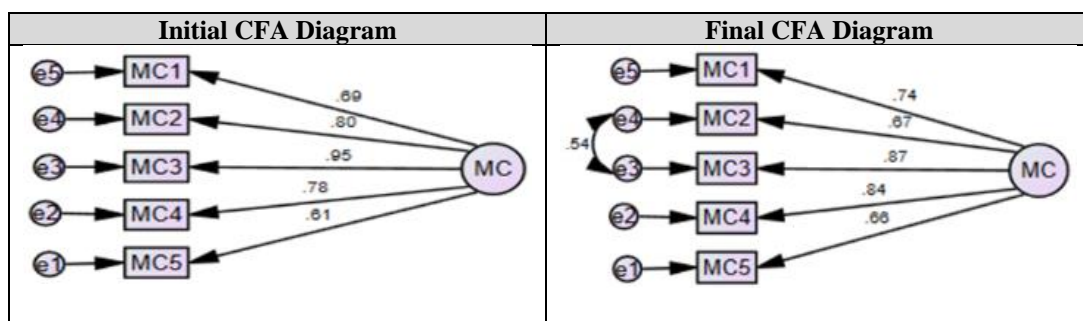
Figure 5.22: Congeneric model of Flexibility to Change

5.4.2.2.4 Management Perception: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure MP. The initial CFA results of the MP model fit determined that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.59). The initial CFA findings presented in Table 5.59 demonstrate that the MP model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-60: Management Perception initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
MP1	University leaders believe in cooperative relationships with competitor universities.	.83	.85	19.64
MP2	University leaders have good experience about managing successful collaboration with competitor universities.	.72	.63	15.97
MP3	University leaders have cooperative mindset to establish successful cooperative relationships with competitor universities.	.90	.92	22.51
MP4	University leaders have a good perception about change in the educational sector in regards to competition and cooperation regulations.	.72	.73	15.37
MP5	University leaders are aware of the anticipated benefits from collaboration with competitor universities.	.92	.89	
Fit Indices				
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	14.971	.901	.702	.041	.937	.873	.936	.215
Final CFA Findings	1.282	.993	.974	.012	.999	.997	.999	.031

The researcher found that the main reason for the poor fit of the MP model is that the high standardised residual covariance between MP2 and MP5 (between *e1* and *e4*) was 55.660. According to Brown and Moore (2012) and Holmes (2011), correlating the error covariance approach can be justified both statistically and substantively. As a result, the researcher made covering error variance terms of both items (MP2 and MP5), (for more details see Figure 5.25). The results of this iteration confirmed that the model was a good fit. As shown in Table 5.59,

the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
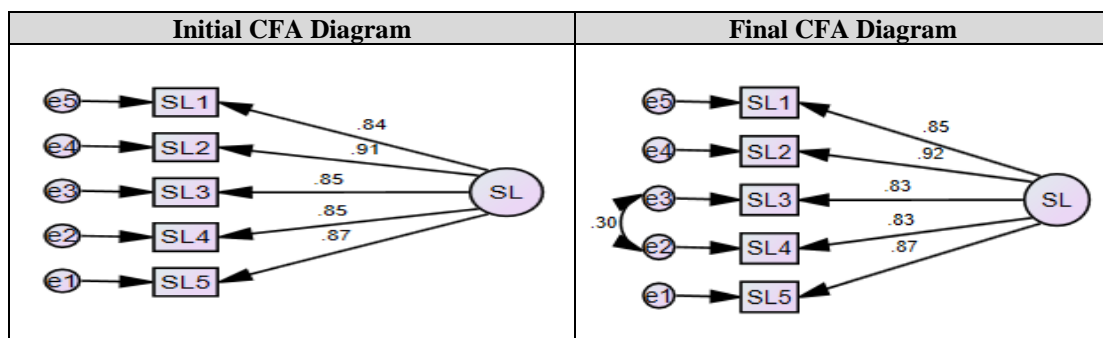

Figure 5.23: Congeneric model of Management Perception

5.4.2.2.5 Top Management Support: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure TMS. The initial CFA results of the TMS model fit established that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.60). The initial CFA findings presented in Table 5.60 demonstrate that the TMS model is not a good fit and needs some modification to reach an acceptable level of fit.

Table 5-61: Top Management Support initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
TMS1	Top management is willing to take risks involved in adopting cooperative relationships with competitor universities	.92	.94	27.34
TMS2	Top management provides resources to support collaboration relationships with competitor universities.	.90	.91	27.98
TMS3	Top management is enthusiastic to keep supporting collaborative relationships with competitor universities.	.89	.92	25.67
TMS4	Top management provides clear objectives to support collaborative relationships with competitor universities.	.92	.96	25.63
TMS5	Top management is willing to make more efforts to build successful collaborative relationships with competitor universities.	.91	.94	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	22.798	.880	.640	.021	.940	.880	.940	.269
Final CFA Findings	2.321	.991	.956	.006	.998	.993	.998	.066

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To improve the model fit, two iterations have been made. The first iteration involved examining the residual covariance with other different items, which indicated that the TMS1 had a high residual covariance with TMS2. The value of the residual covariance for TMS1 and TMS2 (*e4* and *e5*) was 12.323. The researcher made covering error variance terms of both items (TMS1 and TMS2) by applying correlating the error covariance approach (Mueller & Hancock 2019; Collier 2020). The results of the first iteration still showed that the TMS model did not achieve a good fit. The second iteration found that TMS2 had a high residual covariance with other different items, and especially with TMS3. The value of the residual covariance for TMS2 and TMS3 (*e3* and *e4*) was 38.377. As a result, the researcher made covering error variance terms of both items (TMS2 and TMS3) (Mueller & Hancock 2019; Collier 2020; Mustafa et al. 2020), for more details see Figure 5.26. The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.60, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
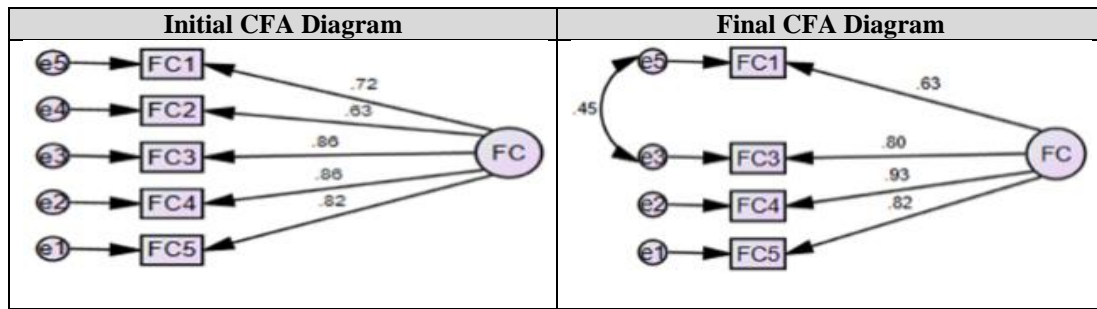

Figure 5.24: Congeneric model of Top Management Support

5.4.2.2.6 Trust Development: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure TD. The initial CFA results of the TD model fit revealed the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.61). The initial CFA findings presented in Table 5.61 demonstrate that the TD model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-62: Trust Development initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
TD1	University encourages academics and staff to develop an interpersonal relationship with competitor universities.	.82	.86	23.28
TD2	University adopts common goals to enhance the relationships with competitor universities.	.89	.91	19.13
TD3	University relies on transparency and clarity to develop collaborative relationships with competitor universities.	.89	.87	17.80
TD4	University has a strong interdependence and harmony to sustain trust with competitor universities.	.89	.88	19.20
TD5	Honesty, and willingness are essential to developing collaborative relationships with competitor universities.	.82	.80	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	11.510	.932	.769	.024	.963	.925	.962	.187
Final CFA Findings	2.004	.996	.980	.005	.993	1.000	1.000	.003

To improve the model fit, two iterations were made. The first iteration involved examining the residual covariance with other different items, which indicated that TD1 had a high residual covariance with TD3. The value of the residual covariance for TD1 and TD3 (*e3* and *e5*) was 26.377. Correlating the error covariance approach can be justified both statistically and substantively (Holmes et al. 2006; Holmes 2011; Byrne 2016). As a result, the researcher made covering error variance terms of both items (TD1 and TD3). The results of the first iteration still showed that the TD model did not achieve a good fit. The second iteration found that TD4 had a high residual covariance with other different items, and especially with TD5. The value of the residual covariance for TD4 and TD5 (*e1* and *e2*) was 30.949. The researcher made covering error variance terms of both items (TD4 and TD5) (Holmes et al. 2006; Holmes 2011; Byrne 2016a), for more details see Figure 5.27. The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.61, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
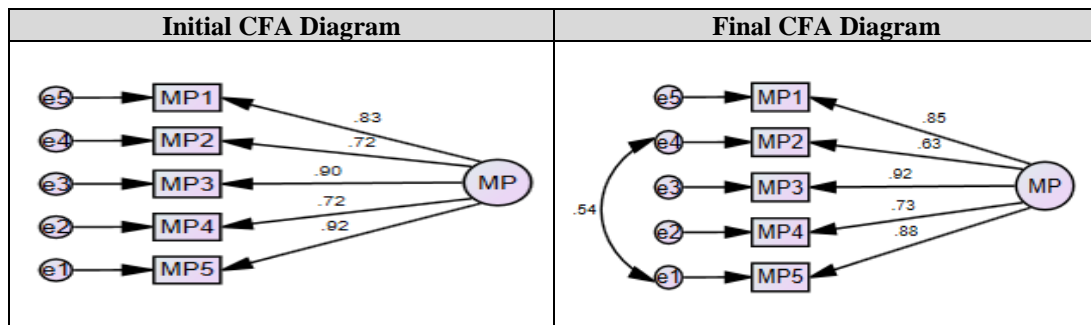

Figure 5.25: Congeneric model of Trust Development

5.4.2.2.7 Mutual Benefit: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure MBs. The initial CFA results of the MBs model fit pointed that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.62). The initial CFA findings presented in Table 5.62 demonstrate that the MB model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-63: Mutual Benefit initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
MB1	Success relationships with competitors occur when cooperative universities provide actual and equal contributions.	.76	.73	11.94
MB2	University is willing to share resources to get into collaborative relationships with competitor universities.	. 77	.74	12.36
MB3	University is ready to avoid opportunistic behaviour to get into collaborative relationships with competitor universities.	.82	.84	15.42
MB4	Success relationships with competitors occur when expected benefits come to all cooperative universities.	.82	.84	
MB5	**University has mutually dependent relationships with competitor universities to increase mutual benefits among partners.**	**.15**	**Removed**	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	4.160	.973	.919	.017	.932	.948	.974	.102
Final CFA Findings	1.165	.998	.981	.003	1.000	.998	1.000	.023

To improve the model fit, two iterations have been made. The first iteration involved examining the items loading which indicated that the regression weight of MB5 was the lowest of the other items with 0.15. Based on this, MB5 was eliminated (Hair et al. 2014, Hair et al. 2014a). The results still showed that the mutual benefits model did not achieve a good fit. The second iteration found that MB1 had a high residual covariance with other different items, and especially with MB2. The value of the residual covariance for MB1 and MB2 (e4 and e5) was 4.297. The researcher made covering error variance terms of both items (MB1 and MB2) by applying correlating the error covariance approach (Byrne 2001; Holmes et al. 2006), for more details see Figure 5.28.The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.62, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
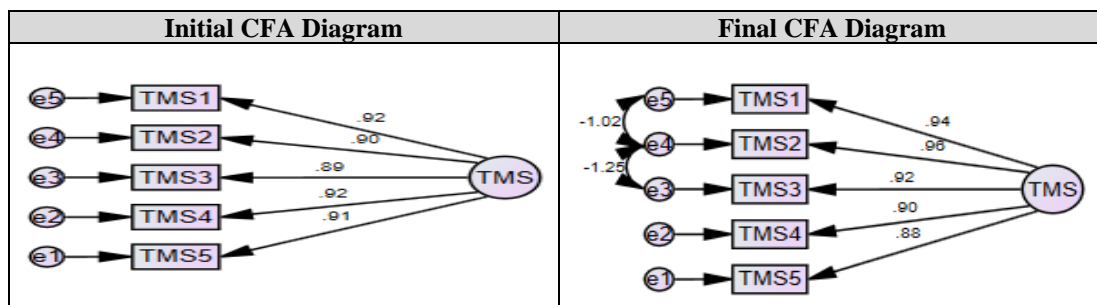
Figure 5.26: Congeneric model of Mutual Benefit

5.4.2.2.8 Sharing Resources and Capabilities: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure SRC. The initial CFA results of the SRC model fit showed that the model was a poor fit to the data because the cut-off ranges of several fit indices was not at acceptable levels (for more details see Table 5.63). The initial CFA findings presented in Table 5.63 demonstrate that SRC model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-64: Sharing Resources and Capabilities initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
SRC1	University looks for complementary resources and capabilities to enhance cooperative relationships with competitor universities.	.66	.82	11.09
SRC2	Compatible resources and capabilities enable the university to collaborate successfully with competitor universities.	.92	.76	13.32
SRC3	Sharing resources and capabilities with competitor universities enables the university to increase competitiveness.	.85	.68	12.15
SRC4	Sharing experience, technology, and skills with competitor universities enables the university to reconfigure resources and capabilities.	.63	.70	11.99
SRC5	University is willing to establish collaborative relationships with competitor universities to share knowledge and academic information.	72	.89	
Fit Indices				

	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	29.240	.885	.655	.027	.844	.686	.843	.306
Final CFA Findings	.553	.998	.989	.002	1.001	1.005	1.000	.000

To improve the model fit, two iterations have been made. The first iteration involved examining the residual covariance with other different items, which indicated that the SRC2 had a high residual covariance with SRC3. The value of the residual covariance for SRC2 and SRC3 (*e3* and *e4*) was 46.855**.** The researcher made covering error variance terms of both items (SRC2 and SRC3) by applying correlating the error covariance approach (Holmes 2011; Mueller &

Hancock 2019). The results of the first iteration still showed that the sharing resources and capabilities model did not achieve a good fit. The second iteration found that SRC1 had a high residual covariance with other different items, and especially with SRC5. The value of the residual covariance for SRC1 and SRC2 (*e1* and *e5*) was 38.467. The researcher made covering error variance terms of both items (SRC1 and SRC5), for more details see Figure 5.29. The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.63, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
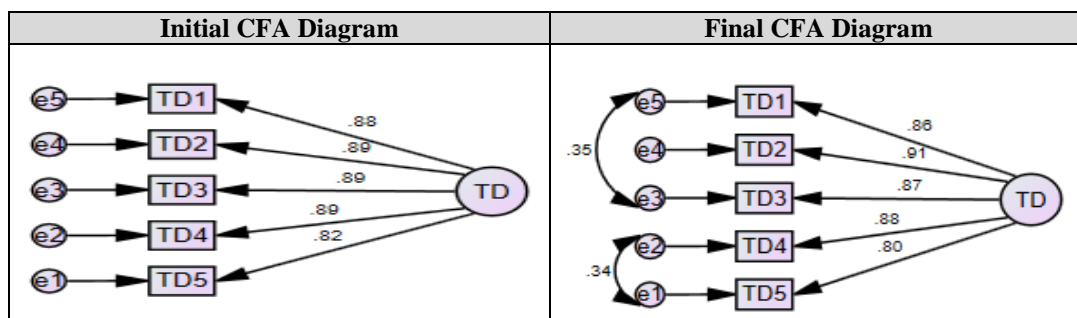

Figure 5.27: Congeneric model of Sharing Resources and Capabilities

5.4.2.2.9 Organisational Learning: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement five items were used to measure OL. The initial CFA results of OL model fit indicated that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.64). The initial CFA findings presented in Table 5.64 demonstrate that the OL model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-65: Organisational Learning initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
OL1	University is willing to learn via collaborating with competitor universities.	.80	.82	14.16
OL2	University agrees that the ability to learn is the key to a successful collaboration with competitor universities.	.84	.86	14.49
OL3	University believes that willingness to learn from competitor universities is an investment to improve performance.	.72	.68	12.97
OL4	University encourages academics and staff to learn from collaborative relationships with competitor universities.	.81	.78	
OL5	**University believes that working with competitor universities increases the chance of learning.**	**.14**	**Removed**	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	23.200	.870	.610	.033	.843	.685	.842	.271
Final CFA Findings	1.223	.998	.980	.003	1.000	.998	1.000	.027

To improve the model fit, two iterations have been made: the first iteration was examining the items loading which indicated that the regression weight of OL5 was the lowest with 0.14 of the other items. Based on that, OL5 was eliminated (Hair et al. 2010; Hair et al. 2014a). The results still showed that the OL model did not achieve a good fit. The second iteration found that OL3 had a high residual covariance with other different items, and especially with OL4. The value of the residual covariance for OL3 and OL4 (*e2* and *e3*) was 5.249. The researcher made covering error variance terms of both items (OL3 and OL4), for more details see Figure 5.30.The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.64, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
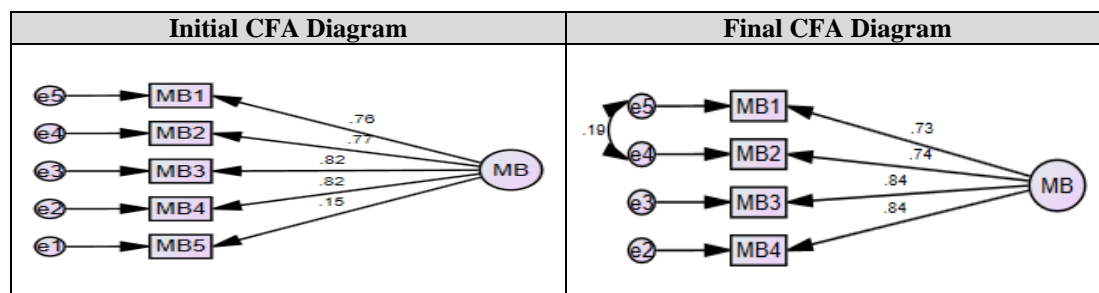

Figure 5.28: Congeneric model of Organisational Learning

5.4.2.2.10 Communication Management: Initial CFA Fndings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure CM. The initial CFA results of the CM model fit established that the model was a poor fit to the data because the cut-off range of several fit indices was at unacceptable levels (for more details see Table 5.65). The initial CFA findings presented in Table 5.65 demonstrate that the CM model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-66: Communication Management initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
CM1	University has effective information support system to coordinate information with competitor universities.	.88	.85	21.86
CM2	University has an appropriate monitoring system to solve problems with competitor universities.	.93	.90	25.63
CM3	University is willing to share internal and external information with competitor universities.	.81	.81	19.96
CM4	University frequently keeps informed of new developments within competitor universities.	.95	.97	31.95
CM5	University uses information technology to exchange information with competitor universities.	.91	.91	

Fit Indices								
	CMIN/DF	**GFI**	**AGFI**	**RMR**	**IFI**	**TLI**	**CFI**	**RMSEA**
Initial CFA Findings	13.179	.920	.760	.014	.964	.927	.964	.201
Final CFA Findings	3.175	.984	.941	.009	.995	.987	.995	.080

The researcher found that the main reason for the poor fit of the CM model is the high standardised residual covariance between CM1 and CM2 (between *e4* and *e5*) which was 40.679. To improve the model, correlating the error covariance approach was applied to justify both statistically and substantively (Mueller & Hancock 2019; Collier 2020; Mustafa et al. 2020). As a result, the researcher made covering error variance terms of both items (CM1 and CM2), for more details see Figure 5.31. The results of this iteration confirmed that the model was a good fit. As shown in Table 5.65, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
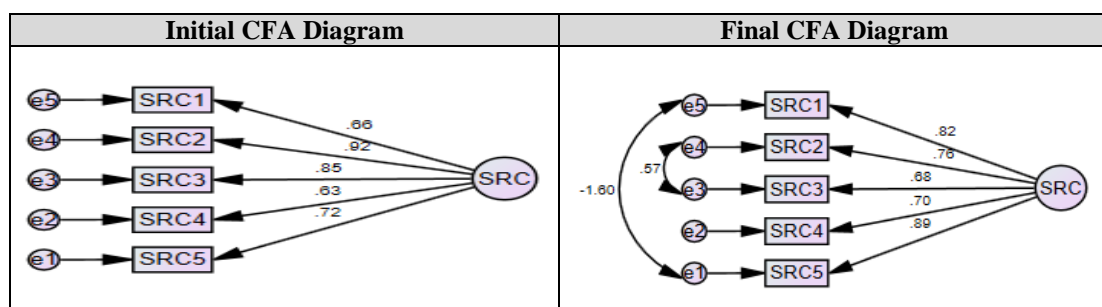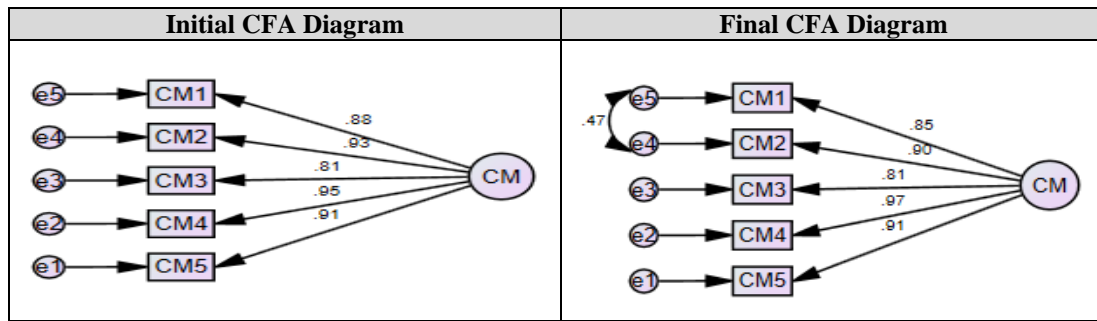
Figure 5.29: Congeneric model of Communication Management

5.4.2.2.11 Institutionalisation: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure INS. The initial CFA results of the INS model fit established that the model was a poor fit to the data because the cut-off range of several fit indices was not at an acceptable level (for more details see Table 5.66). The initial CFA findings presented in Table 5.66 demonstrate that the INS model is not a fit and needs some modification to reach an acceptable level of fit.

Table 5-67: Institutionalisation initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
INS1	University has a mechanism to deal with the diversity of partners within a standardized structure.	.91	.89	18.66
INS2	The results of cooperation with competitor universities are published into society.	.91	.93	19.53
INS3	University adopts the process of ensuring that routinized actions occur in cooperative activities with partners.	.91	.89	18.22
INS4	University relies on institutional norms to achieve successful cooperative relationships with competitor universities.	.90	.89	24.12
INS5	University's board of directors has the authority to monitor cooperative activities with competitor universities.	.82	.81	

Fit Indices								
	CMIN/DF	**GFI**	**AGFI**	**RMR**	**IFI**	**TLI**	**CFI**	**RMSEA**
Initial CFA Findings	20.875	.873	.618	.029	.938	.876	.938	.257
Final CFA Findings	4.025	.984	.920	.007	.994	.981	.994	.080

To improve the model fit, two iterations were made. The first iteration was an examination of the residual covariance with other different items which indicated that the Ins1 had a high residual covariance with Ins3. The value of the residual covariance for Ins1 and Ins3 (between *e3* and *e5*) was 7.572. The researcher made covering error variance terms of both items (Ins1

and Ins3), (Holmes 2011; Byrne 2016), for more details see Figure 5.32. The results of the first iteration still showed that the INS model did not achieve a good fit. The second iteration found that Ins4 had a high residual covariance with other different items, especially with Ins5. The value of the residual covariance for Ins4 and Ins5 (between *e1* and *e2*) was 59.638. The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.66, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
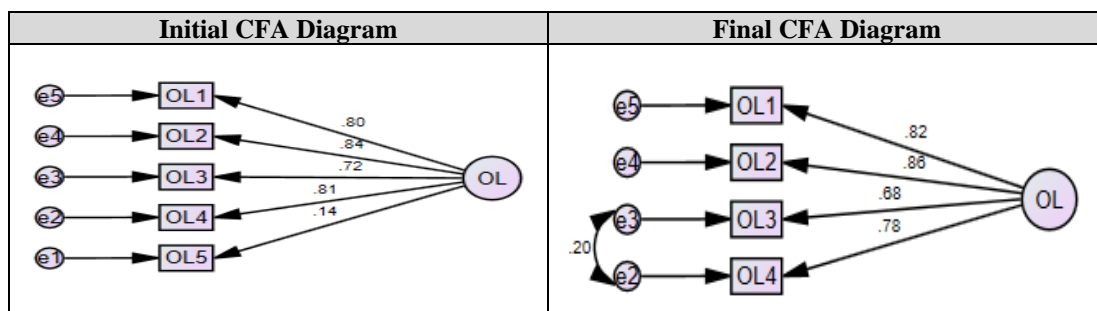

Figure 5.30: Congeneric model of Institutionalisation

5.4.2.2.12 Ministry of Higher Education Laws: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure the MHEL. The initial CFA results of MHEL model fit indicated that the model was a poor fit to the data because the cut-off range of several fit indices was not at an acceptable level (for more details see Table 5.67). The initial CFA initial presented in Table 5.67 demonstrate that the MHEL model does not fit and needs some modification to reach an acceptable level of fit.

Table 5-68: Ministry of Higher Education initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
MHEL1	**The Ministry of Higher Education in Jordan obligates universities to apply the instructions and rules in the higher education.**	**.35**	**Removed**	
MHEL2	The Ministry of Higher Education in Jordan has a full authority to control private universities in Jordan.	.88	.86	23.12
MHEL3	The Ministry of Higher Education has established standards to facilitate the evaluation of universities' performances.	.89	.87	24.05
MHEL4	The role of the Ministry of Higher Education is explained by outlining the regulations which are related to private universities.	.96	.96	31.48
MHEL5	The Ministry of Higher Education is in charge of approving budgeting plans in terms of their programs, performance and admission policies.	.92	.92	
Fit Indices				

	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	4.898	.965	.895	.012	.985	.970	.985	.114
Final CFA Findings	.186	1.000	.997	.001	1.001	1.004	1.000	.000

To improve the model fit two iterations were made. The first iteration involved examining the items' loading (Hair et al. 2010; Hair et al. 2014; Hair et al. 2014a) which indicated that the regression weight of MHEL1 *was* the lowest with 0.35 among the other items. Based on that, MHEL1 was eliminated (Hair et al. 2010; Hair et al. 2014; Hair et al. 2014a). The results still showed that the MHEL model did not achieve a good fit. The second iteration found that MHEL2 had a high residual covariance with other different items, and especially with MHEL3. The value of the residual covariance for MHEL2 and MHEL3 (between *e3* and *e4*) was 11.204. Correlating the error covariance approach was applied to justify both statistically and substantively (Mueller & Hancock 2019; Collier 2020). The researcher made covering error variance terms of both items (MHEL2 and MHEL3), for more details see Figure 5.33. The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.67, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.

Initial CFA Diagram	Final CFA Diagram
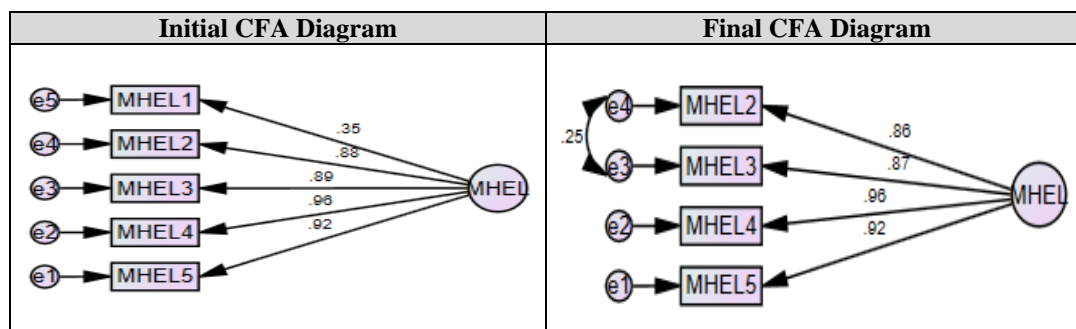
Figure 5.31: Congeneric model of the Ministry of Higher Education

5.4.2.2.13 Geographical Proximity: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, five items were used to measure GP. The initial CFA results of the GP model fit pointed that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.68). The initial CFA findings presented in Table 5.68 demonstrate that the GP model is not a good fit and needs some modification to reach an acceptable level of fit.

Table 5-69: Geographical Proximity CFA findings

Items	Items wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
GP1	The universities which are located in nearby geographical areas cooperate in providing infrastructure for students and staff at the universities.	.78	.78	14.35
GP2	Cooperative relationships among nearby universities reduce the cost of services.	.68	.63	11.40
GP3	Geographic proximity among universities makes communication among them direct.	.96	1.01	16.78
GP4	University's interactions with nearby universities are expected to be far into the future.	.67	.62	12.99
GP5	Maintaining a long-term relationship with nearby universities is important to my university.	.78	.74	
Fit Indices				
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	20.665	.874	.621	.036	.895	.789	.894	.255
Final CFA Findings	3.875	.985	.924	.014	.991	.969	.991	.080

To improve the model fit two iterations have been made. The first iteration examined the residual covariance with other items which indicated that the GP2 had a high residual covariance with *GP4*. The value of the residual covariance for GP2 and GP4 (between *e2* and *e4*) was 55.482. The researcher made covering error variance terms of both items (GP2 and GP4) by applying correlating the error covariance approach (Mueller & Hancock 2019; Collier

2020), for more details see Figure 5.34. The results of the first iteration still showed that the GP model did not achieve a good fit. The second iteration found that GP4 had a high residual covariance with other different items, and especially with GP5. The value of the residual covariance for GP4 and GP5 (between *e1* and *e2*) was 24.279. The results of the second iteration confirmed that the model was a good fit. As shown in Table 5.68, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
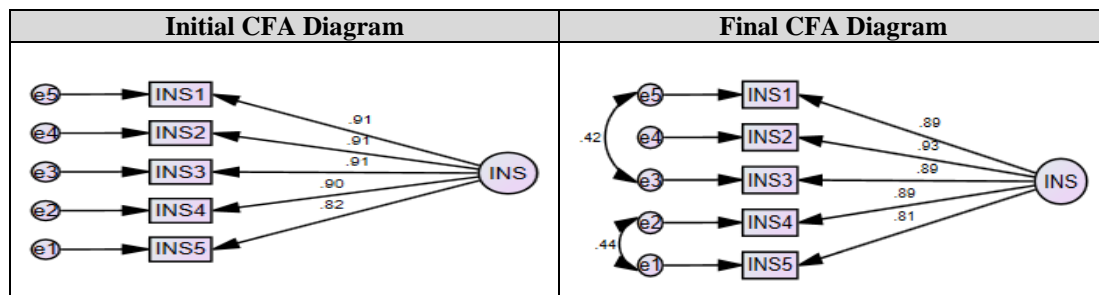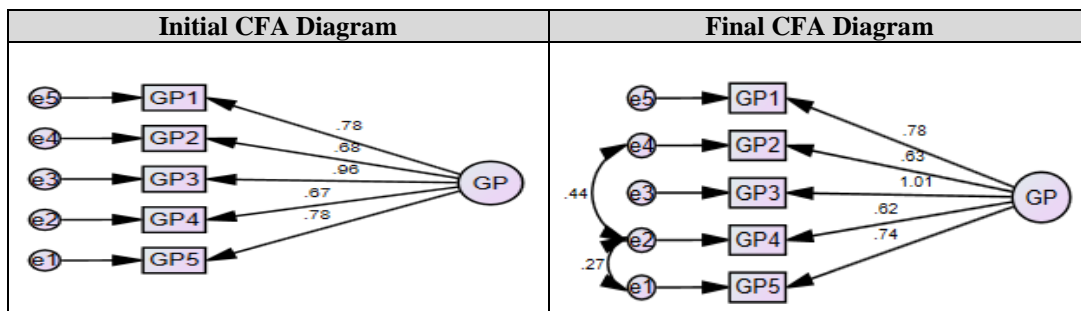

Figure 5.32: Congeneric model of Geographical Proximity

5.4.2.2.14 University Success: Initial CFA Findings

At the first iteration of conducting one-factor congeneric measurement, there were ten items used to measure US for adopting COS. The initial CFA results of the US model fit determined that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.69). The initial CFA findings presented in Table 5.69 demonstrate that the US model is not a good fit and needs some modification to reach an acceptable level.

Table 5-70: University Success initial CFA findings

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
US1	**Working with competitors enables the university to provide educational needs to students.**	**.46**	**Removed**	
US2	Collaboration with competitor universities provides supporting factors to improve education services' quality.	.60	.57	8.39
US3	Collaborative relationships with competitors help the university to enhance its productivity and effectiveness.	.64	.74	10.25
US4	Collaborative relationships with competitors help the university to save costs and increase profits.	.71	.73	10.15
US5	Working with competitors enables the university to grow in size).	.66	.57	6.84
US6	Collaboration with competitors enables the university to maintain a good image and reputation in the Jordanian education sector.	.64	.56	8.21
US7	The university has a social responsibility.	.63	.68	
US8	**The university successfully retains a prestigious place in various university ranking systems.**	**.66**	**Removed**	
US9	**Working with competitors enables the university to obtain quality assurance from the accreditation body in Jordan.**	**.50**	**Removed**	
US10	**The university response to change effectively to survive and continue in Jordanian educational sector.**	**.42**	**Removed**	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	13.996	.768	.635	.079	.635	.527	.632	.207
Final CFA Findings	2.241	.983	.948	.020	.986	.970	.986	.064

To improve the model fit four iterations were made. The first iteration involved an examination of the items loading which indicated that the regression weight of US10 was the lowest loading, with 0.42, of the other items. Based on this, US10 was eliminated (Hair et al. 2014; Hair et al. 2014a). However, the results showed that the US model still did not achieved a good fit. For the second time, the researcher conducted an examination of the items loading which indicated that the regression weight of US1 and US9 resulted in the lowest loadings, with 0.49, 0.50 respectively, of the other items. Based on this, US1 and US9 were eliminated (Hair et al. 2014; Hair et al. 2014a). The results ultimately showed that the US model for adopting COS did not achieve a good fit.

The second iteration found that US8 had a high residual covariance with other different items, and especially with US4. The value of the residual covariance for US8 and US4 (between *e3* and *e7*) was 31.297. As a result, the researcher decided to eliminate US8. Item US8 has a lower loading (0.66) than US4 (0.72) in the construct and Byrne (2001) and Holmes (2011)

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recommend this action to address this issue and improve the model fit. But the results still showed that the US model did not achieve a good fit.

The third iteration found a high standardised residual covariance between US4 and US5 (between *e6* and *e7*) at 22.258. The researcher made covering error variance terms of both items (US4 and US5) by applying correlating the error covariance approach (Holmes 2011; Byrne 2016), for more details see Figure 5.35. However, the results still showed that the US model did not achieved a good fit.

The fourth iteration found a high standardised residual covariance between US5 and US6 (between *e5* and *e6*) at 25.274. The researcher made covering error variance terms of both items (US5 and US6), for more details see Figure 5.35. The results of the fourth iteration confirmed that the model was a good fit. As shown in Table 5.69, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators that were reported in this research met the recommended levels.
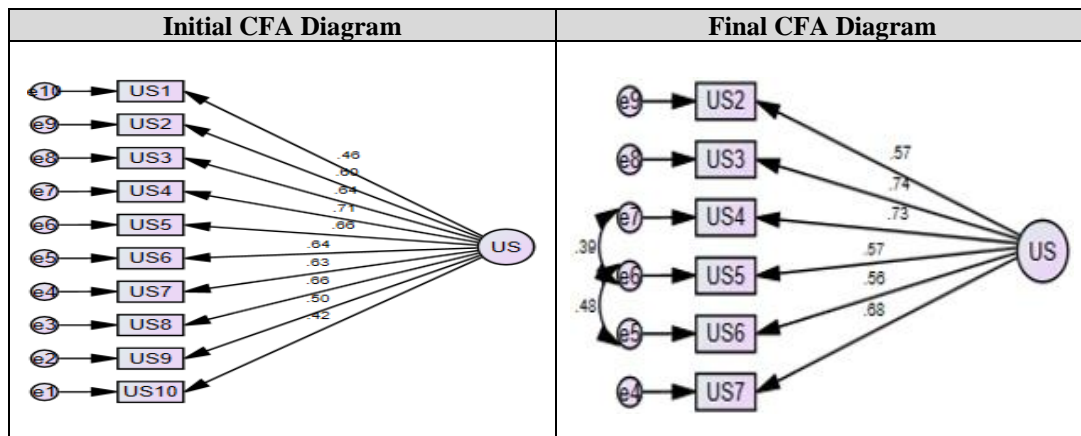
Figure 5.33: Congeneric model of University Success

5.4.2.2.15 Summary of CFA One-Factor Congeneric Measurement Models

The previous section reported on the tests of the one-factor congeneric measurement model. All fourteen constructs were tested separately using the CFA technique and the fitness of the one-factor congeneric measurement models was achieved. Table 5.70 presents the results at this stage including the items removed.

Table 5-71: Summary of congeneric measurement

Construct	No. Items Input	No. Items Output	Eliminated Items
Management Commitment	5	5	= = = = =
Strategic Leadership	5	5	= = = = =
Flexibility to Change	5	4	FCH2
Management Perception	5	5	= = = = =
Top Management Support	5	5	= = = = =
Trust Development	5	5	= = = = =
Mutual Benefit	5	4	MB5
Sharing Resources and Capabilities	5	5	= = = = =
Organisational Learning	5	4	OL5
Communication Management	5	5	= = = = =
Institutionalisation	5	5	= = = = =
Ministry of Higher Education	5	4	MHE1
Geographical Proximity	5	5	= = = = =
University Success	10	6	US1, US8, US9, US10
Total	**75**	**67**	

5.4.2.3 Stage 2: The Initial Measurement Models for Each Category (CFA for All the Exogenous Variables with Each Category)

In this stage, CFA was conducted with exogenous factors (independent variables), divided by categories separately (Hair et al. 2017), and then the same procedure was undertaken with endogenous factors (dependent variables) in individual CFA because the endogenous variables have one construct (US). According to researchers, this method is recommended when conducting a two-step approach to eliminate any cross-loading across constructs prior to examining a research model using SEM and to improve the model fit (Holmes & Rowe 1994; Rowe 2002; Dorman 2003; Singh & Smith 2004; Vivek 2009; Ghandour 2010; Hair et al. 2017; Haque et al. 2019).

As mentioned earlier, the exogenous variables of this study considered three categories: MM, MR and SFs (see Chapter 4 Section 4.8 Figure 4.16: The proposed research model). The output of the one-factor congeneric measurement model will be the input to this stage. Stage 2 is discussed next.

5.4.2.3.1 Management Mindset Group (MM)

The output of the one-factor congeneric measurement model will be the input to this stage. Five constructs were considered as exogenous factors for the MM group: MC 5 items, SL 5 items, FCH 4 items, MP 5 items and TMS 5 items (see Table 5.70). These constructs are deemed to be essential factors for COS success between PJUs. These five constructs are treated as results and output of the exogenous factors for this group. At the first iteration of conducting

exogenous factors for MM group measurement, there were 24 items used to measure exogenous factors. The CFA initial results of the MM model fit showed that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.71). The initial CFA findings presented in Table 5.71 demonstrate that the MM model is not a good fit and needs some modification to reach an acceptable level of fit.

Table 5-72: Fit indices for Management Mindset group initial and final

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
MC4	University accepts mutual strengths and weaknesses to maintain cooperative relationship with competitor universities	.78	Removed	
MC5	Relationships with competitor universities are very important to my university	.64	Removed	
FCH5	University strategy reflects a high level of flexibility in managing risks to maintain collaborative relationships with competitor universities.	.74	Removed	
MP2	University leaders have good experience about managing successful collaboration with competitor universities.	.69	Removed	
MP4	University leaders have a good perception about change in the educational sector in regards to competition and cooperation regulations.	.71	Removed	
TMS2	Top management provides resources to support collaboration relationships with competitor universities.	.90	Removed	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	6.536	.691	.616	.042	.833	8.9	.832	.135
Final CFA Findings	2.969	.885	.837	.025	.958	.947	.658	.080

To improve the model, fit iterations were made and a review of the item loadings and the modification indices revealed some evidence of misfit in the model. Factor loadings for the initial measurement model of MM group variables were between 0.64 - 0.93 (for more details see Figure 5.36). Therefore, items with low loadings or large modification indices were removed (Hair et al. 2010; Hair et al. 2014a) or reset free one at a time (for more details see Table 5.71). Table 5.71 depicts the initial and final measurement model of factor loadings for the MM group. It shows the values of fit indices with items standardised loadings.

Despite a total of six items being removed (see table 5.71), the result showed that the MM model still did not achieve a good fit. The measurement model was reassessed until a

considerably well-fitting model was achieved. Further iterations were made for items which have a high residual covariance with other different items (Byrne 2011, 2016), particularly between MC3 with MC4, SL2 and SL4, FC4 and FC1. The values of the residual covariance are MC1 with MC2 26.045; SL3 with SL4 36.128; FC1 with FC4 48.315 respectively. Therefore, the modification indices technique improved factor loadings for the final measurement model of MM group variables with the range being between 0.75- 0.97 (for more details see Figure 5.36).
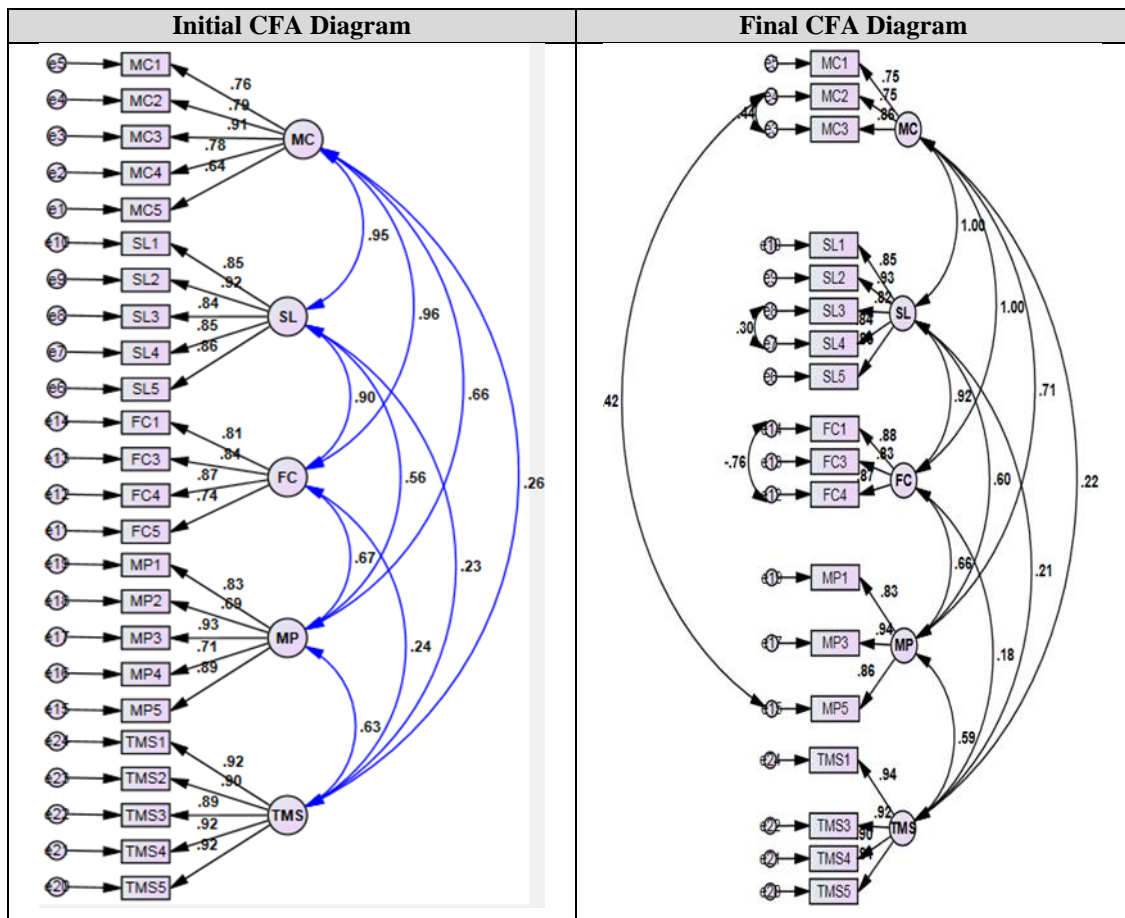
Figure 5.34: Congeneric model of Management Mindset group

5.4.2.3.2 Management Relationship Group (MR)

The second exogenous variable was the MR group. In this stage, CFA was conducted. The output of the one-factor congeneric measurement model will be the input to this stage. Five constructs were considered as exogenous factors for the MR group: TD 5 items, MBs 4 items, SRC 5 items, OL 4 items and CM 5 items (see Table 5.70). These constructs are deemed to be essential factors for COSS between PJUs. These five constructs are treated as results and output of the exogenous factors for this group. At the first iteration of conducting exogenous factors

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for MR group measurement, 23 items were used to measure this aspect. The initial CFA results of the MR model fit showed that the model was a poor fit to the data because the cut-off range of several fit indices was not at acceptable levels (for more details see Table 5.72). The initial CFA findings presented in Table 5.72 demonstrate that the MR model is not a good fit and needs some modification to reach an acceptable level of fit.

Table 5-73: Fit indices for Management Relationship group initial and final

Items	Item wording	Initial Standardised Loadings	Final Standardised Loadings	C.R. (t)
SRC4	Sharing experience, technology, and skills with competitor universities enables the university to reconfigure resources and capabilities.	.74	Removed	
SRC5	University is willing to establish collaborative relationships with competitor universities to share knowledge and academic information	.81	Removed	
CM1	University has effective information support system to coordinate information with competitor universities.	-.01	Removed	
CM3	University is willing to share internal and external information with competitor universities.	09	Removed	
CM5	University uses information technology to exchange information with competitor universities.	.10	Removed	

Fit Indices								
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	3.791	.777	.720	.056	.864	.842	.863	0.96
Final CFA Findings	3.009	.889	.829	.028	.936	.919	.936	.080

To improve the model, fit iterations have been made and, a review of the items loadings and the modification indices revealed some evidence of misfit in the model. Factor loadings for the initial measurement model of MR group variables were between -0.01-0.84 (for more details see Figure 5.37). Therefore, items with low loadings or large modification indices were removed (Hair et al. 2014; Hair et al. 2014a) or reset free one at a time (for more details see Table 5.72). Table 5.72 depicts the initial and final measurement model of factor loadings for the MR group. It shows the values of fit indices with items standardised loadings.
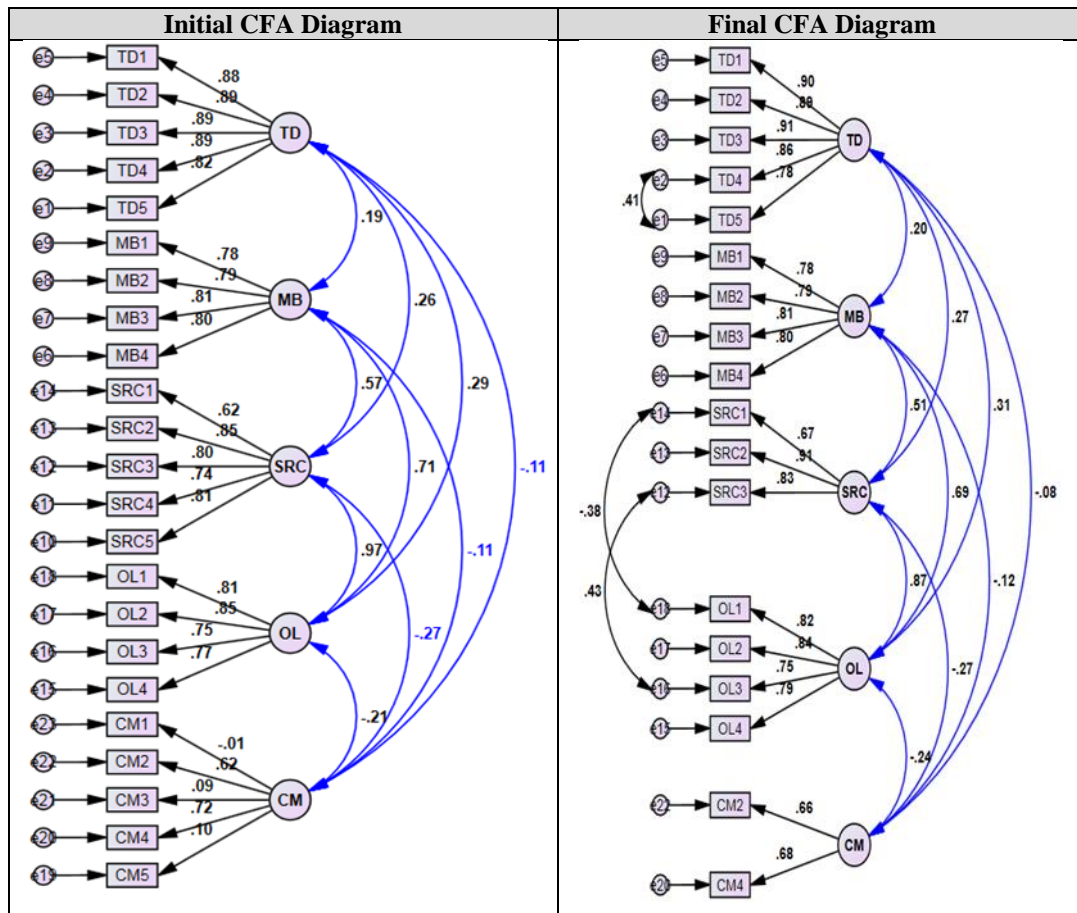
Figure 5.35: Congeneric model of exogenous variables for the Management Relationship group

Subsequently, a total of five items were removed however, the results showed that the MR model still did not achieve a good fit. The measurement model was reassessed until a well-fitting model was achieved. Further iterations occurred for items which have a high residual covariance with other different items (Byrne 2001, 2016), particularly between TD4 with TD5, SRC1 and OL1, SRC3 with OL3. The values of the residual covariance were 33.160 for TD4 with TD5; 35.873 SRC1 with OL1; SL3 with SL4 36.128; and 59.697 SRC3 with OL3 respectively. Thus, the modification indices technique improved factor loadings for the final measurement model of the MR group variables with values between 0.66-0.91 (for more details see Figure 5.37).

5.4.2.3.3 Supporting Factors Group (SFs)

The third exogenous variable was the SFs group. In this stage, CFA was conducted. The output of the one-factor congeneric measurement model will be the input to this stage. Three constructs were considered as exogenous factors for the SFs group: INS 5 items, MHEL 4 items, and GP 5 items (see Table 5.70). These constructs are deemed to be essential factors for

COSS between universities. Those three constructs are treated as results and output of the exogenous factors for this group. At the first iteration of conducting exogenous factors for SFs group measurement, 14 items were used to measure exogenous factors for the SFs group. The initial CFA results of the SFs model fit showed that the model was a poor fit to the data because the cut-off range of several fit indices was not at an acceptable level (for more details see Table 5.73). The initial CFA findings presented in Table 5.73 demonstrate that the SFs model is not a fit and needs some modification to reach an acceptable level of fit. Factor loadings for the initial measurement model of the SFs group were between 0.66-0.96 (for more details see Figure 5.38). Table 5.73 depicts the initial and final measurement model of factor loadings for the SFs group. It also shows the values of fit indices with items standardised loadings.

Table 5-74: Fit indices for Supporting Factors group initial and final

No items removed in this group							
Fit Indices							
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Initial CFA Findings	4.832	.851	.789	.039	.928	.911	.928	.113
Final CFA Findings	2.951	.913	.873	.038	.964	.955	.964	.080

To improve the model fit, two iterations have been made. The first iteration examined the residual covariance with other different items which indicated that INS4 had a high residual covariance with INS5. The value of the residual covariance for INS4 and INS5 was 61.439. The second iteration found that GP4 had a high residual covariance with other different items, especially with GP2. The value of the residual covariance for GP4 and GP2 was 57.281 (for more details see Figure 5.38). Finally, the results confirmed that the model was a good fit. Factor loadings for the final measurement model of SFs group have been improved with values being between 0.62-1.00. As shown in Table 5.73, the final CFA findings of the model fit indicated and confirmed that the measurement model achieved a good fit and all the different indicators reported in this research met the recommended levels.
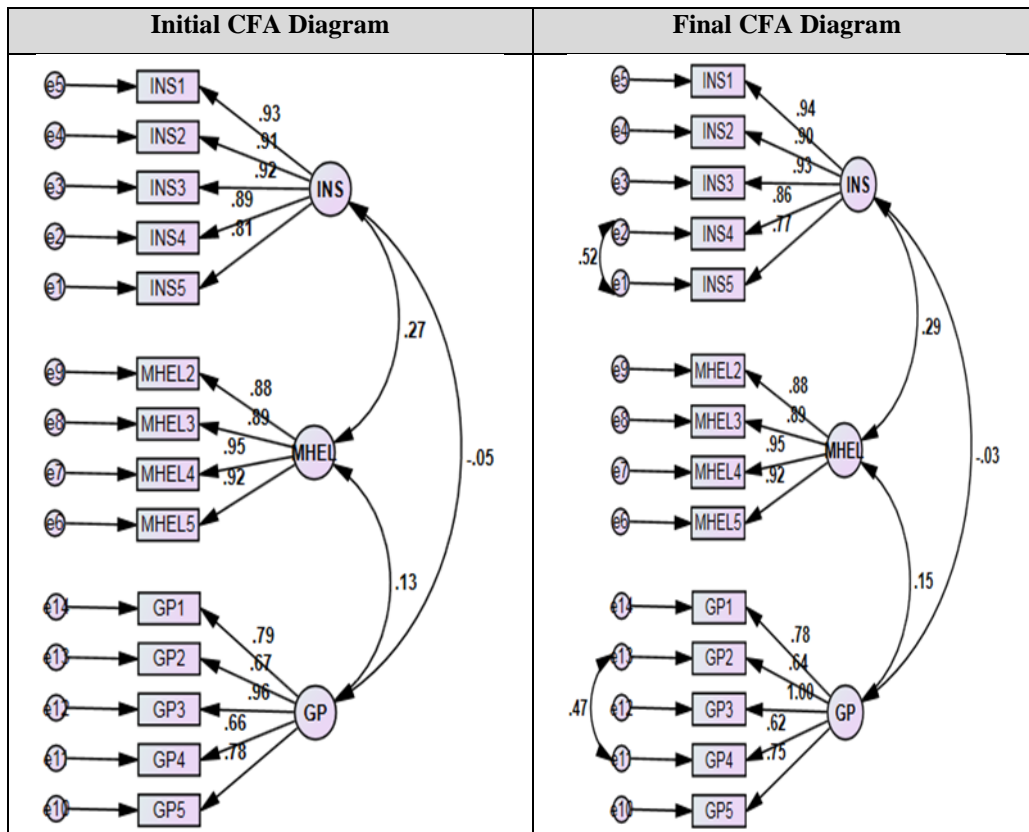
Figure 5.36: Congeneric model of exogenous variables for external Supporting Factors group

In short, CFA provided the results of each group in exogenous variables. The data set being used by CFA procedures for all exogenous and endogenous variables was used as inputs in the next stage (CFA procedures for the overall measurement model).

5.4.2.3.4 Summary of CFA for Exogenous and Endogenous Variables

Table 5.74 presents a summary of the exogenous and endogenous variables model, indicating the 11 items that have been removed.

Table 5-75: Summary for exogenous and endogenous variables of groups' measurement

Construct	No. Items Input	No. Items Output	Eliminated Items
Management Commitment	5	3	MC4, MC5
Strategic Leadership	5	5	= = = = =
Flexibility to Change	4	3	FC5
Management Perception	5	3	MP2, MP4
Top Management Support	5	4	TMS2
Trust Development	5	5	= = = = =
Mutual Benefit	4	4	= = = = =
Sharing Resources and Capabilities	5	3	SRC4, SRC5
Organisational Learning	4	4	= = = = =
Communication Management	5	2	CM1, CM3, CM5
Institutionalisation	5	5	= = = = =
Ministry of Higher Education	4	4	= = = = =
Geographical Proximity	5	5	= = = = =
University Success	6	6	= = = = =
Total	**67**	**56**	

5.4.2.4 Stage 3: Overall Measurement Model Fit

All constructs presented in the proposed research model have been subjected to evaluation with respect to individual and grouping exogenous and endogenous variables in the measurement model fit. In this process eight items were removed from the individual models, as illustrated in Table 5.70, as well as 11 items in the exogenous and endogenous grouping measurement model fit in Table 5.74. The objective behind removing these 19 items via this procedure was to accomplish an enhanced fit to the data. An overall measurement model fit has been established with the intention of evaluating the competence of the measurement model which tested the covariance structures for all constructs. Initially, as shown in Figure 5.39, almost 56 items were assessed in the overall measurement model.
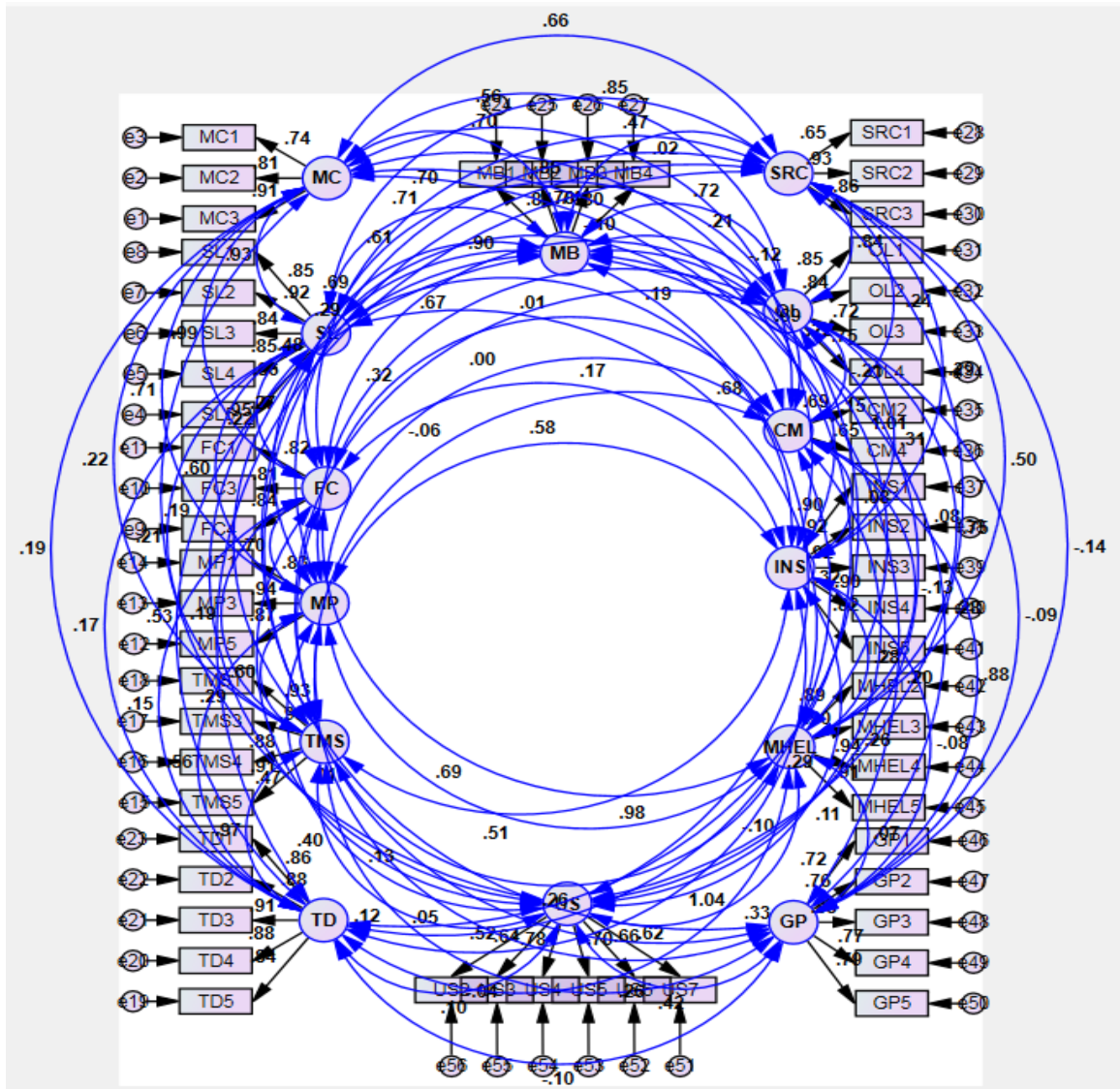
Figure 5.37: Initial overall measurement model fit

The results of the overall measurement model fit are presented in Table 5.75. These results indicate that the model was not an appropriate (poor) fit to the data because the cut-off ranges for the fit indices were not at an acceptable level.

Table 5-76: Overall measurement initial CFA model findings

Fit Indices		
Indices	**Results**	**Status**
CMIN/DF	4.808	Acceptable
GFI	.575	Not acceptable
AGFI	.513	Not acceptable
RMR	.047	Acceptable
IFI	.751	Not acceptable
TLI	.723	Not acceptable
CFI	.749	Not acceptable
RMSEA	.112	Not acceptable

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Based on the results of the overall measurement model fit presented in Table 5.75, a number of alterations have been made to improve the overall measurement model fit. The first iteration examined the items loading which indicated that the regression weight of (OL4, GP4, US5 and US6) was the lowest of the other items in the proposed research model. Because of the low loading of these items, the researcher decided to eliminate them to improve the overall measurement model fit. The overall results improved with this change but still showed that the overall measurement model did not achieve a good fit.

In the second iteration, the researcher found that there was a high residual covariance between some items such as (MC1, FC4, MC3, MP3, SL2, TMS3, MP5, SL4, TMS5, FC1, TD1, MHE4, TD2, MB1, SRC2, US3, SRC3, GP2, MB4, OL1, CM2, INS4, OL3, CM4, INS1, MHE3, GP1, and US7). As a result of the high residual covariance of the mentioned items on other items in the research proposed model, the researcher decided to eliminate these items to address the issue and improve the model fit. The results of this iteration showed some improvement in the overall measurement model but still did not achieve a good fit.

In the third iteration, the researcher found that there was a high standardised residual covariance between some items such as (FC1 and FC4) and (GP1 and GP4). The researcher made covering error variance terms of both items (FC1 and FC4) and (GP1 and GP4) (Byrne 2001; Holmes 2011). The results of the third iteration confirmed that the model was a good fit.

Table 5.76 shows the items that have been removed in the overall measurement model. All fourteen constructs in the research proposed model were evaluated in one model and the best fit of the overall measurement model was achieved.

Table 5-77: Summary overall measurement model findings

Construct	No. Items Input	No. Items Output	Eliminated Items
Management Commitment	3	3	= = = = =
Strategic Leadership	5	5	= = = = =
Flexibility to Change	3	3	= = = = =
Management Perception	3	3	= = = = =
Top Management Support	4	4	= = = = =
Trust Development	5	5	= = = = =
Mutual Benefit	4	4	= = = = =
Sharing Resources and Capabilities	3	3	= = = = =
Organisational Learning	4	3	OL4
Communication Management	2	2	= = = = =
Institutionalisation	5	5	= = = = =
Ministry of Higher Education	4	4	= = = = =
Geographical Proximity	5	4	GP4
University Success	6	4	US5, US6
Total	**56**	**52**	

In total, four items were removed from the proposed model to achieve the overall measurement model fit. Thereafter, the proposed model achieved the final model fit as demonstrated in Table 5.76 with 52 items as shown in Figure 5.40.
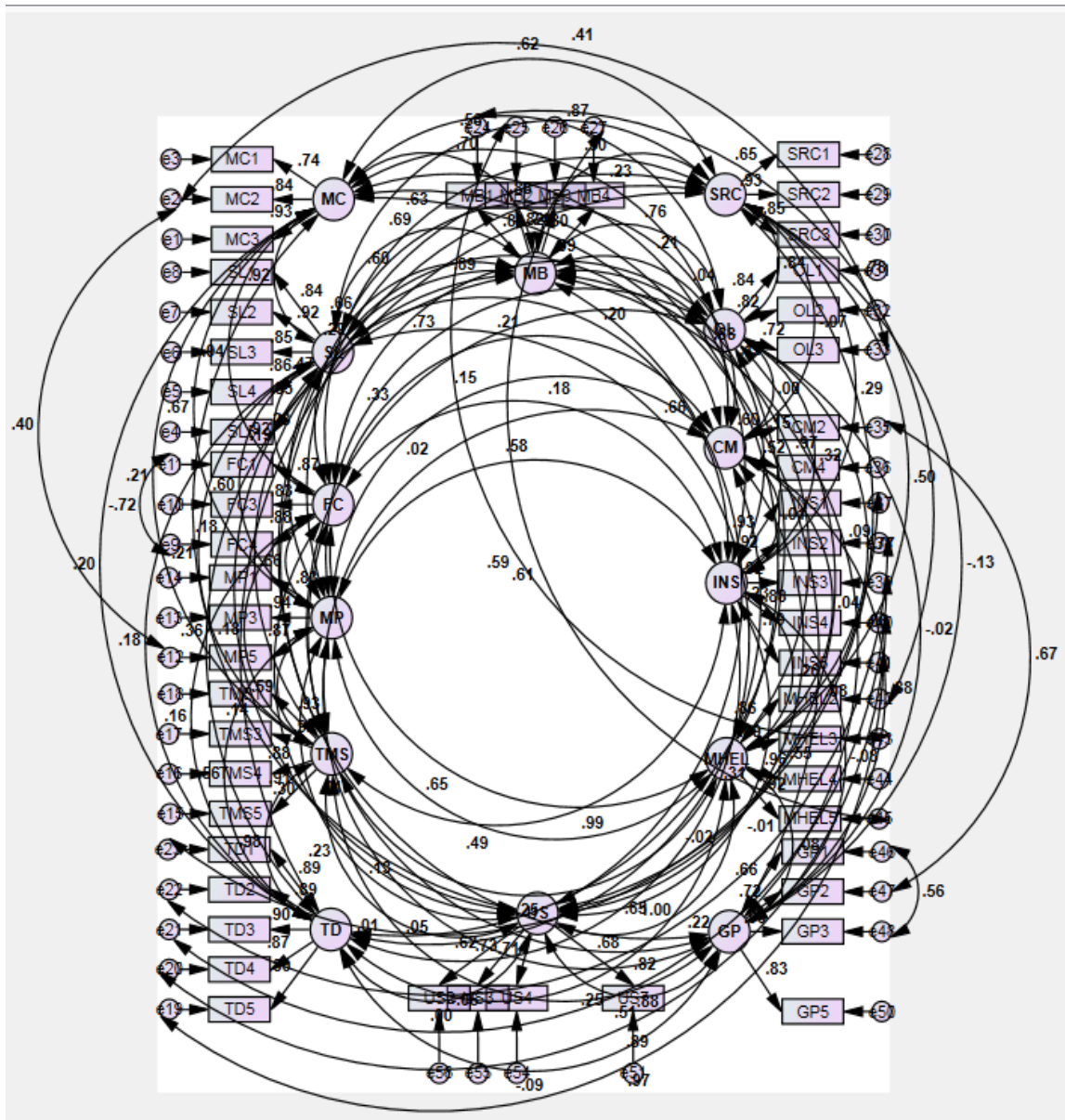
Figure 5.38: Final overall measurement model fit

The results of the final model fit are presented in Table 5.77. These results indicate and confirm that the overall measurement model fit achieved a good fit and all the indicators that were reported in this research met the recommended level except for GFI. However, GFI was close to an acceptable level 0.90 of goodness model. According to (Doll et al. 1994) GFI values between 0.80 and 0.89 are still a reasonable indicator for measurement model fit. Moreover, the GFI index may fall slightly below the generally acceptable range of 0.90 or greater but it is

still within the acceptable range (Enns et al. 2002; Foote et al. 2005; Peng 2014; Ali & Osmanaj 2020). However, the main reason behind the gap between the acceptable level of GFI 0.90 and the cut off value 0.887 might be the complexity of the model that includes 14 constructs and 52 items. Jais (2007) stated that model complexity may reduce GFI value from the acceptable range 0.90. Therefore, 0.887 was considered an acceptable level for GFI.

Furthermore, researchers consider different fit indices for SEM in their studies and, in this regard, (Awang 2012) claims that there is no agreement among specialists in SEM for which fit indices should be addressed in the measurement model. Further, Jackson et al. (2009) stated that a minimal set would include the chi-square, degrees of freedom, probability value, an index to describe incremental fit (TLI, CFI or RNI), and a residuals-based measure (RMSEA) and its associated confidence intervals or SRMR. Moreover, Hair et al. (2014) stated that, "the researcher should report at least one incremental index and one absolute index, in addition to the χ2 value and the associated degrees of freedom" (P.583). In this regard, Hair et al. (2014) confirmed that, "reporting the χ2 value and degrees of freedom, the CFI or TLI, and the RMSEA will usually provide sufficient unique information to evaluate a model" (p. 583). In the same context, Holmes et al. (2006) and Hair et al. (2014) confirmed that researchers can use at least one index from each goodness category of the measurement model to achieve the acceptable fit. Furthermore, Bagozzi and Yi (2012) agree with Hair et al. (2010) that there are no commonly accepted cut-offs for GFI and AGFI. Thus, this study follows the recommendations of the aforementioned scholars to use at least one index from each category of model fitness. Table 5.77 shows the final overall measurements for the final model.

Table 5-78: Overall measurement final CFA model findings

Fit Indices		
Indices	Results	Status
CMIN/DF	2.684	Good
GFI	.887	Acceptable
AGFI	.801	Good
RMR	.041	Good
IFI	.901	Good
TLI	.904	Good
CFI	.901	Good
RMSEA	.075	Good

The fit statistics validate the termination of 23 items from various constructs' measures. This helps to enhance the values of the fit indices in the final model of measurement. The alterations made in the individual measurement model tend to bring significant changes in the model while

improving its effectiveness. The remaining 52 items in fourteen construct measures also show the significant similarity between data and the measurement model.

5.4.3   Validity and Reliability Tests

In this stage the validity and reliability of the measurement model have been examined. It is a very important stage designed to test the reliability and validity of the measurement model. This is because inappropriate measurements in validity and reliability caused by low values of reliability or validity may lead to a negative impact on the quality of data that will be employed as an input in the next stages of the analysis process to test the reliability and validity of the proposed model. Consequently, it is essential to ensure the reliability and validity of the measurement model. In regard to analysing the reliability and validity, the results yielded from testing the overall measurement model were used. The assessment employed for testing the reliability and validity of the proposed research model is shown in Table 5.78. These instruments included: Cronbach's Alpha (Hair et al. 2014), Construct Reliability (Field 2013), Squared Multiple Correlation (SMC) (Holmes 2011), Convergent Validity (Hair et al. 2010) and Construct Validity (Holmes et al. 2006).

Table 5-79: CFA measurement model results

Items	Factors		Estimate	S.E.	C.R.(t)	P	SRW	SMC	Cronbach's Alpha	Construct Reliability	Composite reliability	AVE
* Management Commitment												
MC1	<---	Management Commitment	.645	.039	16.706	***	.714	.549				
MC2	<---	Management Commitment	.811	.041	19.665	***	.808	.652	.848	.847	.873	.700
MC3	<---	Management Commitment	1.000				.910	.829				
* Strategic Leadership												
SL1	<---	Strategic Leadership	1.094	.057	19.357	***	.844	.712				
SL2	<---	Strategic Leadership	1.157	.050	22.932	***	.921	.847				
SL3	<---	Strategic Leadership	1.043	.054	19.480	***	.847	.717	.937	.937	.925	.748
SL4	<---	Strategic Leadership	1.100	.055	19.855	***	.856	.732				
SL5	<---	Strategic Leadership	1.000				.858	.736				
* Flexibility to Change												
FC1	<---	Flexibility to Change	.693	.038	18.212	***	.843	.673				
FC3	<---	Flexibility to Change	.662	.037	17.968	***	.814	.662	.848	.867	.877	.742
FC4	<---	Flexibility to Change	1.000				.773	.711				
* Management Perception												
MP1	<---	Management Perception	1.023	.054	23.545	***	.831	.691				
MP3	<---	Management Perception	1.166	.050	18.884	***	.941	.886	.913	.913	.904	.778
MP5	<---	Management Perception	1.000				.869	.756				
*Top Management Support												
TMS1	<---	Top Management Support	.904	.032	28.191	***	.930	.865				
TMS3	<---	Top Management Support	.882	.032	27.800	***	.926	.857				
TMS4	<---	Top Management Support	.831	.035	23.949	***	.878	.770	.950	.952	.966	.830
TMS5	<---	Top Management Support	1.000				.910	.828				
* Trust Development												
TD1	<---	Trust Development	1.006	.049	20.615	***	.858	.737				
TD2	<---	Trust Development	.926	.043	21.629	***	.882	.778				
TD3	<---	Trust Development	1.073	.047	22.790	***	.907	.822	.940	.942	.937	.758
TD4	<---	Trust Development	.857	.040	21.675	***	.883	.779				
TD5	<---	Trust Development	1.000				.844	.712				
* Mutual Benefit												
MB1	<---	Mutual Benefit	1.142	.065	17.435	***	.840	.706				
MB2	<---	Mutual Benefit	.977	.066	14.735	***	.744	.553	.872	.873	.867	.623
MB3	<---	Mutual Benefit	1.007	.065	15.613	***	.777	.603				

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			Estimate	S.E.	C.R.	P						
MB4	<---	Mutual Benefit	1.000				.799	638				
* Sharing Resources and Capabilities												
SRC1	<---	Sharing Resources and Capabilities	1.259	.101	12.507	***	.648	.510				
SRC2	<---	Sharing Resources and Capabilities	1.392	.106	13.136	***	.934	.872	.851	.852	.881	.674
SRC3	<---	Sharing Resources and Capabilities	1.000				.855	.732				
* Organisational Learning												
OL1	<---	Organisational Learning	.830	.056	14.792	***	.830	.689				
OL2	<---	Organisational Learning	1.096	.062	17.690	***	.814	.663	.827	.827	.866	.630
OL3	<---	Organisational Learning	1.000				.722	.521				
* Communication Management												
CM2	<---	Communication Management	.819	.102	8.039	***	.732	.536	.719	.719		
CM4	<---	Communication Management	1.000				.612	.441			.950	.510
* Institutionalisation												
INS1	<---	Institutionalisation	.918	.043	21.268	***	.900	.811				
INS2	<---	Institutionalisation	.817	.032	25.855	***	.915	.837				
INS3	<---	Institutionalisation	1.005	.037	27.393	***	.917	.842	.948	.951	.945	.787
INS4	<---	Institutionalisation	.885	.033	27.202	***	.898	.806				
INS5	<---	Institutionalisation	1.000				.824	.679				
* Ministry of Higher Education												
MHEL2	<---	Ministry of Higher Education	.985	.039	25.499	***	.895	.801			.948	
MHEL3	<---	Ministry of Higher Education	.978	.036.	27.375	***	.901	.811	.950	.951		.825
MHEL4	<---	Ministry of Higher Education	.983	.040	24.530	***	.938	.880				
MHEL5	<---	Ministry of Higher Education	1.000				.914	.836				
* Geographical Proximity												
GP1	<---	Geographical Proximity	.874	.059	14.841	***	.791	.626				
GP2	<---	Geographical Proximity	1.097	.058	19.012	***	.670	.449	.865	.868	.874	.610
GP3	<---	Geographical Proximity	.818	.065	12.492	***	.965	.932				
GP5	<---	Geographical Proximity	1.000				.769	.591				
** University Success												
US2	<---	University Success	.704	.079	8.934	***	.608	.557				
US3	<---	University Success	.912	.089	10.277	***	.727	.528	.774	.777	.797	.598
US4	<---	University Success	1.138	.111	10.223	***	.721	.520				
US7	<---	University Success	1.000				.684	.497				

*Exogenous Latent Constructs; **Endogenous Latent Constructs*

5.4.3.1 Reliability Test

In regard to reliability test, four assessments were used to evaluate the reliability of the proposed research model: Cronbach's alpha; Construct Reliability, Squared Multiple Correlation (SMC) and Composite Reliability (CR). Each of these reliability tests is addressed next.

5.4.3.1.1 Cronbach's Alpha

This is a useful test to assess the reliability of internal consistency (Vaske et al. 2017; Viladrich et al. 2017; Taber 2018). The recommended acceptable level of this indicator is 0.70 (Bushnell et al. 2003; Bushnell et al. 2006; Helms et al. 2006; Stafford & Turan 2011; Field 2013; Hair et al. 2014; Sekaran & Bougie 2020). Based on Table 5.78, all the constructs in the research proposed model were in the range of 0.719 - 0.950 and, thus, exceeded the acceptable level.

5.4.3.1.2 Construct Reliability

This tests the reliability of each construct. The recommended level of the construct reliability is 0.70 (Helms et al. 2006; Stafford & Turan 2011; Field 2013; Hair et al. 2014; Sarjana & Khayati 2017; Noviantoro & Peranginangin 2020; Pallant 2020). The results of the construct reliability value of each construct in the proposed research model are presented in Table 5.78. The results show that construct reliability ranges between 0.710 and 0.952. These values confirm that the constructs achieved a good level of reliability because these values were all above the acceptable level, thus confirming a high level of reliability. High construct reliability indicates that internal consistency exists, meaning that the measures all consistently represent the same latent construct (Hair et al. 2014). Construct Reliability is computed from the squared sum of factor loadings (Li) for each construct and the sum of the error variance terms for a construct (ei), as shown in the Equation 5.1 (Hair et al. 2014)

$$CR = \frac{\left(\sum_{i=1}^{n} Li\right)^2}{\left(\sum_{i=1}^{n} Li\right)^2 + \left(\sum_{i=1}^{n} ei\right)}$$

Equation 5.1: Construct reliability equation (Hair et al. 2014, p. 619)

5.4.3.1.3 Squared Multiple Correlation (SMC)

This is considered the major indicator for assessment of every single item in the proposed research model (Holmes et al. 2006; Hair et al. 2010). According to researchers, the suggested

value of SMC is >0.30 (Holmes et al. 2006; Rogers 2008; Holmes 2011; Mcguire 2016; Smith 2017; Dreyer et al. 2019). Table 5.78 illustrates that the items in the proposed model were between .441 and .932. Consequently, the value of SMC demonstrated in Table 5.78 shows that all the items used to measure the constructs of the proposed model are reliable.

5.4.3.1.4 Composite Reliability (CR)

This is also an indicator of reliability. Its value ranges between 0 and 1 and, if greater than 0.7, it indicates that internal consistency exists (Gefen et al. 2000; Hair 2006; Komiak & Benbasat 2006; Hair et al. 2010; Guan & Huang 2014; Siddiqui & Siddiqui 2020; Fahmi et al. 2021). It also means that the measurement items represent the same measurement construct. CR was calculated following the standard set in the Composite Reliability Calculator using the following equations (Raykov 1997) (http://www.thestatisticalmind.com/calculators/comprel/composite_reliability.htm):

$$ CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum Var(\varepsilon i)} $$

λ_i :Factor loadings of each variable.

Equation 5.2: Composite reliability equation (Raykov 1997)

The results of the CR value of each construct show that construct reliability ranges between .797 and .966 (for more details see Table 5.78). These values confirm that the constructs have a high level of reliability because these values are all above the acceptable level .70. Thus, four measurements of reliability tests for the research proposed model have been achieved. This indicates that the proposed model has good reliability and is suitable for further testing to check validity.

5.4.3.2 Validity Testing

The validity of the proposed research models has been tested with four methods: Face validity, Convergent Validity, Construct Validity and Discriminant validity. Each of these validity tests will be addressed next.

5.4.3.2.1 Face Validity

Face validity is the degree to which others judge the measurement of concepts (Leedy & Ormrod 2005; Greener 2008). Face validity refers to the subjective agreement among

professionals that a scale logically reflects the concept being measured (Zikmund et al. 2013). It is important to encourage participants in surveys or interviews as well as other experimental or research design (Greener & Martelli 2018). According to Zikmund et al. (2013) "when an inspection of the test items convinces experts that the items match the definition, the scale is said to have face validity" (p303). The assessment of the face validity of the questionnaire included two steps. The first step was obtained feedback from a panel of experts and the second step conducted pre-testing in terms of a pilot study. These two strategies yielded additional support for the measurement validity of the study. No amendments to the draft questionnaire were made after these steps were conducted, thus finalising the development of the questionnaire.

5.4.3.2.2 Convergent Validity

Convergent validity was used to evaluate the validity of measurement. It aims to assess the consistency of the measurement items under each measurement construct and it intends to confirm that those measurement items reflect the latent constructs that they are designed to measure (Carlson & Herdman 2012). Several methods are available to estimate the relative amount of convergent validity among item measures (Hair et al. 2010; Hair et al. 2014). S*tandardised Regression Weights (SRW)* is one of the important considerations. It refers to the consistency between the construct and its relative variable and it illustrates the measurement limits of the items being measured (Wei & Nair 2006). The factor loading of each item having an approximated value of 0.50 or more is considered significant validity (Hair et al. 2006; Holmes 2011; Bawa 2017; Dey et al. 2017). In this research, the loading values of the factors were between 0.612 and 0.914, as shown in Table 5.78. This range is considered as a standard to measure the validity of the variables. The *critical ratios (CR)* of the proposed research model items presented in Table 5.78 were between 8.039 and 28.191, which were more than the standard value of 1.96 recommended by (Gefen et al. 2000; Byrne 2011; Holmes 2011; Byrne 2016; Hair et al. 2017b). This indicates that the proposed research model retains significant regression validity (Hair et al. 2010). Next, *Average Variance Extracted (AVE)* was also used to test convergent validity (Hair et al. 2010; Ahmad et al. 2016; Hamid et al. 2017). All the constructs and items of research exceeded the acceptable level of 0.50 (Chen & Quester 2006; Hair et al. 2010; Chai et al. 2015). AVE is calculated manually using Equation 5.3 (Hair et al. 2014). For more details see Table 5.78.

$$AVE = \frac{\sum_{i=1}^{n} Li^2}{n}$$

Li: Factor loadings; i: number of items.

Equation 5.3: Average variance extracted equation (Hair et al. 2014, p. 619.

5.4.3.2.3 Construct Validity

This is used to measure the validity of indicators to evaluate their constructs. The indices of goodness of fit measures point to construct validity (Holmes et al. 2006; Greener 2008; Holmes 2011; Sekaran & Bougie 2016). The results of one-factor congeneric measurement model are illustrated in Table 5.79. The fourteen constructs in this research have achieved a good fit and the indices provide evidence of the validity of these constructs.

Table 5-80: One factor congeneric measurement model result

Constructs	Fit Indices							
	CMIN/DF	GFI	AGFI	RMR	IFI	TLI	CFI	RMSEA
Management Commitment	2.783	985	.945	.009	.992	.979	.992	.077
Strategic Leadership	2.164	.988	.956	.004	.996	.991	.996	.062
Flexibility to Change	1.474	.998	.976	.003	.999	.996	.999	.040
Management Perception	1.282	.993	.974	.012	.999	.997	.999	.031
Top Management Support	2.321	.991	.956	.006	.998	.993	.998	.066
Trust Development	2.004	.996	.980	.005	.993	1.000	1.000	.003
Mutual Benefit	1.165	.998	.981	.003	1.000	.998	1.000	.023
Sharing Resources and Capabilities	.553	.998	.989	.002	1.001	1.005	1.000	.000
Organisational Learning	1.223	.998	.980	.003	1.000	.998	1.000	.027
Communication Management	3.175	.984	.941	.009	.995	.987	.995	.080
Institutionalisation	4.025	.984	.920	.007	.994	.981	.994	.080
Ministry of Higher Education	.186	1.000	.997	.001	1.001	1.004	1.000	.000
Geographical Proximity	3.875	.985	.924	.014	.991	.969	.991	.080
University Success	2.241	.983	.948	.020	.986	.970	.986	.064

5.4.3.2.4 Discriminant Validity

Discriminant validity aims to confirm the uniqueness of measurement items, dimensions or constructs in the model in which they should be truly distinct from others (Hair et al. 2010; Sekaran & Bougie 2016). There are several distinct methods that can be used to test discriminant validity (Hair et al. 2014; Kline 2015). A more rigorous test for discriminant validly depends on the rule of thumb that the square root of average variance extracted (√**AVE**) of each construct is larger than its correlation with other constructs (Farrell & Rudd 2009; Farrell 2010; Zaiţ & Bertea 2011; Ito et al. 2012; Hamid et al. 2017; Cheung & Wang 2017; Thuynsma & De Beer 2017; Al-Okaily et al. 2020; Gopinath 2020a). It is based on the idea

that a latent construct should explain more of the variance in the item measures that it shares with another construct. Passing this test provides good evidence of discriminant validity (Hair et al. 2014). Thus, it provides evidence that constructs in this study had adequate discriminant validity (see Table 5.80).

Table 5-81: Discriminant validity for measurement model

	AVE	√AVE	MC	SL	FCH	MP	TMS	TD	MB	SRC	OL	CM	INS	MHE	GP	US
MC	0.700	**0.836**	**0.560**													
SL	0.748	**0.864**	0.335	**0.239**												
FCH	0.742	**0.861**	0.505	0.321	**0.514**											
MP	0.778	**0.882**	0.414	0.241	0.392	**0.676**										
TMS	0.830	**0.881**	0.136	0.090	0.112	0.423	**0.747**									
TD	0.758	**0.870**	0.114	0.067	0.088	0.353	0.646	**0.577**								
MB	0.623	**0.789**	0.304	0.195	0.272	0.221	0.093	0.079	**0.334**							
SRC	0.674	**0.820**	0.196	0.116	0.193	0.211	0.106	0.090	0.122	**0.182**						
OL	0.630	**0.793**	0.336	0.222	0.328	0.310	0.146	0.121	0.226	0.186	**0.267**					
CM	0.510	**0.712**	0.077	0.020	0.067	0.055	0.009	-0.008	0.010	-0.014	0.001	**0.201**				
INS	0.787	**0.887**	0.140	0.086	0.113	0.422	0.759	0.677	0.100	0.110	0.148	0.003	**0.795**			
MHE	0.825	**0.908**	0.291	0.185	0.266	0.231	0.123	0.110	0.321	0.122	0.228	0.10	0.135	**0.327**		
GP	0.610	**0.781**	0.055	0.003	0.044	0.019	-0.022	-0.034	0.025	-.027	-0.005	0.189	-0.035	0.022	**0.230**	
US	0.598	**0.773**	0.161	0.041	0.128	0.112	0.007	-0.001	0.079	0.021	0.025	0.145	-0.003	0.075	0.145	**0.354**

Note: Values on the diagonal (bolded) represent the square root of the AVE while values off-diagonal represent correlations between constructs

5.5 Structure Equation Model

Structure Equation Model (SEM) has been increasingly utilised in the Business literature in the past few years. It has become a widely used umbrella term covering a broad range of statistical concepts. SEM is an advanced statistical analysis technique (Mueller & Hancock 2019; Collier 2020). It is one of the strongest multivariate techniques and allows researchers to assess the data quality of their studies' measurement models (Hair et al. 2014; Schumacker & Lomax 2015; Hair et al. 2018). The wide use of SEM is due to its ability to develop and test the theories. According to Hair et al. (2010, p. 312), "SEM is particularly useful for the process of developing and testing theories and has become a quasi-standard in research". SEM encompasses statistical techniques such as the testing of correlations, regression analysis, covariance testing and factor analysis (FA) (Byrne 2001; Blunch 2012). SEM also comprises techniques such as path analysis and CFA that determine the degree to which variables are interrelated (Hair et al. 2014; Hair et al. 2018; Mueller & Hancock 2019).

There are three types of SEM which include measurement models, structural models, and a combination of the measurement and structural models (McQuitty 2004; McQuitty & Wolf 2013; Kline 2015). This research employed measurement and structural models of SEM to evaluate the proposed model because this type of SEM uses both measurement and structural parameters for complete testing of the proposed model. SEM refers to a quantitative data assessment tool which identifies, evaluates, and tests the theoretical relationships between observed endogenous constructs and unobserved exogenous constructs (Byrne 2001, 2011; Shah 2012).

SEM includes two steps: identification and valuation. In the first step, model identification is described in the SEM approach, which further relates to the influence constructs have on each other and their dimensions (Kline 2015; Schumacker & Lomax 2015). A method of visual demonstration of measurement arrangement and theoretical hypothesis consisting of data, the developed model and the relevant theory is known as a specification (Dastgeer et al. 2012; Ahbabi & Ali 2020; Almeqbali & Kasim 2020). In the evaluation process, SEM gives rise to regression weight, variances, covariance and correlations during its repetitive stages which conjoin each other as per the standard measures (Hair et al. 2014; Kline 2015; Byrne 2016).

5.5.1 Structure Model Test

The proposed model in this research was designed to determine the factors that influence COS success. In this regard, the model specifies thirteen 13 constructs (exogenous constructs) which are (MC, SL, FCH, MP, TMS, TD, MB, SRC, OL, CM, INS, MHE and GP) chosen to test the impact of these factors (constructs) on US in the adoption of COS (endogenous variables). The model can be considered complex because it includes 14 constructs, 52 observed variables, and there are different between the constructs. The structural model is an essential approach that represents the relationships between latent variables in the proposed model (Byrne 2013; Kline 2015). The relationships between constructs include direct or indirect effects of some constructs. Collier (2020) and Byrne (2016) explained the structural model as the approach employed to determine those variables that have a direct or indirect effect on the values of other latent variables.

The purpose of the structural model in the research is to evaluate the links via major paths between latent variables, as well as to examine the hypotheses for providing answers to the research questions and objectives highlighted in Chapter 1. Analysis of Moment Structure (AMOS) 25 software was used to assess the structural model where it utilised the same criteria that were used to assess the model fit indices. In addition, the assessment used the standardised path coefficients, which represent the study hypotheses, to determine the accepted and rejected hypotheses. The value of standardised path coefficients, which are known as Critical Ratio (CR), determine the t-value between (CR< - 1.96, CR > + 1.96) to achieve significant level when $p < 0.05$ (Gefen et al. 2000; Byrne 2011; Holmes 2011; Byrne 2016; Hair et al. 2017b; Hair et al. 2018; Hidayat & Sinuhaji 2018; Lesmana et al. 2020; Sulistyo 2020). The following sections provide results of structural model assessment.

5.5.2 The Results of the Structural Model Assessment

The final measurement models of exogenous and endogenous were employed to generate the structural model. Byrne (2016) and Collier (2020) suggested that the mean values of measurement items (observed variables) yielded by CFA could be used to develop the structural model. Figure 5.41 shows the structure model testing. Thus, the exogenous constructs were derived from the measurement items MC1, MC2, MC3, SL1, SL2, SL3, SL4, SL5, FC1, FC3, FC4, MP1, MP3, MP5, TMS1, TMS3, TMS4,

MS5, TD1, TD2, TD3, TD4, TD5, MB1, MB2, MB3, MB4, SRC1, SRC2, SRC3, OL1, OL2, OL3, M2, CM4, INS1, INS2, INS3, INS4, INS5, MHEL2, MHEL3, MHEL4, MHEL5, GP1, GP2, GP3 and GP5, whereas the endogenous variables were derived from US2, US3, US4 and US7(for more details see Figure 5.41).
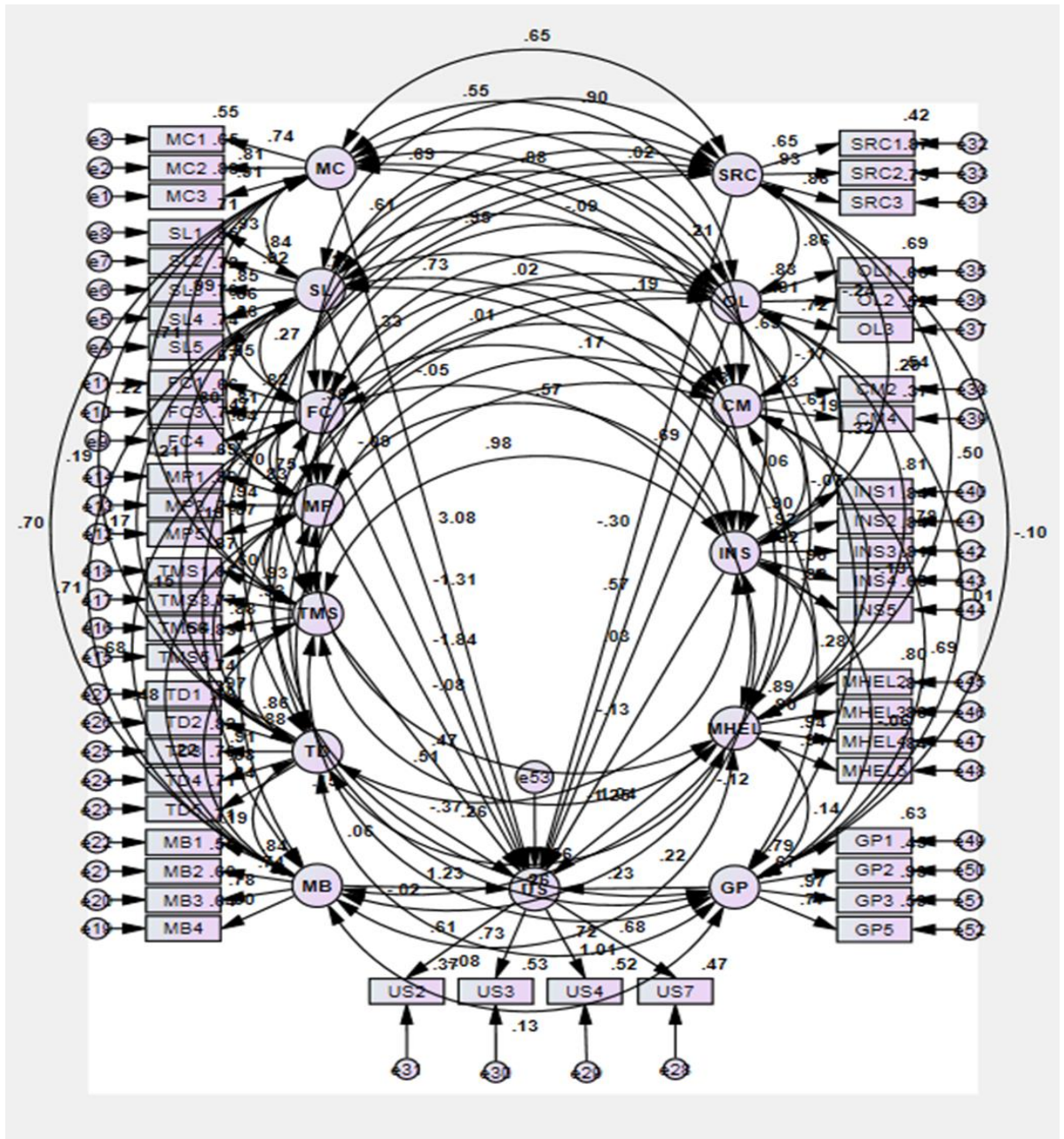
Figure 5.39: Structural model testing of proposed research model

Table 5.82 shows that the results of the structural model fit indicated and confirmed that the measurement model achieved a good fit and most of the indicators that were reported in this research met the recommended levels.

Table 5-82: Structural model fit results

Fit Indices		
Indices	**Structural Model Fit**	**Results**
CMIN/DF	2.981	Good
GFI	.889	Acceptable
AGFI	.803	Good
RMR	.049	Good
IFI	.913	Good
TLI	.907	Good
CFI	.914	Good
RMSEA	.077	Good

However, GFI with .889, as shown in Table 5.81, were less than the acceptable level of ≥.90 but it was close and still within the reasonable and acceptable range (Doll et al. 1994; Enns et al. 2002; Foote et al. 2005; Jais 2007; Peng 2014; Ali 2016; Ali & Osmanaj 2020). This is because of the complexity of the proposed model that includes 14 constructs and 52 variables (13 exogenous latent constructs with 48 observations, and one endogenous latent construct with four observations), and the large size of the research sample. Figure 5.41 shows the structural modeling test. Table 5.82 illustrates the results of the regression analysis among the constructs of the structural model.

Table 5-83: Regression weights of the structural model

Path			Estimate (B)	S.E.	C.R. (t)	P
University Success	<---	Management Commitment	.553	.053	10.434	***
University Success	<---	Strategic Leadership	.426	.069	6.210	***
University Success	<---	Flexibility to Change	.087	.051	1.706 N.S	.088
University Success	<---	Management Perception	.122	.040	3.090	.002**
University Success	<---	Top Management Support	.069	.038	2.210	.049*
University Success	<---	Trust Development	.215	.043	5.036	***
University Success	<---	Mutual Benefit	-.105	.061	-1.722 N.S	.085
University Success	<---	Sharing Resources and Capabilities	.049	.075	.650 N.S	.516
University Success	<---	Organisational Learning	.610	.077	7.943	***
University Success	<---	Communication Management	.005	.094	.049 N.S	.961
University Success	<---	Institutionalisation	-.314	.040	-7.958	***
University Success	<---	Ministry of Higher Education	.295	.056	5.255	***
University Success	<---	Geographical Proximity	.380	.060	6.313	***

* = value is statistically significant at P < 0.05 level; ** = value is statistically significant at P < 0.01 level ***=value is statically significant at p < 0.001; N.S =Not significant
■ Significant; ■ not significant; ■ significant but negative

The results of the regression tests presented in Table 5.82 indicated and confirmed that eight out of thirteen constructs in the structural model have been accepted. These constructs are MC, SL, MP, TMS, TD, OL, MHE and GP. Meanwhile, the other five constructs in the structural model have been rejected. These constructs are FCH, MB, SRC, CM and INS.

5.6 Results of Hypotheses Examination

In Chapter 4, a structural model series of hypotheses were developed to provide a suitable answer to the main research question outlined in Chapter 1 (what are the factors that enable COS to success in PJUs). In this section, the research structural model and hypotheses will be evaluated by employing the results of the SEM. The hypothesised path results of the research structural model are reported in this section to test the hypotheses (for more details see Figure 5.41).

The SEM findings reported in Table 5.83 are measured based on the estimated path coefficient (β) value with CR (t-value), and p value. The standard decision rules the t-value greater than 1.96, and the p values of ≤ .05, ≤ .01 and ≤ .001 apply in this research. SEM tends to determine the importance of the underlying path coefficient between the dependent variable and independent variables (Holmes et al. 2006; Hair et al. 2010; Holmes 2011; Kline 2015; Byrne 2016).
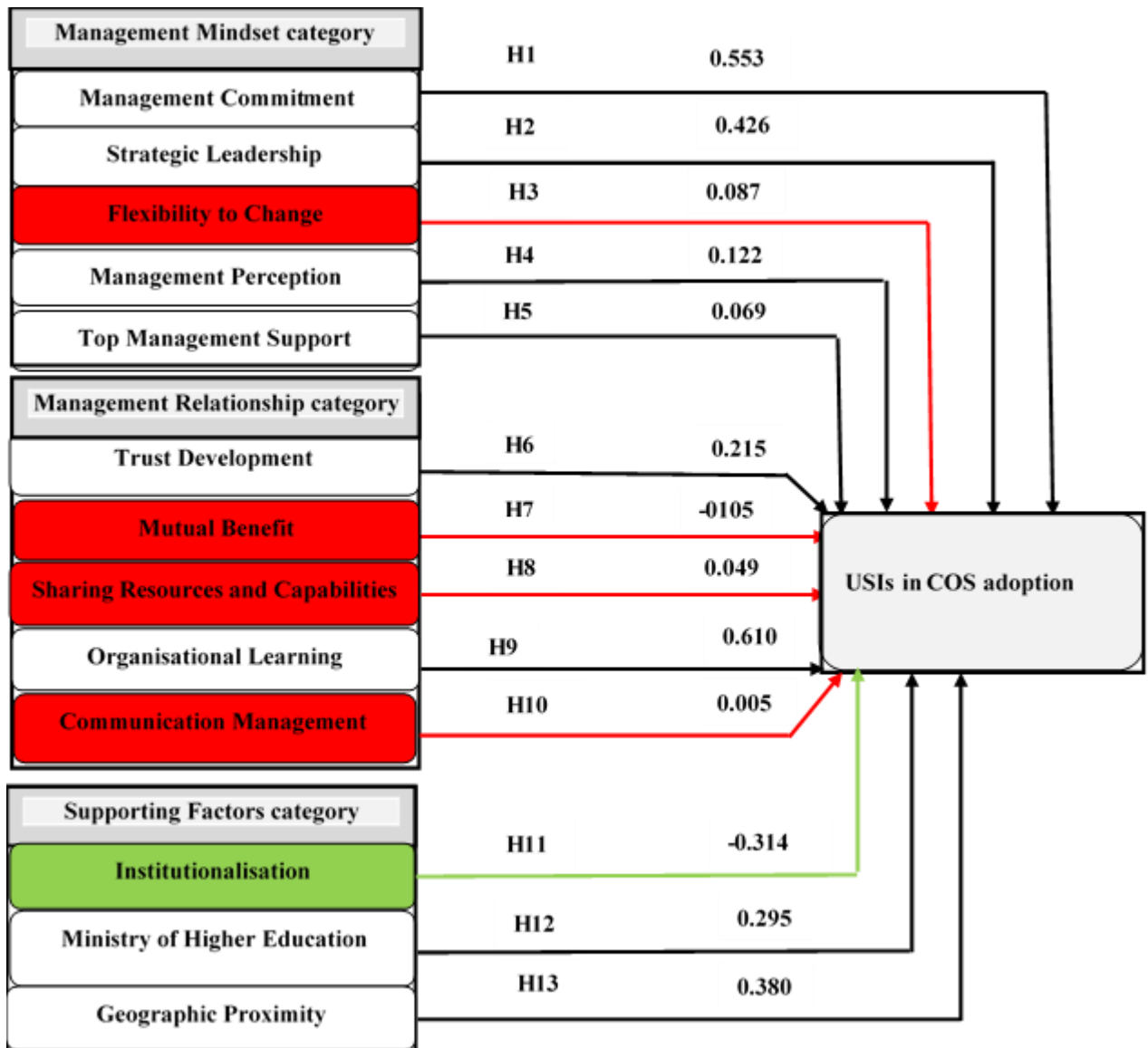
Significant at (P < 0.05), (P < 0.01) and (p < 0.001) standardised path coefficients are appear as black arrow ▬ Non-significant paths appear as red arrows ▬ Significant but negative path appears as green arrows ▬

Figure 5.40: Model hypotheses results

Hypothesis 1: Management Commitment (MC)

The results of the regression test confirmed that MC demonstrates a strongly significant positive impact on the COS success. Table 5.83 illustrates that the standardised regression coefficient (β) was 0.553 with Critical Ratio (CR) (t-value) 10.434, and p value is < 0.001***level, p=0.000. This means that when there is an increase of 1 unit in MC, COS success is expected to increase by 0.553 units with a standard error of 0.053. Thus, MC in universities has a positive significant influence on US for the adoption of COS. Therefore, this hypothesis was supported.

Hypothesis 2: Strategic Leadership (SL)

The results of the regression test confirmed that SL demonstrates a significant positive impact on COS success. As shown in Table 5.83, it is apparent that the regression path is reasonably acceptable and sufficient to describe the relationship between SL and COS success. This is indicated by an accounted value of C.R (t) 6.210 with a P-value of < 0.001***level, p=0.000. The standardised regression coefficient (β) was 0.426, which means that when there is a rise of 1 unit in SL, COS success is increased by 0.426 units with a standard error of .069. These results confirm that SL has a positive impact on US in adopting a COS. Therefore, this hypothesis was supported.

Hypothesis 3: Flexibility to Change (FCH)

The results of the regression test indicated that FCH demonstrates a non-significant impact on US for the adoption of a COS. From Table 5.83, it is apparent that the regression path is weak and insufficient to describe the relationship between FCH and COS success. The standardised regression coefficient (β) was 0.087, the CR (t-value) 1.706, which is lower than the minimum acceptance level of significance (1.96) with standard error 0.051, and p value 0.088, which is greater than 0.05. These results confirm that there is no significant positive influence for FCH on COS success. Based on these results, FCH is unlikely to have a non-significant impact on COS success. Therefore, this hypothesis is not supported.

Hypothesis 4: Management Perception (MP)

The results of the regression test confirmed that MP demonstrates a significant positive impact on COS success. As shown in Table 5.83, it is obvious that the regression path is reasonably acceptable in describing the relationship between MP and COS success.

This is explained by calculating the standardised regression coefficient (β) which was 0.122 with CR (t-value) 3.090, and p value which is < 0.01 level .002**. These outcomes emphasised that there is a significant positive effect related to MP on COS success. Thus, MP is more likely to influence the adoption of COS success. Therefore, this hypothesis was supported.

Hypothesis 5: Top Management Support (TMS)

The results of the regression test indicated and confirmed that TMS demonstrates a significant positive impact on the successful adoption of COS. From Table 5.83, it is obvious that the regression path is acceptable and sufficient to describe the relationship between TMS and COS success. This is indicated through a calculated value of standardised regression coefficient (β) which was 0.069 with Critical Ratio (CR) (t-value) 2.210, which is greater than an acceptance level of significance (1.96) and a P-value is 0.049*, which is greater than 0.05. This means that when there is an increase of 1 unit in TMS, COS success is expected to increase by 0.069 units with a standard error of 0.038. These results confirmed that there is a significant positive influence of TMS on COS success. Therefore, this hypothesis is supported.

Hypothesis 6: Trust Development (TD)

The results of the regression test indicated and confirmed that TD establishes a significant positive impact on US in adoption COS. As shown in Table 5.83, it is clear that the regression model is reasonably satisfactory and sufficient to describe the relationship between TD and COS success. The standardised regression coefficient (β) was 0.215 with CR (t-value) 5.036, which is higher than 1.96 or 2.56 (the acceptance level of significance), and p value is *< 0.001**** level, p=0.000. This means that when there is a rise of 1 unit in TD, COS success is increased by 0.215 units with a standard error of 0.043. These results confirm that there is a significant positive impact of TD on COS success. Thus, TD positively impacts COS adoption. Therefore, this hypothesis is supported.

Hypothesis 7: Mutual Benefit (MB)

The results of the regression test indicated and confirmed that MB proves to have a non-significant impact on COS success. As shown in Table 5.83, it is apparent that the regression path is reasonably weak and insufficient to describe the relationship between MB and COS success. The standardised regression coefficient (β) was -0.105

with CR (t-value) -1.722, which is less than 1.96 (a minimum acceptance level of significance), with a P-value of 0.085, which is higher than a minimum acceptance level of significance (0.05), with standard error 0.061. Based on these results, MB does not significantly and positively influence COS success. Therefore, this hypothesis is not supported.

Hypothesis 8: Sharing Resources and Capabilities (SRC)

The results of the regression test indicated and confirmed that SRC demonstrates a non significant impact on US in the adoption of a COS. As shown in Table 5.83, the standardised regression coefficient (β) was 0.049 with CR (t-value) 0.650, which is less than 1.96 (a minimum acceptance level of significance), with a P-value at 0.516 which is higher than a minimum acceptance level of significance (0.05). Based on these results, the SRC is not likely to impact significantly on COS success. Therefore, this hypothesis is not supported.

Hypothesis 9: Organisational Learning (OL)

The results of the regression test indicated and confirmed that OL shows a strongly significant positive impact on successful COS adoption. As shown in Table 5.83, it is obvious that the regression path is reasonably acceptable and sufficient to describe the relationship between OL and COS success. This is indicated through a calculated value of CR (t-value) 7.943, which is greater than 1.96 or 2.56 (the acceptance level of significance). The value of beta (β) is 0.610, which means that when there is a rise of 1 unit in OL, COS success is increased by up to 0.610 units with a standard error of 0.077. The effect of OL on COS success is significant, p value is *< 0.001**** level, *p=0.000.* These results confirm that there is a significant positive impact of OL on successful COS adoption. Therefore, this hypothesis is supported.

Hypothesis 10: Communication Management (CM)

The results of the regression test indicated that CM shows a non-significant impact on COS success adoption. As shown in Table 5.83, it is apparent that the regression path is reasonably weak and insufficient to describe the relationship between CM and COS success. This is demonstrated through the standardised regression coefficient (β) which was 0.005 with CR (t-value) 0.094, which is less than 1.96 (a minimum acceptance level of significance), with a P-value of .961, which is higher than a minimum acceptance level of significance (0.05). These results confirm that there is a

non-significant influence of CM on COS success. Based on these results, CM is not likely to adopt a successful COS. Therefore, this hypothesis is not supported.

Hypothesis 11: Institutionalisation (INS)

The results of the regression test, as shown in Table 5.83, indicated that INS has a significant but negative impact on successful COS adoption. The standardised regression coefficient (β) which was -0.314 with Critical Ratio (CR) (t-value) -7.958, and p value is $< 0.001***$ level, p=0.000. This means that when there is a rise of 1 unit in INS, COS success is expected to decrease by up to 0.314 units with a standard error of 0.040. Based on these results, INS has a negative impact on COS success adoption. Therefore, this hypothesis is not supported.

Hypothesis 12: Ministry of Higher Education (MHE)

The results of the regression test confirmed that the MHE demonstrates a significant positive impact on COS success adoption. As shown in Table 5.83, it is obvious that the regression path is reasonably acceptable and sufficient to describe the relationship between the MHE and COS success. This is specified through an accounted value of the CR (t-value) 5.255 which is greater than 1.96 or 2.56 (the acceptance level of significance). The value of beta (β) is 0.295, which means that when there is a rise of 1 unit in MHE, COS success is increased by up to 0.295 units with a standard error of 0.056. The impact of the MHE on COS success is significant (P= 0.000) at level < 0.001***. These outcomes emphasise that there is a significant positive effect of the MHE on COS success. Therefore, this hypothesis is supported.

Hypothesis 13: Geographic Proximity (GP)

The results of the regression test indicated and confirmed that GP shows a significant positive impact on US in the adoption of COS. As shown in Table 5.83, it is clear that the regression model is sufficient to describe the relationship between GP and COS success. The standardised regression coefficient (β) was 0.380 with CR (t-value) 6.313, which is higher than 1.96 or 2.56 (the acceptance level of significance), and p value is $< 0.001***$ level, p=0.000. This means that when there is a rise of 1 unit in GP, COS success is increased by 0.380 units with a standard error of 0.060. These results confirm that there is a significant positive impact of GP on COS success, which demonstrates that GP positively impacts COS success adoption. Therefore, this hypothesis is supported.

Table 5-84: SEM output for hypothesised path relationships in the structural model

Paths			Research Structural Model				Impacts	Results
			Standardised (β)	S.E.	C.R. (t)	P		
H1	MC	→ US	.553	.053	10.434	***	Positive and significant	Supported
H2	SL	→ US	.426	.069	6.210	***	Positive and significant	Supported
H3	FC	→ US	.087	.051	1.706	.088	Negative and not significant	Not Supported
H4	MP	→ US	.122	.040	3.090	.002**	Positive and significant	Supported
H5	TMS	→ US	.102	.038	2.210	.049*	Positive and significant	Supported
H6	TD	→ US	.215	.043	5.036	***	Positive and significant	Supported
H7	MB	→ US	-.105	.061	-1.722	.088	Negative and not significant	Not Supported
H8	SRC	→ US	.049	0.75	.650	.516	Negative and not significant	Not Supported
H9	OL	→ US	.610	.077	7.943	***	Positive and significant	Supported
H10	CM	→ US	.005	.094	.049	.961	Negative and not significant	Not Supported
H11	INS	→ US	-.314	.040	-7.958	***	Negative but significant	Not Supported
H12	MHEL	→ US	.295	.056	5.255	***	Positive and significant	Supported
H13	GP	→ US	.380	.060	6.313	***	Positive and significant	Supported

Results supported at significance level: p ≤ .01, p ≤ .05, p ≤ .001 ■ *Significant,* ■ *Not significant,* ■ *Significant but negative*

5.7   Chapter Summary

This chapter commenced with the results of a descriptive analysis of the survey responses, followed by the validation of the research instrument which includes EFA for the data collected that related to the proposed research model, as well as describing the validity and reliability tests. Next, the chapter outlined CFA and SEM testing and, finally, an examination of the hypotheses results and assessment relationships strength was presented. This chapter represents the findings of the structural model with path

coefficient relationships which were evaluated using SEM. All hypotheses were examined and reported. Eight hypotheses in the proposed model were found to be significant, having a positive impact on US in the adoption of COS. Four hypotheses were found to have an insignificant impact on US in the adoption of COS. Only one hypothesis was found to be significant, showing a negative impact on US in the adoption of COS. Overall, however, this is of little importance. The next chapter discusses the findings of the qualitative and quantitative methods used in this research project.

6 CHAPTER SIX: RESULTS DISCUSSION

6.1 Chapter Overview

This chapter summarises and discusses the study's findings in light of the research questions. Previous studies in higher education (HE) are rare, therefore literature outside the focus area are used to support and add value to these studies. This chapter first provides an overview, which is followed by the responses to research Questions 1, and 2 (and their sub questions).

6.2 Response to Research Questions

While the existing literature on coopetition strategy measurement is extensive, the majority of research is outside the higher education sector and those that exist are from non-Jordanian contexts (Lundberg & Andresen 2012; Niemczyk & Stańczyk 2014). This study has explored the phenomenon in the PJU sector and presented the findings, and now discusses these findings using the research questions.

6.2.1 RQ 1: What is the Current Organisational Relationship that Exists among Private Jordanian Universities?

The findings from both the qualitative and quantitative data shows that the current relationship between PJUs has elements of coopetition. All the interview participants (INPs) and 90.10% of the survey respondents (SURs) confirmed that coopetition (CO) occurs between PJUs, therefore indicating they cooperated and competed with each other simultaneously in different areas. Further, as outlined in Chapter 4, the COS may enable Jordanian universities to respond to environmental dynamism quickly and flexibly, and could lead to re-structuring the higher education sector in Jordan (HESJ). Furthermore, cooperative relationships could create mechanisms to protect the tertiary education sector by improving university positions, resources and performance. This existence of CO between the PJUs confirms the work conducted in previous studies (Niemczyk & Stańczyk 2014; Dal-Soto & Monticelli 2017). These studies, completed in Poland and Brazil, found that the benefits of coopetition relationships (COR) include enhancing the diffusion of knowledge and improving the efficiency of the entire education sector (Niemczyk & Stańczyk 2014), and access to previously unavailable resources (Dal-Soto & Monticelli 2017).

Although the findings of this research study were consistent with the 2014 and 2017 studies, differences have been found. First, this study has added new reasons for adopting a COS between PJUs. These include the need to work together to improve effectiveness, to adopt new strategic actions due to the removal of government funding, and the benefits of using COS on PJUs such as sharing knowledge and resources, reducing cost, and minimising competition between Jordanian universities (see Section 4.2). Moreover, the current study has used a mixed method approach to explore the coopetition strategy while the previous studies used a single method (the qualitative approach). Finally, the findings of the quantitative component of this research added empirical results to support the previous findings related to the COS adoption in the education sector. Hence, the findings related to this research question have contributed to filling the gap in literature, that is, the rarity of studies of coopetition strategies in HES and especially in Jordan.

6.2.1.1 Sub1- RQ1: What are Coopetition Aspects and Levels between Private Jordanian Universities?

Based on the outcomes of the qualitative and quantitative stages, the main cooperation areas included academic activities, sharing interest, government policy and university services with low level of cooperation; while students, higher revenue and reputation were associated with a high level of competition. These aspects are explored in the next section.

6.2.1.1.1 Cooperation Areas and Levels between Universities

Academic activities is the most significant area of cooperation and includes collaborative teaching, research and supervision according to (88%) of the INPs and the majority in the SURs (98.3%). Further, *sharing interest* between universities through exchanging knowledge, experiences, publications and course materials was mentioned by (72%) of the INPs and (92.4%) of the SUPs. Two thirds of the INPs (66%), and (93.3%) of the SURs acknowledged *government policy* as an important cooperation aspect between universities, indicating that it could be improved by implementing legislation, instruction and regulations. Approximately (50%) of the INPs and (86.7%) of the SURs indicated that *University services* are an important aspect through health insurance services, social and athletic activities and community services. These cooperation areas may enhance university competitiveness, facilitate

sharing knowledge and resources, save costs, improve learning quality, develop universities' capabilities and improve resilience to external changes.

These results are supported by Bennett and Kottasz (2011), Niemczyk and Stańczyk-Hugiet (2014a) and Dal-Soto and Monticelli (2017) which established cooperation activities such as joint research, sharing knowledge, skills, managerial experiences and procedures, and joint marketing efforts as important areas among universities.

In light of the cooperation areas mentioned earlier, the current study also determined the level of cooperation aspects between universities. The research findings confirmed that the ***cooperation areas are still considered to be at a low level*** by all INPs and 77.8%, of the SUPs. Further, 74.5%, of the SUPs indicated that cooperation as ***government policy*** is also low and, 68.9% of the SUPs indicated that cooperation in ***academic activities*** is not satisfactory, and 68.6% of the SUPs revealed that cooperation in ***sharing interests*** is low between universities.

Further, as outlined in Chapter 4, these results indicate that cooperation activities might occur between those with similar size, power, expertise or a similar knowledge field. In addition, the advancement of some cooperation activities is hindered by the individual characteristics of some universities due to the owner's mindset, university's culture and individual behaviours towards academics and management staff. Moreover, some universities claimed that they have enough numbers of high-level academics in different disciplines, thus they tend to compete more than cooperate.

These results are in line with Niemczyk and Stańczyk (2014) which found that cooperation is at a low level between Poland universities, particularly for joint conferences, incidental joint research projects and the exchanging knowledge. They added that while benefits exist, offered by relationship networks between researchers and educators, these exist at a personal level rather than owing to a formal contractual agreement.

6.2.1.1.2 Competition Areas and Levels between Universities

In the identified areas, ***students*** were the most significant area of competition through study fees, quality services and new programs. All the INPs and SUPs revealed that there is an intense competition between universities to get more students. Further, to ***get higher revenue*** is another significant area of competition between universities

through profit, satisfaction stakeholders and market value (share). This was said by 88% of the INPs and all the SURs responses. Next, competition to ***improve university reputation*** is also mentioned as an essential competition area through quality assurance, university ranking, academic staff quality and university image and brand (77% of the INPs and all SURs). Similar findings have been reported by Dal-Soto and Monticelli (2017) and Bennett and Kottasz (2011), who found that market limitation, the capacity of universities and geographical closeness have led to fierce competition for students.

In relation to levels of competition, the research findings from both phases in this study found that the respondents believe that there was a ***high level of competition between universities***. They indicated that the most competitive area was the *students*: in 94% of the SUPs and all of the INPs. This was followed by the *profit and higher revenue* area in 89.1% of the SUPs, and the majority of the INPs; whereas 87.1% of the SUPs and the majority of the INPs saw intense competition to *improve the reputation* between universities.

The reasons for the high level of competition were mentioned in Chapter 4 and included the limited number of students available in the market, the need to increase profits and market share, and the weak monitoring of PJUs by the MHE. Therefore, as universities compete for the same resources, the level of competition is high. This situation motivates each university to use counter-movements to achieve results and gains, which are intensified by challenges posed by the competition, or opportunities to improve market position. Moreover, universities act intensively to maximise their own interests, which creates imitation by competitors to handle situations of environmental uncertainty. Thus, universities have developed their competitiveness capabilities, and distinctive competencies to achieve a competitive advantage over their competitors.

In addition, while university goals are determined independently, the goal is common to all and, therefore, provides the basis of their competition. This relationship has caused tension between different universities that tends towards conflict, disharmony and relentless pursuit caused by an imbalance between universities. Further, the universities are close geographically, have similar portfolios of undergraduate courses, indicating competition for the same market share.

6.2.1.2 Sup2-RQ1: What is Coopetition Strategy Type between Private Jordanian Universities?

Based on the cooperation and competition areas which were confirmed from qualitative and quantitative data, all INPs revealed that universities have a low level of cooperation and high level of competition, that is Type 2: Contender coopetition (see Figure 6.1). This result was confirmed by 93.7% of the SUPs whereas (2.3 %) of the them reported that Type 3: Partner was the current type, while Type 1: Mono player and Type 4: Adapter were reported by six of the respondents (2.0%) for each CO type.

High	Type 2: Contender	Type 4: Adapter
↕	95.7% (248 participants)	2% (6 participants)
Competition		
↕	Type 1 Mono player	Type 3: Partner
	2% (7 participants)	2.3% (6 participants)
Low		
	Low ←——→ Cooperation ←——→ High	
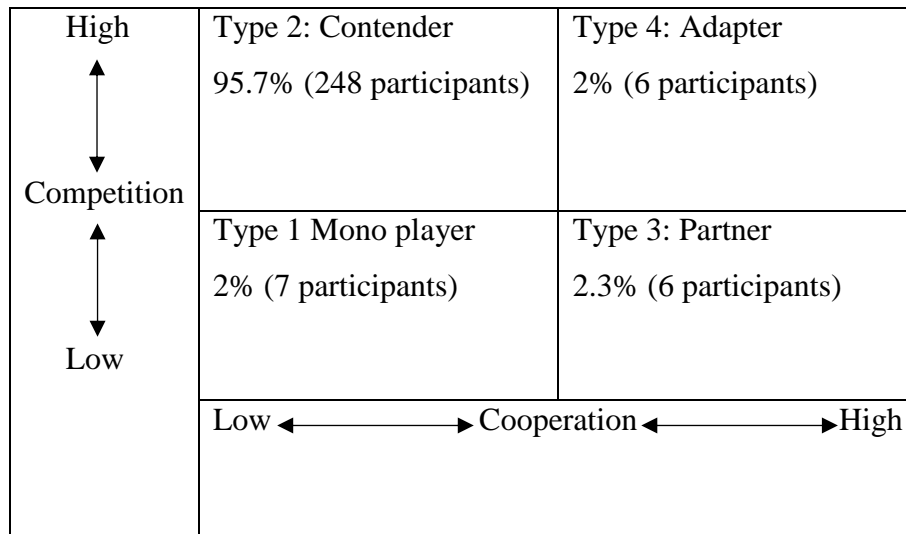
Figure 6.1: Coopetition types in PJUs

PJUs still believe that cooperation with local and direct competitors is still risky in that their business secrets might be discovered by their competitors. Therefore, due to a low level of trust, they maintain a low degree of cooperation and a high degree of competition. In addition, from the traditional business culture of PJUs, they assume that to cooperate with competitors will not be beneficial because a competitor is a competitor. Further, cooperation with competitors may contain threats and risks such as the loss of independence and control, and the exposure of specific resources and capabilities.

This attitude and threat has been reported in previous studies outside the educational sector (Lavie 2006; Ceptureanu et al. 2018a; Cygler et al. 2018), as has an increase in opportunistic behaviour, tension and conflict, also reported by Cygler et al. (2018). Also, these studies reported that business will not grow substantially by high

cooperation with competitors (Lavie 2006; Ceptureanu et al. 2018a; Cygler et al. 2018). This could align with the Jordanian university context as the service, market and resource similarity is very high.

The study also found that there is low interdependency between each other. Although they cooperate with competitors, most of them do not develop a long-term strategy to handle coopetition. Rather, it is being done mainly on a short-term basis with a low degree of cooperation. Furthermore, PJUs prefer to compete with their local and direct competitors and to cooperate with the advanced international universities to gain great benefits from their excellent reputations, experiences, qualifications and certifications. As a result, 95.7% of the participants stated that PJUs are in the Type 2: Contender category (High competition, Low cooperation).

6.2.2 RQ2: What are Factors that Enable the Coopetition Strategy to be Successful in Private Jordanian Universities?

There are three aspects to answering this question: What are the most important factors for coopetition strategy? What are the indicators for coopetition strategy success? and, what are the critical success factors for a coopetition strategy?

6.2.2.1 Sub-1 RQ2: What are the Important Factors that Enable the Coopetition Strategy to be Successful in Private Jordanian Universities?

The findings for this research identified 13 main factors which were grouped into three categories, MM, MR and SFs, which will be discussed in the following section.

6.2.2.1.1 Management Mindset (MM) category

According to the study findings that emerged through the qualitative and quantitative stages, the important factors in MM category were MC, SL, FCH, MP and TMS.

MC was the most significant factor for COS with the majority of the INPs (94%) and 89.0% of the SURs nominating it. This is because MC represents the degree of top management towards the implementation of COS. It is also important for maintaining and developing cooperation relationships and creating a positive climate toward COS. These findings are supported by studies outside the education sector such as (Morris et al. 2007; Osarenkhoe 2010a; Bengtsson & Kock 2014; Dorn et al. 2016; Perera et al. 2016; Buttschardt 2017; Monticelli 2017; Ceptureanu et al. 2018a; de Resende et

al. 2018). They all offer strong evidence indicating that MC is an antecedent factor for establishing successful COS.

The importance of MC between universities is built around three key items *Long-term commitment, Compulsory commitment, and Formal and informal agreement.*

The respondents believed that *Long-term commitment* is the most important item for MC with 77% of INPs and 87.4 % of SUPs responding this way. This is because it represents a university's tendency toward the persistence of a cooperative strategy and provides a signal of how reliable a partnership is with other competitors when working towards achieving strategic objectives. Other studies support this finding. They have clearly stated that long-term commitment is important for maintaining cooperative relationships with competitors (Dagnino & Padula 2002; Zineldin 2004; Chin et al. 2008; Jiang et al. 2008; Dagnino 2009; Tsamenyi et al. 2010; Yamakawa et al. 2011; Petter et al. 2014; Ceptureanu et al. 2018).

Compulsory commitment is the second important item for MC. The respondents have seen that a university must be committed to support cooperative relationships with competitor universities according to 77% of INPs and 89.7% of SUPs. This is because, as found in previous studies, complete commitment leads to sustainable and successful relationships and the development of a sense of obligation and responsibility for goals and activities that contribute to relationship outcomes (Chin et al. 2008; Limoubpratum et al. 2015; Perera et al. 2016) in the industry and banking sectors.

Formal or informal agreement is the third important item for MC. More than two thirds of INPs (72%) and 90% of the SUPs said that the universities have a formal or an informal agreement, or at least a memorandum of understanding, with competitors. This is because formal or informal agreements maintain a cooperative relationship and can enhance trust, reduce conflict, maintain commitment, and achieve common objectives with competitors. This result is confirmed by many studies such as (Bengtsson & Kock 1999; Hoffmann & Schlosser 2001; Padula & Dagnino 2005, 2007; Gueguen & Isckia 2011; Osarenkhoe 2010a; Lacoste 2012; Limoubpratum et al. 2015; Dorn et al. 2016; Perera et al. 2016; Souchon et al. 2018).

Unsurprisingly, the results revealed that **SL** is considered the second most important factor in the MM category by (83%) of the INPs and (89.6%) of the SUPs. SL is important because it manages and guides the COS to success, and creates and sustains

clear vision, mission, objectives and values along with competitors; as well as integrating COS within its practices. It is also responsible for building, consolidating and sustaining a strong coopetitive network to develop business projects. These outcomes corroborate with (Wohlstetter et al. 2005; Bryman 2007; Carmeli et al. 2012; Thomason et al. 2013; Limoubpratum et al. 2015; Pinasti et al. 2016; Tyndall 2017; Dyduch 2019) who all supported the importance of SL in coopetition relationships (CORs).

SL covers five items, including *Clear vision and mission, Solving of conflict, Creation of strategy, Obtaining and allocation of new resources, and Regular engagement with stakeholders*.

Clear vision and mission was identified as the first significant item in SL. More than two thirds (72%) of INPs and most of the SUPs (90%) agreed that SL can establish a clear vision and mission to sustain cooperative relationships with competitor universities. Vision and mission are important factors in COS because they relate to management intentions and orientations, level of support, overall strategic planning, and guide organisations in the right direction for the future. These outcomes are similar to the studies of (Chin et al. 2008; Efendioglu & Karabulut 2010; Hitt et al. 2011; Khan & Khalique 2014; Limoubpratum et al. 2015; David & David 2016) who explain of how vision and mission are related to leaders' tasks and are critical to CORs.

The Solving of conflict is considered the second significant item for SL by approximately two thirds of the INPs (66%) and (89.1%) of the SUPs. Managing tension and conflict effectively is necessary for leaders. They must deal with any potential conflict before it escalates (Ceptureanu et al. 2018), because escalating conflict can hamper organisations' performances when they are attempting to cooperate with each other. These findings are congruent with (Bengtsson & Kock 2000; Zineldin 2004; Lam & Chin 2005; Morris et al. 2007; Chin et al. 2008; Ruijun & Zhiman 2011; Limoubpratum et al. 2015; Ceptureanu et al. 2018a) who all confirm that conflict management is identified as a critical function for leaders in helping to maintain an intense level of COS.

The Creation of strategy to manage successful collaborative relationships with competitor universities was considered third amongst the SL items by two thirds of INPs (66%) and (90.4 %) of the SUPs. SL was found to be an important driver in

strategy formulation and execution (Mubarak & Yusoff 2019) because effective planning and the efficient implementation of strategies are their responsibility. The importance of this item is supported by (Chin et al. 2008; Limoubpratum et al. 2015) who concluded that SL created new strategies according to the goal of the relationship.

(61%) of INPs and (89.1%) of the SUPs mentioned that the *Obtaining and allocation of resources* is the fourth significant item for SL. Management must develop efficient and effective coping strategies for acquiring or allocating resources, to provide enough and relevant resources for implementing, maintaining and developing COS. Lack of resources can impede operations and even lead to the failure of COS. These findings on resources are aligned with (Bengtsson & Kock 1999; Ketchen et al. 2004; Chin et al. 2008; Thomason et al. 2013; Limoubpratum et al. 2015; Pinasti et al. 2016; Ceptureanu et al. 2018a) who observe that obtaining and allocating resources is an essential element for COS success.

Relationship with stakeholders was revealed as the fifth important item for SL by (61%) of INPs and (89.4%) of the SUPs. This is because a strategic decision like COS is a complex decision and it is not easy to make choices based solely on instinct, as it needs information from different resources. Therefore, university leaders need to develop relationships with stakeholders to improve the flow of information, and respond to their feedback to analyse, prioritise and make the right decisions. This result is consistence with (Wohlstetter et al. 2005; Eddy et al. 2014) which found that promoting dialogue with stakeholders helps organisations make effective decisions.

FCH is the third important factor in the MM group based on the responses of INPs (72%) and SUPs (89.3%). FCH enables universities to handle different kinds of work, manage different relationships and balance different roles to respond effectively to change in the education sector. It also has the capacity to develop flexible mindsets in order to make COS possible by convincing competitors of the advantages provided by the cooperation and strengthening of their competitive power simultaneously and in reconfiguration COS. These outcomes corroborate studies conducted outside the education sector such as (Hoffmann & Schlosser 2001; Heimeriks & Duysters 2007; Bengtsson et al. 2010; Chen & Ling 2010; Wassmer 2010; Hung & Chang 2012; Parker 2012; Dadfar et al. 2014; Bengtsson & Raza 2016; Dorn et al. 2016) who recommend that flexibility is an important condition for developing CORs.

There are three significant items related to the FCH: ***Response to changes, Reallocate resources,*** and ***Cultural fit.***

Response to change is considered to be a characteristic of a university's relationships with competitors and the most significant item for FCH by two thirds of INPs (66%) and (89.4%) SUPs. It implies that universities could respond quickly to changes in the education sector in order to manoeuvre and improve their strategic positions. More, agility in response enables universities to configure coopetive relationships, reconfigure new relationships and preserve existing relationships with competitors through the number and type of actions taken over time. The findings of this study are consistent with the work of (Sambamurthy et al. 2003; Gnyawali et al. 2010; Chen & Chiang 2011; Bengtsson & Johansson 2014; Bengtsson & Raza 2016) who clearly state that agility in responding to opportunities plays an important role in managing different coopetive relationships and dealing with challenges.

Reallocate resources is the second significant item for FCH by approximately (55%) of INPs and (89.1%) of the SUPs. Reallocation of resources is an important plan for using available resources to achieve various significant activities and goals for the near future, respond to change effectively, develop trust, co-ordinate coopetive activities with competitors, and carry out the adaptations needed to enhance CORs. These outcomes are similar to (Hoffmann & Schlosser 2001; Zhou & Li 2010; Abdallah 2011; Kowalski 2014; Forés & Camisón 2016) who all observed that increasing strategic flexibility and operational capability through COS provides greater opportunities to reallocate resources, and to use the vacant capacity of other economic entities operating in the network.

Cultural fit is the third significant item in the FCH factor according to more than half of the INPs (55%) and (89.4%) of the SUPs. Lack of cultural fit is a barrier to implementing COS (Zineldin 2004). This is because it may influence common strategic decisions, increase the space of further cooperation with competitors, help to get a clear picture of competitors' cultures, handle conflict problems, eliminate barriers in CO, and maintain stable relationships with competitors.

These findings agree with (Zineldin 2004; Leung 2007; Chin et al. 2008; Tidström 2014) who all mention that mutual culture facilitates interactions and synergies, and

develops cooperation relationships while differences in culture lead to negative interactions between partners, disagreements, and increased tension and conflict.

The fourth important factor for COS in the MM category is MP. Two thirds of INPs (66%) and (90.9%) of the SUPs indicated this was important because MP is useful in understanding and predicting a competitor's propensities, orientations, behaviours, and to identify their choice of an alternative. MP also helps university leaders in directing attention towards developing CO through awareness of change in the education sector, a broader perception of actors surrounding the organisation, and regulations about CORs. These findings are supported by many studies in the tourism sector, for example (Gordon 2007; Mazanec & Strasser 2007; Wang & Krakover 2008; Pandža 2015; Karl 2018; Czakon & Marszałek 2021).

The participants in this study identified three items for MP: ***Belief in coopetive relationships, Cooperative mind-set,*** and ***Awareness of benefits.***

Belief in coopetive relationships was revealed to be the most important item by the research participants. More than half of INPs (55%) and (88.7%) of SUPs indicated that university leaders believe in cooperative relationships with competitor universities. This implies that universities have a positive orientation toward coopetive relationships, which allows organisations to manage coopetiveness effectively, share new knowledge, deploy more experts in CO management, and guard their own knowledge leakage. The importance of this item is also supported by (Hult et al. 2005; Bouncken et al. 2007; Rauch et al. 2009; Bouncken et al. 2016b) who found that cooperative orientation has positive effects on decisions, actions and performance.

Coopetive mind-set for university leaders was also revealed to be the second important item for MP by (50%) of INPs and (91.7%) of the SUPs. This is because managing COS requires a coopetive mindset to deal effectively with cooperation and competitive relationships simultaneous with individual interests and achieving common benefits. These outcomes corroborate (Luo 2007a; Gaim & Wåhlin 2016; Gnyawali et al. 2016; Czakon & Marszałek 2021; Czakon et al. 2020) who all propose that a coopetive mindset helps filter knowledge and direct CO action effectively.

Awareness of the benefits from coopetive relationships is the third significant item in the MP factor. Less than half of INPs (44 %) and (92.4%) of the SUPs agreed that university leaders are aware of the importance of the anticipated benefits from

collaboration with competitor universities. This is because strategic rationale for coopetition decisions depends on the benefits sought and the available competitors' perceptions. So, COS may yield benefits otherwise unattainable such as access to resources, cost reduction and strengthened competitiveness. The findings are consistent with many studies such as (Kylänen & Rusko 2011; Altinay et al. 2016; Della & Aria 2016; Rao et al. 2016; Czakon & Marszałek 2021) who all state that the awareness of benefits earned through prior collaboration has been recognised as playing a critical role in deciding on CO.

TMS is the fifth important factor in the MM group according to approximately two thirds of INPs (61%) and (92.5%) of the SUPs. This is because management attitude effects organisations' resources, participants, structures, processes, decisions, and other organisational mechanisms that support CORs and overcome obstacles through personal relationships. In addition, TMS reduces uncertainty for the relationships by providing a clear expectation, and re-allocating or adding additional resources in the case of unforeseen events. These results confirmed the work of many scholars outside education sector such as (Hoffmann & Schlosser 2001; Chin et al. 2008; Rikkiev & Seppänen 2009; Young & Jordan 2008; Rikkiev 2009, 2012; Rikkiev et al. 2012; Dadfar et al. 2014; Ganisen et al. 2015; Ceptureanu et al. 2018a). They all mention TMS's importance in implementing the COS.

According to the results, TMS involves four items: *Willing to take risks, Enthusiasm towards continued support, Providing clear objectives,* and *Willing to make more effort.*

Willing to take risks in adopting CORs with universities was also revealed as the top among the other items for TMS by half INPs and (92.8%) of the SUPs. COS is actually a risk management strategy for cooperative organisations because working with competitors entails a level of risk. However, actors are involved in coopetition to exploit new business opportunities and to gain the advantages of risk sharing. These results correspond to the work outside the education sector for (Segil 2005; Bonel & Rocco 2007; Lunnan & Haugland 2008; Gnyawali & Park 2011; Estrada et al. 2016; Sanou et al. 2016; Galkina & Lundgren 2017; Raza et al. 2018) who found that coopetive organisations are established based on the sharing of both risks and rewards.

Enthusiasm towards continued support of coopetition relationships with universities was identified as a second significant item by (44%) of INPs and (92.4%) of the SUPs. TMS is not enough to achieve CO success, therefore, it is important to keep and develop that support to manage COS successfully and motivate coopetitors to achieve their common objectives and mutual benefits. These results correspond to the work of (Lambe et al. 2002; Bellini et al. 2016; Sparkling et al. 2017) who note that it is always important to keep TMS in the whole COS implementation process to achieve successful relationships.

Approximately (44%) of INPs and (92.7%) of the SUPs mentioned ***Providing clear objectives*** as the third significant item for TMS. Universities may have different ideas, expectations, ambitions, capabilities and objectives (Vuorinen & Martinsuo 2018) however, top management should clearly show their CO objectives (Chin et al. 2008) because fuzzy and poorly defined objectives may lead to failed coopetive projects. These results correspond to the works of (Whipple & Frankel 2000; Hoffmann & Schlosser 2001; White & Fortune 2002; Dodourova 2009; Andreola et al. 2012; Rikkiev et al. 2012; Rikkiev & Mäkinen 2013; Wood 2014; Nyambura & Projectplanning 2015). They all state that clear and realistic goals and objectives are critical factors for CO success.

Willing to make more effort to build successful coopetition relationships is ranked as fourth amongst the TMS items by (38%) of INPs (92.4%) of the SUPs. This is because top management encourages organisations to engage in CO due to the occurrence of perceived or potential benefits. Also, it stimulates organisations to coordinate their efforts by complementarity and investments in relationships to achieve win-win results. These results corroborate with (Chin et al. 2008; De Ngo & Okura 2008; Gnyawali & Charleton 2018; Kavirathna et al. 2019) who all note that management is devoted in their efforts to achieve benefits and develop CORs to improve their strategy and performance.

Concluding Remark

The study result identified five important factors and 19 items grouped in the MM category. The first and most important factor is MC, while SL is considered the second most important, and FCH is the third, while MP is ranked as fourth in importance, and TMS is the fifth. Based on the MM category, these factors play a significant role in

formulating and implementing a successful COS between PJUs. Therefore, universities must consider these factors to successfully manage the COS between PJUs.

6.2.2.1.2 Management Relationship (MR) Category

According to their importance, MM category is comprised of five factors including *TD, MB, SRC, OL,* and *CM.*

TD is considered the most important factor in the MR category by all INPs and (92.44%) of the SUPs. This is because it maintains long term relationships with the competitors, provides a greater sense of security in sharing resources, risk and cost with partners, and increases attention to interaction intensity with partners to prove that they are interested in cooperative survivability and development. Furthermore, it may reduce the engagement in competitive actions that significantly undermine a university's own market position and increase loyalty level and interdependency between partners. Moreover, development of trust enables partners to be more likely to share critical information and relevant experiences with each other. These results correspond with work outside the education sector such as (Bengtsson & Raza 2016; Bouncken et al. 2016a; Czakon & Czernek 2016a; Della & Aria 2016; Klimas 2016; Le Roy et al. 2016; Rajala & Tidström 2017; Vanyushyn et al. 2018; Kraus et al. 2019; Raza & Kostis 2020). They all claim that TD is a crucial factor for sustaining successful CORs between organisations.

According to the outcomes of the qualitative and quantitative study, there are five items in this factor namely, *Common goals, Interpersonal relationships, Transparency and clarity, Interdependence and harmony,* and *Honesty and willingness.*

Common goals is considered to be the most important item for TD by (72%) of INPs and (92.4%) of the SUPs. It is the foundation of TD because it enables cooperative organisations to achieve the same goal and to link up different organisations towards the same direction, to participate in collective actions to achieve common goals, and to help cooperative organisations reduce their operating costs. These outcomes align with studies such as (Luo 2007a; Chin et al. 2008; Savolainen 2009; Choi et al. 2010; Das & Rahman 2010; Yami et al. 2010; Brahm & Kunze 2012; Mukherjee et al. 2012)

who claim that the creation of common goals is considered an important element for developing trust between partners and sustaining successful COS management.

Interpersonal relationships was indicated as the second important item for TD by (72%) of INPs and (92.7%) of the SUPs. Strong interpersonal relationships between rivals may facilitate working together and resolve any obstacles to manage coopetive relationships successfully. In addition, coopetition activities need a strong cognitive and emotional response from employees involved in COS to develop coopetition experiences, interactions and trust. These results support work such as (Ghobadi & D'Ambra 2011; Baruch & Lin 2012; Czachon & Kuś 2014; Fernandez et al. 2014a; Tidström 2014; Le Roy & Fernandez 2015; Fernandez & Chiambaretto 2016; Lundgren & Kock 2016; Lascaux 2020). They all proposed that interpersonal trust between managers is deemed necessary to counterbalance elements of rivalry, achieve common goals, and generate positive behaviours and performance between coopetive teams.

Transparency and clarity is the third important item for TD between universities. (61%) of INPs and (92.0%) of SUPs believed that universities rely on transparency and clarity to develop coopetition relationships. Transparency and clarity create a positive and cooperative atmosphere that outweighs the fear of negative consequences and develops trust and sustains relationships. Lack of transparency and clarity may lead to increased confusion, complexity and ambiguity in relationships, and create a negative and competitive climate between partners, so the relationships may fail. These outcomes corroborate with the studies of (Pirson & Malhotra 2011; Hanisch & Wald 2014; Snippert et al. 2015; Dao et al. 2016; Couston et al. 2019; Damayanti et al. 2019) who found that transparency and clarity play a significant role in developing trust.

Interdependence and harmony were mentioned as the fourth important item for TD by (61%) of INPs and (92.4%) of the SUPs. Interdependence and harmony is important because it is characterised by give-and-take and facilitates constructive challenges to an organisation's goals, reduces risk and develops trust between cooperative organisations so keeping a coopetive relationship alive. These outcomes are similar to those found in studies such as (Ritala & Tidström 2014; Czakon et al. 2016; Czernek et al. 2017; Bouncken et al. 2018; Chou & Zolkiewski 2018; Chai et al. 2019), who all

highlight that interdependence and harmony increase cooperation opportunities by working together in order to develop trust and sustain COS successfully.

Approximately (50%) of INPs and (92.7%) of the SUPs mentioned that ***Honesty, and willingness*** are the fifth important item for TD. Honesty in business is important because it may result in a good reputation, development of trust, and attracts more organisations to work with the honest organisation to gain CO benefits. Willingness to cooperate is also important because it is a necessary precondition to an intention to cooperate, which in turn is an antecedent to actual cooperation among competitors in order to obtain mutually rewarding and benefits.

These results correspond to work such as (Liu et al. 2008; Lewis 2009; Clark et al. 2010; Søderberg et al. 2013; Buttschardt 2017; De Araujo & Franco 2017; Do Nascimento et al. 2017; Hora et al. 2018) who found they honesty is the basis of cooperation, as this allows an increasing willingness to work and look for solutions together to develop trust and sustain CORs.

MB is the second important factor in the MR group as indicated by (77%) of INPs and the majority of SUPs (92.5%) as it allows cooperation occur between competitors. Organisations need to complement and strengthen each other to enhance long-term relationships. It enhances competitive advantage, drives the cooperative side of COS, and lessens competition and increases cooperation. Expected revenue outweighs any cooperation drawbacks when benefits are related to resources, information and market positions. This view is supported by studies such as (Morris et al. 2007; Akdoğan & Cingšz 2012; Czachon & Kuś 2014; Wiener & Saunders 2014; Perera et al. 2016; Pinasti et al. 2016; Ceptureanu et al. 2018a; de Resende et al. 2018; Hora et al. 2018; Damayanti et al. 2019; Kozak & Buhalis 2019; Shvindina 2019) which confirm that MB is a very important factor to sustain CORs and achieve win–win situations.

The findings identified four items that related to MB, which included ***Actual and equal contributions, Willingness to share resources, Getting benefits to all partners,*** and ***Avoiding opportunistic behaviour.***

Actual and fair contributions was mentioned as the most important item by (72%) of INPs and (92.7%) of the SUPs. Partners invest money and in-kind contributions into the network to be more actively involved and committed. They should make sure that the costs and benefits, power and control, are shared in a fair way rather than it being

equal according to organisation size, resources, capabilities and strategic position. These outcomes are consistent with studies such as (Ghobadian et al. 2007; Padula & Dagnino 2007; Prashant & Harbir 2009; Abdallah 2011; Ahenkora 2015; Ceptureanu et al. 2018a; Khalilzadeh & Wang 2018; Stadtler 2018; Planko et al. 2019). They underline that equity in contribution, benefits and fair distribution of power are important for COS success; and avoid tension, conflicts within the network by providing balanced rights and responsibilities.

Willingness to share resources was considered to be the second important item for MB between universities by (66%) of INPs and (92.7%) of the SUPs. This is because sharing resources can create synergistic effects, add value to each organization, and maintain the coopetive relationship. Further, it can increase incentives to take risks, be proactive in product development, minimize the sources of uncertainty, and reflects distinctive competencies in bolstering competitive advantages. These outcomes corroborate with a number of studies (Lin et al. 2009; van de Wijngaert & Bouwman 2009; Mccreary 2012; Sadovnikova et al. 2016; Sanou et al. 2016; de Resende et al. 2018) which found that organisations involved in CO are willing to share resources and knowledge in order to overcome the limitations of the previous lack of knowledge and resources – and receives the most benefits from these relationships.

Getting benefits to all partners is the third significant item for MB raised by approximately (61%) of INPs and (92.0%) of the SUPs. This is because benefits of CORs are expected to improve academic reputation, develop trust, and turn competitors into partners. Although some organisations do not gain significant benefits from the choice of CO, it is still difficult for organisations to act alone in the era of globalization because COS is one means of much cheaper and safer entry to the market and increasing competitiveness. These outcomes are similar to other studies (Vaidya 2011; Kumar 2012; Petrović & Stevanović 2013; Czakon et al. 2016; Dahl et al. 2016; Le Roy & Czakon 2016; Nikol'chenko & Lebedeva 2017; Czakon 2018; Humerick 2019) which found that sustaining CORs requires adequate benefits for all partners without losing independency and identity.

The fourth important item was that universities are ready to *Avoid opportunistic behaviour* to get into coopetition relationships as indicated by (61%) of INPs and (92.7%) of SUPs. Opportunistic behaviour is described as the risk that one of the

members stops cooperating after they get their desired resources or outcomes. It is likely to result in distrust, tension and different types of conflict in a business relationship. Opportunistic behaviour can lead to greater complexity, slow or damage network decision-making, unequal MB, and threats of failure to COS. These results are in line with a number of studies (Wagstaff 2013; Chen et al. 2014; Monticelli 2017; Nikol'chenko & Lebedeva 2017; Russo & Cesarani 2017; Ceptureanu et al. 2018; Raza et al. 2018; Li & Kang 2019; Crick et al. 2020a) which confirmed that opportunistic behaviour is one of the dark aspects of CORs.

SRC is considered to be the third important factor for the MR category by (66%) of INPs and (91.9%) of the SUPs. Organisations may lack the capabilities and resources, however they need to cooperate with external partners to obtain benefits. SRC may reduce resource scarcities, acquire new knowledge and opportunities, and improve innovation and performance. It may also mitigate uncertainty, strengthen trust and commitment, realise economies of scale and increase universities' survival. Moreover, it may help organisations to be better prepared to react to business disruptions and respond to the changing economic landscape, improve their position in their sector in the current market and to enter a completely new market segment. The participant's views about the importance of SRC factor for COS success are confirmed by studies outside the education sector (Park et al. 2014a; Mattsson & Tidström 2015; Bengtsson et al. 2016; Gnyawali et al. 2016; Kraus et al. 2017; Gnyawali & Charleton 2018; Hoffmann et al. 2018; Pattinson et al. 2018; Crick & Crick 2019; McGrath et al. 2019).

According to the outcomes of the qualitative and quantitative phases, SRC involved three items: *Compatible resources and capabilities, Complementary resources and capabilities,* and *Increased competitiveness.*

Compatible resources and capabilities and *Complementary resources and capabilities* have the same importance and are ranked as the most significant items for the SRC factor by approximately (61%) of INPs and (92.0%) of the SUPs for each item.

Compatible resources and capabilities is important because it encourages different organisations to work together and obtain greater benefits by sharing, create reciprocal interdependence as the new relationship could not be devised by one firm alone, and make coordination easier as the partners have similar resources and routines. The

results are in line with a number of studies (Quintana & Benavides 2004; Salo et al. 2008; Mitsuhashi & Greve 2009; Greve et al. 2010; Gnyawali & Park 2011; Meier et al. 2016; Perera et al. 2016; Park & Kim 2019) which all point out that resource compatibility and capabilities are found to be an important area in COS and impact directly on the success of CORs.

Complementary resources and capabilities are also important because it often brings the partners together to strengthen each other to initiate projects that they could not have successfully engaged in alone. For example, expanding current markets or exploring new markets. They also enable partners to divide responsibilities within the relationship, with each focusing on their area of specialty, creating the possibility of a rise in competence through recombination and transformation of critical resources. These outcomes are in line with the views of a number of studies (Gnyawali & Srivastava 2013; Dahl 2014; Girod & Whittington 2017; Dyer et al. 2018; Gnyawali & Charleton 2018; Hannah & Eisenhardt 2018; Hoffmann et al. 2018; Bouncken et al. 2020; Makhashen et al. 2020; Seepana et al. 2020) which all claim that complementary resources and capabilities play a major role in enhancing the synergies effect; creating value and improving performance.

Increased competitiveness is considered to be the second significant item for SRC by half of INPs and (92.0%) of the SUPs. This is because bringing resources and capabilities together potentially allows for the creation and development of new sources of competitiveness, and facilitates joint innovations to improve competitiveness in the marketplace. It also gives the participants a chance to gain necessary competence for improving their competitiveness, reduces resource pressures from finance and labour, and access to the required resources from coopetive networks. These findings are consistent with several studies (Cai 2017; Girod & Whittington 2017; Arslan 2018; Crick 2018; Gnyawali & Charleton 2018; Hannah & Eisenhardt 2018; de Marques & Guerra 2019). They all found that a high-degree of sharing resources and capabilities would enable partners to enhance their competitiveness in similar markets and share the risk of investment.

OL was identified as the fourth significant factor in the MR category by (61%) of INPs and (94.3%) of the SUPs. This is because it is a powerful tool, which helps organisations to adapt to complex business environments, share knowledge and

techniques, and be successful in CORs. It also enables organisations' continuous learning, managing development challenges, derive learning from current practice, and inform future workers to avoid failures in relationship development. Further, it helps coopetitors to be involved in a learning context to achieve complex knowledge structures, makes partners more innovation-oriented, sustains a competitive advantage of the firms and increases intangible assets such as knowledge and patents. This result is underpinned by a number of studies (Parra et al. 2015; Chiou & Sinkovics 2016; Buttschardt 2017; Gao et al. 2017; Gast 2017; Huang & Li 2017; Metz 2017; Rajala 2018; Buffardi et al. 2019; Zhan et al. 2020) which observed that learning and knowledge management was an essential factor for CORs and development.

Identified in the study results there are three items in the OL factor: ***Willingness to learn, Ability to learn,*** and ***Learning is an investment.***

The findings of the study confirmed that ***Willingness to learn*** was considered to be the most important item related to OL by (55%) of INPs and (92.7%) of the SUPs. Willingness to learn is important for COS because it increases the willingness to create and capture value by competition and strengthen readiness to share resources and expand knowledge by cooperation. It also encourages employees to be active in giving and learning to create a positive learning environment between partners and promote a sharing culture. These outcomes are corroborated by (Nielsen et al. 2011; Ritala & Laukkanen 2013; Song 2014; Limoubpratum et al. 2015; Weiblen & Chesbrough 2015; Chen & Tan 2016; Limoubpratum 2017; Allmendinger 2019; Hameed & Naveed 2019; Wang et al. 2019) which recommend that competitors will gain from working together if they are willing to learn and utilize the knowledge and experience of their partners to achieve self-improvement and obtain dependable technology.

Ability to learn is the second significant item that must be considered for OL. Approximately half of INPs and (91.7%) of the SUPs indicated universities agree that the ability to learn is a key to a successful COS. This is because the ability to learn is a socio-technical resource which allows organisations to engage in the learning race against their partners, enables them to access relevant partner information and knowledge to achieve a higher return from the sharing of knowledge, improves performance and obtains superior competitive advantages. These outcomes corroborate with several studies (Akhtar et al. 2013; Dekoulou & Trivellas 2014;

Estrada et al. 2016; Kedia et al. 2015; Pant & Yu 2016; Wang & Hong 2018; Xu & Cavusgil 2019; Estrada & Dong 2020; Kumar et al. 2020; Oliveira 2020) which argue that an organisation's ability to learn is the key to improving competitiveness, survival and success in opportunities.

Learning is an investment ranked as the third among the OL items by half of INPs and (98.6 %) of the SUPs. Organisations consider that learning is a future investment through education, training and desire to develop learning activities. Also, it helps in the creation and implementation of knowledge, collecting knowledge and information from different sources, sharing knowledge with partners and acceptance of new ideas to improve performance, and guarantees the organisation's survival. Research from a number of studies (Garcia et al. 2006; Kim & Miner 2007; Madsen & Desai 2010; Magazzini et al. 2012; Voneuler & Wachtmeister 2017; Kim & Yoon 2019; Möller et al. 2019; Kumar et al. 2020; Liu & Zeinaly 2020) noted that learning should be embedded in the basic values of a firm, and management should see it as an investment not a cost.

CM is considered to be the fifth important factor in the MR category by more than half of the INPs (55%) and (92.3%) SUPs. CM is important because it enables coopetive organisations to sustain their long-term success and prevents potential uncertainties. In addition, good communication enables members to share effective information correctly, facilitate communication among partners, avoid the misunderstandings and minimises potential conflict as well as helping members to remove obstacles. Further, it is beneficial for a company to improve its productivity and efficiency by providing a good communication environment. These outcomes are similar to those of studies such as (Chin et al. 2008; Tidström 2009; Eriksson 2010; Büyüközkan & Arsenyan 2012; Thomason et al. 2013; Wiener & Saunders 2014a; Limoubpratum et al. 2015; Chiambaretto & Fernandez 2016; Pinasti et al. 2016; Christ et al. 2017; Yap & Skitmore 2020). They all indicate that CM is a crucial factor for implementing a successful COS.

According to the outcomes of the qualitative and quantitative phase of this research, the CM factor involves two items: ***An appropriate conflict management system*** and ***Keeping informed of new developments.***

Having **An appropriate conflict management system** to solve problems with competitors was mentioned by approximately (44%) of INPs and (92.0%) of the SUPs as the most important item for CM. A conflict management system is important because conflict can occur amongst coopetitors at any time however, it is also needed to handle conflict efficiently, maintain socialization and to sustain healthy CORs. Moreover, it may enable organisations to gather information, understand background and make decisions, and enhance capacity to manage conflict before it escalates. It also helps in balancing the pros and cons of the relationship and minimises the sources of insecurity and uncertainty. These results support the work of (Bengtsson & Kock 2000; Zineldin 2004; Lam & Chin 2005; Chin et al. 2008; Mokhlesian 2014; Pinasti et al. 2016; Buttschardt 2017). They emphasised that conflict management systems are important for COS success in order to resolve complex conflicts and maintain an intensive level of cooperation with competitors.

(38%) of INPs and (92.7%) of the SUPs ranked universities frequently **Keeping informed of new developments** at second amongst other CM items. Sharing new and updated information is a vital for COS because it enables effective and timely transfer of information, allows involved organisations to share real information without any interruptions, enhances mutual understanding between partners, avoids unexpected problems, and facilitates conflict resolution. It also helps extend information and successful stakeholder interaction in a competitive marketplace, enhances an organisation's response to a fast changing market, and time decision making at a lower total cost to partnership. These outcomes are consistent with a number of studies (Schecter 2017; Zhao et al. 2016; Derinöz & Patriarche 2018; Raweewan & Ferrell 2018; Tidd & Bessant 2020; Liu et al. 2019; Yap et al. 2019; Chang & Loor 2020; de Carvalho et al. 2020; Schiffling et al. 2020) which recommend that sharing information between coopetitors efficiently and effectively helps to achieve benefits such as improved innovativeness, coordinated coopetition actions, and enhanced COS performance.

Concluding Remark

This study identified five important factors and 17 items which were grouped in the MR category. The first and the most important factor is TD, then MB followed SRC as the third important factor in this category, after that OL, and CM as the fifth important factor. Based on the MR category, these factors play a significant role in

sustaining a successful COS. Therefore, universities must consider these factors for successful management of COS between PJUs.

6.2.2.1.3 Supporting Factors (SFs) Category

The findings of this study identified three factors related to the SFs category, listed according to importance: INS, MHEL and GP.

INS is considered to be the most important factor of the supporting factors group that must be considered for CORs by approximately (77%) of INPs and (92.5%) of the SUPs. INS is crucial for COS success because it is given a formal status for the relationship between partners, so the partners define their responsibilities, tasks, duties and rights clearly, and they agree on an effective conflict resolution mechanism to solve problems and maintain cooperative behaviours. Further, INS routinizes the learned knowledge and practices and provides better coopetive performance by following and developing formal rules to facilitate INS in COS. In addition, by learning from their partners through INS, they will complement their lack of resources and maintain the competitive advantage in the market. INS also offers stability, adaptability and coherence in organisational procedures and coopetive activities by integrating economic and strategic perspectives for partners.

These results are in line with a number of studies (Hoffmann 2005; Dumay & Henry 2013; Van Langenhove 2011; Bocken et al. 2015; Hassa & Tanner 2016; Jonker & O'Riordan 2016; Schunz et al. 2018; Bouncken & Aslam 2019; van der Kruis 2019; Dyson 2020) which suggest that the INS process is important to enhance deliberate learning, and an alliance and performance process.

According to the qualitative and quantitative studies, institutionalisation (INS) is comprised of **five items**: *Mechanism to deal with the partners, Published to society, Routine actions, Institutional norms,* and *Authority to monitor.*

Approximately (72%) of INPs and (92.7%) of the SUPs indicated that *Mechanisms to deal with the partners* and *published to society* have the same importance and ranked as the most significant items for INS. Coordinating mechanisms are necessary to maintain cooperation in business activities and support balancing COS during the evolution of a coopetive relationship. It enables partners to avoid delayed responses, promote dialogue, share mutual feedback, and facilitates both knowledge protection

and knowledge sharing. Further, coordinating mechanisms stimulates inter-organisational interactions, facilitates decision-making structures, and arrangement processes for implementing governance. It also mitigates the tensions associated with CO, helps in building mutual understanding, and faces a highly turbulent environment effectively. Previous studies confirmed that collaboration is an important coordination mechanism in environments that feature high task uncertainty and interdependence (Hoffer 2002; Carson et al. 2006; Dowse 2007; Faems et al. 2008; Okhuysen & Bechky 2009; Olander et al. 2010; Van Der Horst & de Langen 2015; Mariani 2016; Nyström et al. 2017).

Published to society is also important because transparency and disclosure information about the coopetive results become a critical characteristics of the relationships between organisations and their stakeholders as they are a required condition for building or rebuilding trust, promote accountability, cooperation, commitment, and maintaining healthy community stakeholder relationships. Further, such disclosure facilitates internal and external stakeholders monitoring and participating in organisational decision-making and operational processes in order to obtain stakeholder support and achieve an outcome that is beneficial to all organisations involved. Moreover, publishing information to society leads to a better mutual understanding between community and industry via participation in resolving issues and collaborating on solutions to achieve a win-win situation. This result is in agreement with the results of several studies (Adiloglu & Vuran 2012; Ekung et al. 2014; Meintjes & Grobler 2014; Sultana 2015; Palanimally et al. 2019; Chim et al. 2020; Fathalikhani et al. 2020).

Related to INS factor, *Routinized actions* were identified as a second important item by (66%) of INPs and (92.4%) of the SUPs. Institutionalised routine actions are important because they may lead to the development of cooperative performance, facilitate communication, and disseminate strategic knowledge between partners. They may also devise more detail in institutional dynamics and clear instructions and regulations to guide the relation between structure and actions. Further, routines allow organizations to provide a degree of stability of behaviour, economising on limited cognitive resources, bind knowledge and facilitate its application, and create building blocks of organizational capabilities. These outcomes are consistent with a number of studies (Zollo et al. 2002; Schilke 2007; Kersten et al. 2011; Cantor et al. 2014; Park

et al. 2014; Mitrega & Pfajfar 2015; Rajala & Annika 2015; Duhamel et al. 2016; Magnan et al. 2017; Hauge et al. 2018; Haga & Ravn 2019).

Approximately (66%) of INPs and (92.7%) of the SUPs confirmed that *Institutional norms* are the third necessary item for INS. Institutional norms are important because they determine the appropriate behavioural guidelines fostering social obligation and control in the exchange relationship. They also protects participants' knowledge assets by decreasing opportunistic behaviour, allow the successful reproduction of knowledge, and enhance knowledge sharing. Further, they help in forming business systems, integrate business systems with their environment, facilitate government mechanisms, and improve innovation and performance. These findings are consistent with previous research (Olander et al. 2010; Green & Li 2011; Empson et al. 2013; Frazier et al. 2013; Scott 2014; Gnyawali et al. 2016; Koskela et al. 2016; Järvinen & Ylinenpää 2017; Zhou et al. 2019; Biygautane et al. 2020; Dzhengiz 2020).

Approximately (61%) of INPs and (92.4%) of the SUPs mentioned that the board of directors having the *Authority to monitor* coopetition relationships was the fourth significant item related to INS. The board's monitoring duties are important because they give the boards responsibility on behalf of shareholders to monitor the actions of managers, protect the interest of owners, and respond to stakeholders demanding higher standards of governance and greater accountability. The outcomes around authority to monitor were shown to be similar to those mentioned in previous studies (Carter & Lorsch 2004; Lavie 2007; Hillman et al. 2008; Minichilli et al. 2009; Hillman et al. 2011; Samaha & Dahawy 2011; Garg 2013; Mitrega & Pfajfar 2015; Othman et al. 2016; Shalba 2016; Cullen & Brennan 2017).

MHE is considered to be the second essential factor in the SFs group by (72%) of INPs and (92.45%) SUPs. This significance includes four basic roles which are comprised of *Authority to control, Established standards, Approving budgeting plans,* and *Outlining the regulations*. The first and the most important role included *the full Authority of MHEJ to control* PJUs and this was mentioned by approximately (66%) of INPs and (91.7%) of the SUPs. This factor is followed by the role of *Established standards* to facilitate the evaluation of universities' performances as a second important role, which was confirmed by (61%) of INPs and (92.7%) of the SUPs. Next, the responsibility of the MHE for Approving *budgeting plans* in terms of

their programs, performance and admission policies, and ***Outlining the regulations*** have the same importance, ranking as third amongst the items by (61%) of INPs and (92.7%) of the SUPs. These roles enable MHEJ to supervise and develop the HE sector in light of the general policy of the Jordanian government (Mah'd 2010; Mah'd 2014). The importance of MHEJ roles is supported by (Modell 2006; Lundberg 2008; Buckland 2009; Mah'd & Buckland 2009; Mah'd 2010; Lundberg 2011; El-Sheikh et al. 2012; Mah'd 2014).

GP is considered to be the third significant factor in the SFs group by half of INPs and (89.9%) of the SUPs. It is an important factor for COS because it enhances inter-organisational collaborations, facilitates face-to-face interactions between nearby partners, encourages partners to cooperate more with each other when they share similar attributes, and develop trust between innovation partners. It is also is very helpful in bringing organisations together and facilitating the exchange of tacit knowledge by developing a common language; providing interactions with a lot of informational richness. Furthermore, it reduces cost, encourages the utilisation of the same technological platforms, and enhances the diffusion of knowledge and innovation processes. Thus, proximity improves partners' performances and helps them survive by improving their competence, capabilities and resources, and strengthening their competitive positions. The outcomes around GP were shown to be similar to those mentioned in previous studies (Boschma 2005b, 2005a; Knoben & Oerlemans 2006; Balland 2012; Herrmann et al. 2012; Capaldo & Petruzzelli 2014; Gattringer et al. 2017; Felzensztein et al. 2018; Crick & Crick 2019; Lis 2019; Nowińska 2019).

According to the study's qualitative and quantitative results, this factor includes four items: ***Cooperation in infrastructures, Reduce the cost of services, Direct communication,*** and ***Maintaining a long-term relationship.***

Approximately (38%) of INPs and (91.7%) of the SUPs indicated that ***Cooperation in providing infrastructure*** is the most important item in the GP factor**.** Cooperation in infrastructure leads to the promotion of sales, reduced costs, saved time, minimised risk, and supports value-creation from coopetitiors. It also brings more funds and investments by encouraging more organisations to be involved and coordinate their activities to meet intensive competition from rivals. Moreover, it encourages actors

(key players) to use their knowledge, cumulative experience and resources to improve infrastructure service quality and increase their competitiveness. These results are in agreement with a number of studies (Luo 2004; Easterby et al. 2008; Yuen et al. 2012; Letaifa & Rabeau 2013; Islam et al. 2015; Limoubpratum et al. 2015; Parola et al. 2017; Ritala 2018; Adhikary et al. 2019; Sasada 2019).

Cooperation between nearby universities to *Reduce the cost of services* also emerged as a second important item for GP by (33%) of INPs and (87.7%) of the SUPs. Cooperation with nearby organisations may lead to saving on the cost of services or products because cost and risk are divided amongst the cooperating companies, therefore costs for each will be reduced. Cooperation allows sharing resources, capabilities and competences to improve quality. This improvement in the quality will help create economies of scale, achieve better customer satisfaction, increase profit margins and achieve competitive advantages. Further, coopetitors are stimulated to improve their competitiveness, differentiate their products or services, increase innovativeness, and reduce prices and costs to compete actively. These findings are congruent with previous studies (Vanovermeire et al. 2014; Christians 2016; Dahlberg & Helin 2016; Porto et al. 2018; Razmi et al. 2018; Soysal et al. 2018; Fardi et al. 2019; Hintjens 2019; Navío-Marco et al. 2019) which argue that the benefits of COS among nearby organisations are in reducing the cost of transactions for all parties.

Direct communication is identified as the third important item for GP by approximately (33%) of INPs and (89.7%) of the SUPs. This is because it enables competitors to be involved in cluster coordinating activities, the building of personal and mutual trust, achieving a set of individual or common goals and the development of coopetive relationships. It also facilitates the sharing of knowledge and resources, and the flow of information updates efficiently. Moreover, direct communications may increase interaction levels extensively, and create successful cooperative cultures between cluster members. This outcome supports the results of a number of studies (Choi et al. 2002; Wu & Choi 2005; Pathak et al. 2014; Coradi et al. 2015; Parrino 2015; Khazanchi et al. 2018; Bouncken & Aslam 2019; Lis & Lis 2019).

Approximately (27%) of INPs and (90.7%) of the SUPs revealed that *Maintaining a long-term relationship* with nearby competitors is the fourth important item in the GP factor. It helps in coordinating coopetition activities, enhancing organisational

capabilities and competitiveness, and ensuring sustainable business operations and performance. Maintaining long-term relationships may also lead to improvements in efficiency and effectiveness to maximise profits and benefits in the current time and in the future (for all partners). Further, long-term collaboration can ensure stable flows of critical resources between the exchange of partners, stabilise inter-organisational relationships and eliminate environmental uncertainty. These results confirm earlier works (Wang et al. 2016; Gadde & Wynstra 2017; Lambert & Enz 2017; Lee et al. 2017; Dyer et al. 2018; Jespersen et al. 2018; Lee et al. 2018; Cyvoct & Fathi 2019; Gast et al. 2019a; Li et al. 2019) which found that maintaining long-term relationships with partners is the most valuable element in coopetive relationships.

Concluding Remark

In the SFs category, the findings identified three main factors and 13 related items through the qualitative and the quantitative phases. The most important factor in this category was INS, then MHE, GP was the third. These factors are recognised as the essential elements for successful COS management for PJUs. Therefore, universities must consider these factors in successfully managing the COS between PJUs.

6.2.2.2 Sub-2 RQ 2: What are Indicators for Universities Success in the Adoption of the Coopetition Strategy in Private Jordanian Universities?

The results indicated that four indicators were used to measure university success in the adoption of the COS which included *Improve education services' quality, Enhance its productivity and effectiveness, Save costs and increase profits,* and *Social responsibility*.

Improve education services' quality was revealed as the key t item by (61%) of INPs and (90.7%) of the SUPs to measure COS success. Service quality is particularly essential for the services sector because it sustains customers' confidence in services, attracts more and new customers, increases business with existing clients, reduces dissatisfied customers with fewer mistakes, reduces costs; maximises a company's profits, and increases customer satisfaction. It has a significant impact on organisational success and performance, and so creates and sustains competitive advantages.

Enhance its productivity and effectiveness is the second important item to measure university success in the adoption of the COS and was mentioned by (55%) of INPs

and (89.4%) of the SUPs. This is because productivity is a primary element for success in most organisations. It leads to the accomplishment of organisational goals and objectives, effective performance of tasks, efficient use of resources, quality output, better organisational survival, higher profits and growth. Organisational effectiveness is also used to measure goal attainment and overall organisational success in terms of organisational resources, process and outcomes . It provides investors and employees with an idea of the company's strengths, and it highlights areas of ineffectiveness that can be the focus of improvements.

Fifty percent of INPs and (86.7%) of the SUP strongly emphasised the importance of *Saving costs and increasing profits* to measure COS success (as the third item). Profitability is important as it increases corporate expansion and growth, increases organisational function in markets characterised by intense competition and changing customer needs and preferences. Moreover, saving cost increases profitability and so affects managerial decisions, increases competitiveness, and increases returns on investment and profits.

Social responsibility is the fourth important item to measure university success in the adoption of COS. This item was acknowledged by (27%) of INPs and (88.4%) of the SUPs. Social responsibility is important for the realisation of many benefits including increased competitiveness, enhanced reputation, maintenance of employee morale, commitment and productivity, increased trust, and the strengthening of relationships with competent state authorities and stakeholders.

This outcome is consistent with previous research which has shown that these indicators are used to measure organisational success and performance such as productivity (Blaich 2015; Adelere 2017; Joubert 2019), effectiveness (Chang & Huang 2010; Anitha 2014; Upadhaya et al. 2014) and social responsibility (Abbasi & Jalili 2016; Momeni & Farid 2018). Furthermore, there were comparisons of the outcomes of those previous studies which were used; comparisons in services quality (Samadi et al. 2014; Al-Qeed et al. 2017; Beshir & Eshra 2018), profitability (Azhagaiah & Gavoury 2011; Onwumere et al. 2012; Sivathaasan et al. 2013) and cost (Jeszka 2015; Garg et al. 2019; Abdul et al. 2020).

6.2.3 Sub 3-RQ 2: What are the Relationships between Coopetition Success Factors and University Success in Adoption of Coopetition Strategy? (Hypothesis)

To answer this research question, the researcher used SEM analysis to test the relationships between coopetition success factors (COSFs) and US in adoption of the COS through thirteen hypotheses as shown in Figure 5.41, which represents the model of the COSFs. The positive and significant relationships between COSFs and the US indicators for the adoption of COS will identify the critical success factors (CSFs) for COS in PJUs. Each of these hypotheses will be discussed in the next section.

6.2.3.1 Hypothesis 1: Management Commitment (MC)

The results show that MC has a significant and positive impact on US in adoption of the COS with path coefficient (β) 0.553, t-value about 10.434, and p value is < 0.001. This means that long-term commitment, formal and informal agreement, and compulsory commitment significantly influences improving education services' quality, enhancing productivity and effectiveness of universities, increasing profits and saving costs, and promoting their social responsibilities. Success of any critical initiative and decision in an organization is highly dependent on MC, so it is an integral part of implementing any successful practices. In addition, it builds a positive energy for an organization to achieve successful goals, maintain competitive advantage and achieve superior performance. Thus, without MC, COS cannot succeed.

This result is consistent with previous research conducted outside the education sector which stated that MC has a positive impact on productivity (Dixit & Bhati 2012; García et al. 2014; Mazayed et al. 2014), effectiveness (Bae 2012; Parisi 2013; Farouk 2017), quality (Javed 2015; Raikhani et al. 2019; Daqar & Constantinovits 2020) and profit (Rashid et al. 2003; Alshaar 2017; Hussain et al. 2020). Likewise, other researchers found a positive and significant relationship between MC and social responsibility (Turker 2009; Hofman & Newman 2014; Yusliza et al. 2019), success (Garrido et al. 2014; Van Nguyen & Pham 2016; Kulathunga & Ratiyala 2018), and performance (Irefin & Mechanic 2014; Kumar et al. 2015; Salma 2018).

Based on the research findings in this study, MC is considered to be a CSF for COS success among PJUs. Therefore, universities should pay more attention to MC to increase the rate of COS success.

6.2.3.2 Hypothesis 2: Strategic Leadership (SL)

The results show that SL has a significant and positive impact on US in the adoption of COS with path coefficient (β) 0.426, t-value 6.210, and p value of > 0.05. By creating a strategy, clear vision and objectives, obtaining and allocating new resources, solving conflict, and engaging with stakeholders regularly, significantly improving service quality, enhancing productivity and effectiveness, increasing profits, and social responsibilities, SL is an important driver of good performance in organisations and it has a direct effect on US. It plays a significant role in making strategic decisions, formulating and implementing a strategy, driving social responsibility activities, influences profitability, and enhances productivity to improve performance. Thus, without effective SL, the capability of a university to achieve or sustain success is greatly constrained.

This outcome agrees with the results obtained by previous studies. The following studies all confirmed that SL has a significant positive influence on productivity (Boaden 2006; Khumalo 2018; Akpoviroro et al. 2020), effectiveness (Mahembe & Engelbrecht 2013; Taylor et al. 2014; Muriithi 2015), quality (Afifah & Daud 2018; Ukpong & Ossia 2019; Alayoubi et al. 2020), and profitability (Conner 2019; Doan et al. 2019; Owusu 2019). Furthermore, the outcomes of this study support the relationships between SL and social responsibility (Du et al. 2013; Alrowwad et al. 2017; Doan et al. 2019), success (Waithaka 2017; Hadrawi 2018; Svotwa 2019), and performance (Özer & Tınaztepe 2014; Knies et al. 2016; Kitonga 2017).

Based on the research findings of this study, SL is a CSF for COS success amongst PJUs.

6.2.3.3 Hypothesis 3: Flexibility to Change (FCH)

The results show that FCH **has no significant impact** on US in the adoption of COS with path coefficient (β) 0.087, t-value 1.706, and p value of 0.088. To clarify, re-allocation of resources, response to changes and cultural fit have not supported US success in the adoption of COS, and FCH has no role in affecting CO performance between PJUs.

The result shows (surprisingly) that FCH refers to one of the important factors for COS success by both the qualitative and quantitative phases but it does not have a critical role in affecting COS success in PJUs. A major reason behind this conclusion might

be that the FCH needs new investment, enough resources and flexibility in use, as well as reconfiguration of organisational processes which might not be available in universities due to a lack of resources however, they cannot support a significant change effectively. Further, planning and resource allocation in PJUs tends to be incremental rather than dynamic (Mah'd 2010), so they might be react gradually rather than be proactive to change. Moreover, they are located under the authority of the MHE and influenced by legislation, regulations and standards, so they need approval to make any strategic changes. In addition, the flexibility in adding to or changing the budget (items or values), is insufficient because it relies on the previous year's budget and follows a budget form which is provided by the MHE (Mah'd 2010).

According to the literature, a significant number of previous studies have found a positive relationship between strategic flexibility and performance (Nadkarni & Narayanan 2007; Nadkarni & Herrmann 2010; Li et al. 2016; Chan et al. 2017; Chen et al. 2017a; Xiu et al. 2017; Oh et al. 2019; Gorondutse et al. 2020; Kharisma et al. 2020). Furthermore, others found the same relationship with profitability (Abbott & Banerji 2003; Bidhandi & Valmohammadi 2017; Shalender & Yadav 2019; Umam & Sommanawat 2019), productivity (Palanisamy & Sushil 2003; Xiu et al. 2017), corporate social responsibility (Kamasak & Yavuz 2018), effectiveness and cost (Palanisamy & Sushil 2003). In contrast, the result of this research aligns with (Sajjad et al. 2020) and (Tijani & Akinlabi 2020) who stated that strategic flexibility has an insignificant relationship with performance and competitive advantages.

Based on the research findings of this study, FCH is not a CSF for US in the adoption of the COS between PJUs.

6.2.3.4 Hypothesis 4: Management Perception (MP)

The results show that MP has a significant and positive impact on US in the adoption of the COS with a path coefficient (β) 0.122, t-value 3.090, and p value of < 0.01. This can be explained as the awareness of benefits, having a cooperative mind-set, and belief that relationships can significantly improve quality, support productivity, increase profits by cost saving, and enhance social responsibilities. Okanga (2014) indicated that management perception affects organisational performance and success because it reflects actions, shapes behaviour, and influences outcomes. In addition, it is useful in supporting successful interaction with others to reach quality outputs, plays

a substantial role in human resources and organisational effectiveness, and develops a culture of continuous improvement which leads to better performances.

This outcome is consistent with previous studies which have shown that a significant relationship exists between MP and performance (Espino & Gil 2005; Spieth & Lerch 2014; Kyenze 2017; Kitsao 2018; Shaikh & Nawar 2018; Keceli et al. 2020; Kumar et al. 2020a). Furthermore, a similar result confirmed the relationship between MP and quality (Sureshchandar et al. 2002; Karamchandani et al. 2020), cost (Koskei 2012), profitability (Okanga 2014), success (Žabjek et al. 2009; Gumapac 2020), productivity and profitability (Choi 2014), effectiveness (Mesfin 2017), and corporate social responsibility (Qu 2007; Aribi 2009; Fernando & Pandey 2012).

Based on the research findings from this study, MP is a CSF for the successful adoption of COS among PJUs.

6.2.3.5 Hypothesis 5: Top Management Support (TMS)

The results show that TMS has a significant and positive impact on US in the adoption of COS with a path coefficient (β) 0.102, t-value 2.210, and p value of < 0.05. This means that the willingness to make more effort, enthusiasm towards continued support of CO, willingness to take risks, and provision of clear objectives significantly influences education service quality improvement, enhances the productivity and effectiveness of universities, saves costs and increases profits, and promotes their social responsibilities. (Iqbal et al. 2015) indicated that TMS is one of the prime factors for achieving project success because TMS helps employees in dealing with hurdles, exhibits commitment to the work, encourages subordinates, and provides the required resources in good time for project success. In addition, it plays an important role in defining the scope and objectives of a project, sharing project vision with a team, resolving the arising conflict, driving organisational growth, survival, and decision making. Further, it gives confidence to project managers to execute their projects towards success, enhances project performance, and renewal and effectiveness.

This outcome is in agreement with previous research which shows a significant positive influence of TMS in success (Iqbal et al. 2015; Almajed 2017; Alsahli 2018; Mimaroglu 2020), productivity (Habtoor 2016; Omoush 2020), profitability (Stanovcic et al. 2016), social responsibility (Sangle 2010), quality services (Sirma et al. 2019) and effectiveness (Khan et al. 2018). Such an empirical outcome is in line

with the positive relationship result between TMS and performance (Al-Mamary et al. 2015; Bueno & Gallego 2017; Sheikh et al. 2017; Sheikh et al. 2017a; Sheikh et al. 2018; Rafiki et al. 2019; Saud 2019; Sirma et al. 2019; Utomo et al. 2020).

Based on the research findings from this study, TMS is a CSF for COS success and one should pay more attention to it to increase the successful rate of this strategy.

6.2.3.6 Hypothesis 6: Trust Development (TD)

The results show that TD has a significant and positive impact on US in the adoption of COS with a path coefficient (β) 0.215, t-value 5.036, and p value of < 0.001. This means that transparency and clarity, common goals, interdependence and harmony, interpersonal relationships, and honesty and willingness significantly influence the improvement of the quality of education services, enhance the productivity and effectiveness of universities, save costs and increase profits, and promote social responsibilities. TD is critical for leading towards success and improving performance. It enables partners to share knowledge and resources, and simplifies the acquisition and interpretation of information to make better performance improvement decisions. In addition, trust helps solve conflicts and alleviates tension and deters opportunistic behaviours which, in turn, increases levels of satisfaction in the relationship and leads to better outcomes. Further, trust facilitates the decision-making process, reduces the cost of transactions, decreases risk investment, enhances profitability, develops communication, and improves effectiveness.

This outcome is in agreement with previous research which has shown a significant positive influence of trust on organisational performance (Gould 2003; Gundlach & Cannon 2010; Çelik et al. 2011; Mafini & Loury 2016; Zeffane et al. 2018), and success (Mumbi & McGill 2008; Chen et al. 2015; Rezvani et al. 2016; Sajjad 2019). Similar outcomes are in line with the ideas of those who have confirmed the positive relationship between trust and social responsibility (Jalilvand et al. 2017; Yadav et al. 2018; Iglesias et al. 2020), organisational effectiveness (Costa 2003; Aucamp 2014; Hoxha 2015), and cost saving (Chow 2008). These outcomes are also supported by studies which assured the positive impact of trust on the quality of services (Gounaris 2005; Chen et al. 2015; Sheikhy & Rafieinejad 2015; Yang 2016; Al-dweeri et al. 2019), profitability (Mohr & Spekman 1994; Luo 2002a; Jiménez et al. 2015; Brandl 2021), and productivity (Jing et al. 2014; Pounds 2018).

Based on the research findings from this study, TD is a CSF for COS success, and one should pay more attention to increase the success rate of this strategy among PJUs.

6.2.3.7 Hypothesis 7: Mutual Benefit (MB)

The results show that MB **have a non-significant impact** on US in the adoption of COS with a path coefficient (β) -0.105, t-value -1.722, and p value of > 0.05. This means that benefits to all partners, avoiding opportunistic behaviour, willingness to share resources, and actual and equal contributions do not influenced the successful adoption of COS. The dominant relationship between PJUs is high in competition and low in cooperation due to working in the same sector, providing similar services, and cooperating at an individual level more than at an institutional level. Therefore, PJUs compete intensively to achieve more advantages than the other universities do, due to the lack of resources and the shortage of funding. However, in a competition-dominated relationship, the competitive side of the relationship does not require a mutuality of benefits, while the cooperative side cannot occur without MB because the competitive side of a coopetive relationship involves conflicting interests, while the cooperative side involves compatibility and the exchange of interests. Therefore, universities are focused on a win-lose approach to obtain more benefits, not a win-win approach to exchange benefits, in this case. Further, differences in age, size and power may have a negative effect on equality of contribution and exchange of benefits between universities because it may lead to increased opportunistic behaviour and reduce the importance of cooperative behaviour and mutual benefits between universities.

Many previous studies have reported that MB are a CSF for COS (Morris et al. 2007; Akdoğan & Cingšz 2012; Bouncken & Fredrich 2012; Akdogan et al. 2015; Hilaly 2015; Shu et al. 2017; Hameed & Naveed 2019; Kraus et al. 2019). Others point out that MB can affect CO success (Pinasti et al. 2016; Thomason et al. 2013; Perera et al. 2016; Ceptureanu et al. 2018a; de Resende et al. 2018), profitability (Luo et al. 2007; Shu et al. 2017), and social responsibility (Gyves & O'Higgins 2008).

The findings from this study indicate that there is not a significant relationship between MB and US success in the adoption of COS. Therefore, our findings are inconsistent with the previous studies. Based on the research findings, MB is an important factor for COS success, but not critical for PJUs.

6.2.3.8 Hypothesis 8: Sharing Resources and Capabilities (SRC)

The results show that SRC **has a non-significant impact** on US in the adoption of COS with path coefficient (β) 0.049, t-value 0.650, and p value of > 0.05. This means that compatible resources and capabilities, increased competitiveness, and complementary resources and capabilities did not influence the success of the adoption of COS.

This is because the universities engage in strong competition to improve competitive positions, enhance market power, pre-empt rival action and gain valuable resources. Therefore, competitors should defend and develop their competitive advantages and superiority due to significant incompatibilities in terms of markets, resources, capabilities, technologies and competencies to obtain valuable resources and develop their capabilities rather than share. In addition, they fear sharing specific or unique resources and capabilities with competitors as it may lead to an increased risk of exposing confidential or specific knowledge and resources, imitate competitive advantages, lose superiority in competition, reveal weakness and damage competitive advantages. Furthermore, tension might arise when sharing an insufficient amount of resources and capabilities with two or more rivals; causing conflict and power imbalances between rivals, and universities may not be able to manage the paradoxical forces of cooperativeness and competitiveness.

The research findings from this study are inconsistent with previous studies which stated that SRC has positive and significant relationships with cost and quality (Khan et al. 2019; Simon et al. 2019), productivity (Yu et al. 2018; Gupta et al. 2019; Saunila et al. 2019; Khaksar et al. 2020) and effectiveness (Mwai et al. 2018; Kareem & Mijbas 2019). The findings are not in agreement with studies which confirmed the relationship with social responsibility (Zhao et al. 2019; Donnelly & Wickham 2020; Zaragoza et al. 2020), profitability (de Sousa et al. 2016; Kamasak 2017; Gupta et al. 2019; Sraha et al. 2020) and performance (Carmeli & Tishler 2004; Ravichandran et al. 2005; Lyu et al. 2019; Somjai & Jermsittiparsert 2019). Our findings are supported by studies which confirmed an insignificant relationship between resources or capabilities with profitability (Olaoye et al. 2020) and performance (Kayabasi & Mtetwa 2016; Violindaa & Jianb 2019; Zaragoza et al. 2020).

Therefore, based on the research findings SRC are not considered as a CSF for COS success between the PJUs.

6.2.3.9 Hypothesis 9: Organisational Learning (OL)

The results show that OL has a significant and strong positive impact on US in the adoption of COS with path coefficient (β) 0.610, t-value 7.943, and p value of < 0.001. This means that learning is an investment, willingness to learn, and ability to learn significantly influence the improvement of the quality of education services, enhance productivity and effectiveness of universities, save costs, and promote social responsibilities. Further, organisational performance and success depend on OL (Yeo 2003) because learning increases organisational capabilities, underpins the decisions and competencies which are needed to efficiently develop the organisational processes, products and value of service by upgrading skills and knowledge. This may lead to a higher reduction of production cost, better management of resources to produce creative and innovative products and services, enhanced productivity, efficiency, and growth over time. Learning promotes sharing information and experience and prepares organisations for competition with external environment, and helps them gain competitive advantages. All these will in turn lead to improved performance.

This outcome aligns with previous studies which showed a significant and positive effect of OL on organisational performance (Dimovski & Skerlavaj 2005; Škerlavaj 2006; Škerlavaj et al. 2007; Hernaus et al. 2008; Al-Abrrow 2014; Nair & Choudhary 2016; Shakya 2018; Martínez et al. 2019; Sahibzada et al. 2020). Such results underpin relationships with profitability (Valdez et al. 2019) and service quality (Ellinger et al. 2002; Prieto & Revilla 2006; Oh & Han 2020), productivity and cost reduction (Prieto & Revilla 2006) and organisational effectiveness (Yang 2007; Lo et al. 2017). The results are further supported by studies which confirm the significant impact of OL on organisational success (Kozielski 2016; Ramanujam & Viswanathan 2019) and social responsibility (Fortis et al. 2018; Valdez et al. 2019; Zeimers et al. 2019).

Therefore, based on the research findings from this study, OL is a CSF for COS success between PJUs.

6.2.3.10 Hypothesis 10: Communication Management (CM)

The results show that CM has **a non-significant impact** on US in the adoption of COS with a path coefficient (β) 0.005, t-value 0.049, and p value of > 0.05. This means that

keeping informed of new developments and an appropriate conflict management system do not influence the success of the adoption of COS. Sharing information is the key to economic efficiency for university resources and it may help universities in decision-making processes (Parker & Kyj 2006). However, communications and sharing information between universities are limited and not always adequate for efficiency (Mah'd 2010) because communication is still dependent on the personal and informal level more than the institutional and formal level. Moreover, universities may not pay enough attention to communication and sharing updated information with other universities because they may still see other universities as competitors, not partners. Therefore, increasing communication and sharing information with competitors may lead to increased unfair competition and damage competitive advantages. Further, universities may not have enough resources to build effective monitoring and communication systems to interact and share information with each other.

However, according to the literature review, many previous studies describe positive relationships between CM and organisational performance (Stanikzai 2017; Kibe 2014; Mohamad et al. 2014; Idowu & Abolade 2018; Mohamad et al. 2018), service quality (Wonglorsaichon 2007; Ueno 2008; Metabis & Al-Hawary 2013; Alsharari et al. 2017) and profitability (Mohamad 2013; Luxton et al. 2017; Mohamad et al. 2018; Arab & Muneeb 2019). In addition, other researchers found that CM has a significant relationship with organisational effectiveness (Sundaray 2011; Welch 2011; Mahadeen et al. 2016; Ruck et al. 2017), productivity (Femi 2014; Yildiz 2015; Moletsane et al. 2019), and social responsibility (Coombs & Holladay 2009; Birim 2016; Duthler & Dhanesh 2018).

The results from this study are inconsistent with the previous literature. Therefore, based on these research findings, CM is not a CSF for PJUs in the success adoption of COS.

6.2.3.11 Hypothesis 11: Institutionalisation (INS)

The results show that INS **has a significant but negative impact** on US in the adoption of COS with path coefficient (β) -0.314, t-value -7.958, and p value of < 0.001. This means that authority to control, routine actions, a mechanism to deal with partners, publish to society and institutional norms have a significant but negative

influence on enhancing productivity and effectiveness of universities, their social responsibilities, improving education service quality, and save costs and increase profits. Increases in INS in universities will lead to a reduced organisational performance and coopetition success indicators (COSIs) (productivity, effectiveness, profitability, costs, service quality and social responsibility) and vice versa.

Many previous studies have reported that INS has a significant and positive impact on organisational performance variables (Zhang & Dhaliwal 2009; Coskun & Altindag 2017; Thabethe 2019; Zand et al. 2019), financial and non-financial performance (Alpay et al. 2008; Olayiwola et al. 2020), and alliances' performance and project success (Zollo et al. 2002; Pishdad et al. 2014; Sukoco 2015; Wahyuni 2015). Others confirmed the relationship with profitability (Weiss & Hughes 2005; Kyereboah & Osei 2008; Jo & Harjoto 2012; Yiu et al. 2020), and corporate social responsibility (Jamali et al. 2008; Jo & Harjoto 2012; Khan et al. 2013; Raflis & Yulianda 2017).

The findings from this study indicate that there is a significant but negative relationship between INS and US indicators and this is consistent with (Boselie et al. 2003) study which mentioned a significant and negative effect of Ins on organisational performance.

Based on the research findings, INS is a CSF for US in the adoption of COS, but has a negative impact.

6.2.3.12 Hypothesis 12: Ministry of Higher Education (MHE)

The results shows that MHE **has a significant and positive impact** on US in adoption of the COS with path coefficient (β) 0.295, t-value 5.255 , and p value of < 0.001. This means that approving budgeting plans, established standards, authority to control and outlining the regulations' roles significantly influence productivity enhancement and the effectiveness of universities, their social responsibilities, improve the quality of education services, and increase profits by saving costs. The MHE has direct effects on PJUs' strategies (Badran 2014; Mah'd 2014) because it is in charge of all universities' resources, decisions, costs, revenues, budgets, and evaluates their outcomes and performances in light of ministry rules, regulations, laws and standards (Mah'd 2010). Moreover, it is in charge of quality assurance, governance and admission policies, in order to develop the quality and excellence of the HESJ (El-Sheikh et al. 2012; Mah'd 2014).

Based on previous studies, it has been indicated that the MHE in Jordan has a significant influence through accreditation tools on universities' quality, outcomes, strategies, revenues, expenses and performances (Kharman 2005; Mah'd & Buckland 2009; Mah'd 2010; Nasser et al. 2011; El-Sheikh et al. 2012; Mah'd 2014; Mah'd 2014; Mansour et al. 2015). Other researchers outside Jordan point out that the MHE has an important impact on universities (Mohammed et al. 2015; Agasisti et al. 2019; Guiake & Tianxue 2019; Abdallah 2020; Grossi et al. 2020), and universities quality (Al-Atiqi & Alharbi 2009; Carroll et al. 2009; Mohsin & Kamal 2012; Koni et al. 2013; Weerasinghe & Fernando 2018).

This research study has confirmed that the MHE has a significant and positive impact on universities performance variables. Therefore, MHE is considered as a CSF for COS success in PJUs.

6.2.3.13 Hypothesis 13: Geographical Proximity (GP)

The results show that GP **has a significant and positive impact** on US in the adoption of COS with path coefficient (β) 0.380, t-value 6.313, and p value of < 0.001. This means that cooperating in infrastructure, reducing the cost of services, direct communication and maintaining a long-term relationship significantly influence productivity enhancement and the effectiveness of universities, their social responsibilities, improve the quality of education services and save costs and increase profits.

GP is necessary for organisational success (Boschma 2005b; Crescenzi 2014; Hinzmann et al. 2019) because it helps in supporting knowledge transfer, reduces the cost of traveling, leads to better communication, increases regional synergy effects, provides opportunities for resource sharing, and creates trust. The outcomes around GP were shown to be similar to those mentioned in previous studies (Boschma 2005a; Balland et al. 2013; Letaifa & Rabeau 2013; Lutz et al. 2013; Broekel 2015; Geldes et al. 2015; Brache & Felzensztein 2019; Nowińska 2019). They all found that GP is positively correlated with coopetition formation and outcomes. Further, it was found to be positively correlated with economic and innovative outcomes (Oerlemans & Meeus 2005), performance of collaborations (Broekel & Boschma 2012), survival rates of SMEs (Staber 2001) and project success (Lhuillery & Pfister 2009). However, some studies proved that excessive GP could negatively affect the activities of

cooperating enterprises (Malmberg & Maskell 1997; Boschma et al. 2016; Fitjar et al. 2016) while other studies indicated that there is no relationship between geographical proximity and the development of CO (Fontes & Sousa 2016; Guan & Yan 2016; Ayoubi et al. 2017; Scherrer & Deflorin 2017).

This study confirmed the positive and significant relationships between GP and performance variables in universities. Therefore, based on these outcomes, GP is considered to be a CSF for COS success between PJUs.

Concluding Remarks

The study found that eight out of 13 factors were found to be significant and have a positive impact on the successful adoption of COS (MC, SL, MP, TMS, TD, OL, MHE and GP). Only one factor, INS, was found to be a significant but had a negative impact on the successful adoption of COS. The other four factors in the proposed model (FCH, MB, SRC and CM) were found to be positive but non-significant impacts on the successful adoption of COS.

6.3   Chapter Summary

In this chapter, the researcher summarised the key findings of the study and answered research questions and research hypotheses. The discussion has covered two main research questions and five research sub-questions. The researcher discussed the COS as a dominant relationship between PJUs, then determined and discussed the CO aspects, levels and type. Further, the researcher provided a deep discussion of the factors that enable COS to be successful in PJUs and a discussion about the important factors for CO and the indicators for COS success. Further still, the proposed hypotheses were addressed. These revelations allowed this researcher to develop a framework for COSF between PJUs, which is discussed in the next chapter.

7 CHAPTER SEVEN: CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

7.1 Chapter Overview

This chapter focuses on the conclusions derived from the theoretical description of the key research variables and the practical results that address the overarching Research Question: *What are the critical factors that determine the success of coopetition strategy in private Jordanian universities?* In addition, reflections on the significance of the study, limitations, suggestions for further research, and recommendations for PJUs managements and the MHEJ are presented. This chapter is organised into the following sections. In Section 7.2, RQ3 is discussed and answered. Section 7.3 presents the theoretical contributions, and practical contributions are addressed in Section 7.4. Section 7.5 covers the limitations and future research, Section 7.6 the recommendations, and Section 7.7 offers concluding remarks.

7.2 RQ 3: What is the Model of Successful Coopetition Strategy Management that has Emerged from the Findings of this Study?

Based on the literature of COSFs and the findings of this research study, the researcher developed a Critical Success Factors Model for Coopetition Management (**CSFMCM**) as shown in Figure 7.1. The CSFMCM has been generated from the critical success factors (CSFs) that have arisen out of this research. The literature review was the primary source of initial information about the philosophical meaning of COSFs in business, manufacturing and some service sectors. As few COS and COSF studies have been conducted in the education sector, it was the literature for COSFs in other sectors that enabled the researcher to come to an initial understanding of COSFs in education sectors.

The findings from the interviews and the survey in this study enabled this researcher to gain important insights into PJUs and to identify the factors that contributed to COS success. These insights enabled the researcher to develop a model that should allow university management to successfully manage COS across PJUs.
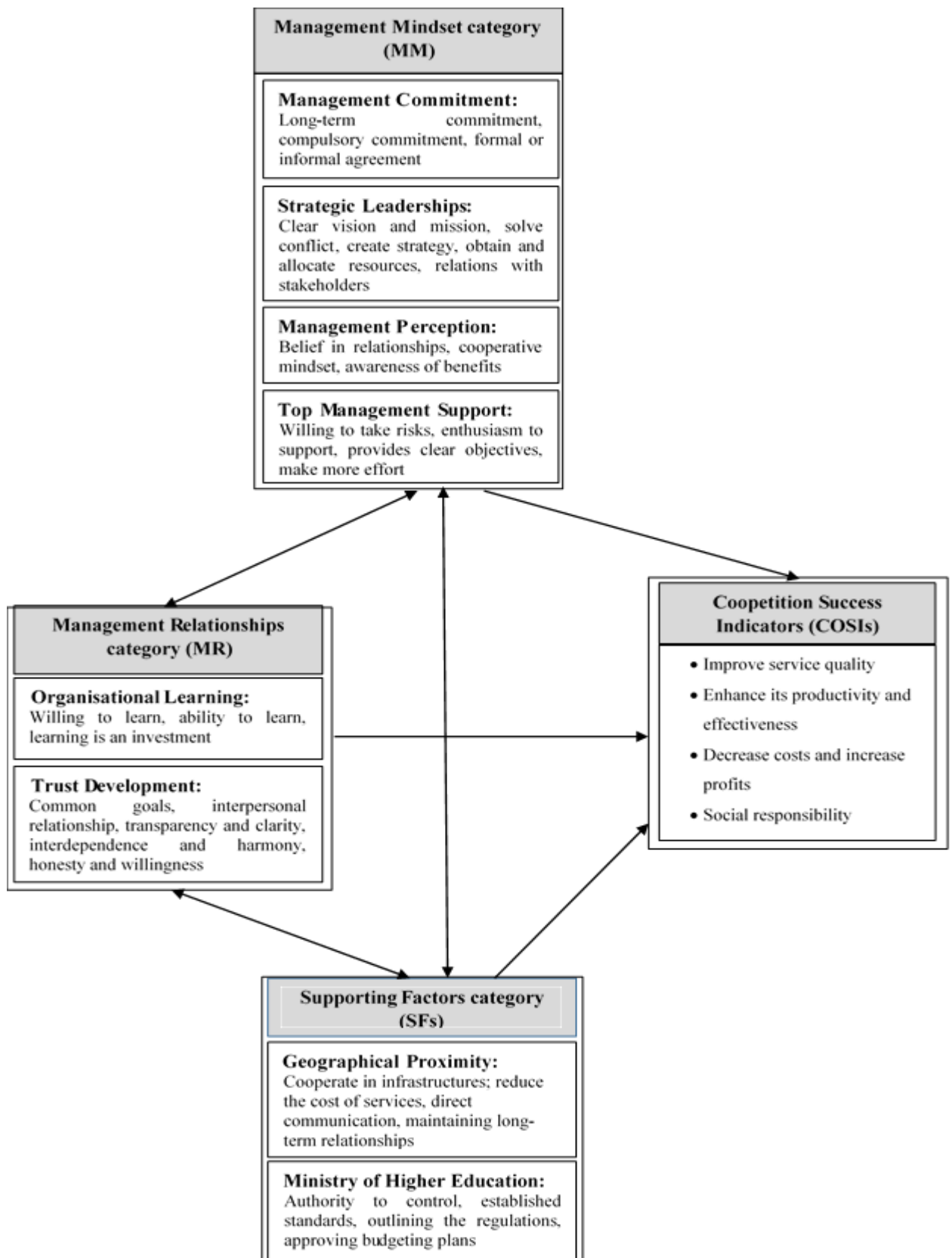
Figure 7.1: A Critical Success Factors Model for Coopetition Management (CSFMCM) in PJUs

This model is explanatory; it highlights and recommends a system that can be used to implement COSFs management in PJUs. The framework considers the unique context of Jordan and its particular social and cultural values.

7.2.1 Model Description and Implications

Research findings revealed the Critical Success Factors Model for Coopetition Management (CSFMCM) for PJUs (see Figure 7.1). The figure shows three main categories for COSFs: Management Mindset (MM), Management Relationship (MR) and Supporting Factors (SFs). Category 1: MM is comprised of four CSFs for COS including MC, SL, MP and TMS. Category 2: MR is comprised of two CSFs for COS including OL and TD. Category 3: SFs is comprised of two CSFs including GP and the role of the MHE. The COSF in these categories enable PJUs to succeed in adopting COS by improving CO outcomes and performance (quality, effectiveness and productivity, cost and profit, and social responsibility) (see Figure 7.1).

The CSFMCM for PJUs also shows the implications of the CSFs in the three groups Management Mindset (MM), Management Relationship (MR), Supporting Factors (SFs) on University Success Indicators (USIs) in the adoption of COS (see Figure 7.1). This figure shows how these implications are inter-linked and integrated, and need to be addressed as a whole to enhance COS success in PJUs.

The first implication is the importance of CSFs for COS in the MM group. These factors were found to be Management Commitment (MC), Strategic Leadership (SL), Management Perception (MP) and Top Management Support (TMS). This research explored how these factors influenced Coopetition Success Indicators (COSIs). MC is the most critical factor on COSIs and is directly related to improved services quality, enhanced university effectiveness and productivity, increased university profits, and enhanced social responsibilities. For example, making a formal or informal agreement (at least a memorandum of understanding) between universities creates a compulsory long-term commitment to COS and leads to a sustainable, successful relationship with competitors. Then, SL knowledge enables universities to have a clear vision and mission, manage their COS successfully, obtain new resources to support the strategy, solve any conflicts arising from the relationship, and develop the relationship with stakeholders to ensure their support and enhance the relationship. MP is also critical to COS success because university management should first believe in COS and have

a cooperative mindset to be aware of the benefits of the coopetition relationship (COR) to all partners. Finally, TMS is needed in all stages of the COR to keep supporting it through a willingness to take risks involved in adopting COS, provide clear objectives to partners, and a willingness to make more effort to build successful collaborative relationships with competitors. TMS is seen as a critical factor to sustain COS success and improve coopetition performance (COP). However, it is the combination and integration among MC, SL, MP and TMS that will lead to improved quality, enhanced productivity and effectiveness, decreased costs and increased profit, and enhanced social responsibility.

Figure 7.1 also shows the second implication that includes the CSFs for COS success in the MR category. These factors are Organisational Learning (OL) and Trust Development (TD). OL is the factor with the greatest effect on COS success in the MR category because OL enables universities to update knowledge, improve their capabilities and competitiveness, sustain competitive advantages, continue to grow, and survive. Therefore, when universities are willing and able to learn from partners and consider learning as an investment process, it will lead to a successful COS by improving quality, increasing effectiveness and profit and enhancing social responsibility. Furthermore, TD is a critical factor in the MR category because without trust between partners, the COR will not be continued.

Previous studies have identified a lack of trust or distrust as an important barrier to improving COS (Czakon & Czernek 2016a; de Araujo & Franco 2017; Kostis & Näsholm 2020; Lascaux 2020; Raza & Kostis 2020; Schiffling et al. 2020). Therefore, when universities adopt common goals with partners, develop interpersonal relationships between staff and leaders, rely on transparency and clarity in cooperation activities, have a strong interdependence and harmony with partners, and show a willingness to develop relationship, this will lead to improved services quality, enhanced effectiveness and productivity, decreased costs, increased profits, enhanced social responsibility, and COS success. However, OL and TD are correlated with and integrated into the MR category because learning and sharing knowledge and information will not occur until trust is developed between competitor universities. Then, the integration and correlation between OL and TD will lead to improved coopetition outcome in PJUs. Thus, MR factors are critical to sustaining COS success.

The third and final implication is the need to acknowledge the importance of the CSFs for COS in SFs category. This relates to two main factors: Geographic Proximity (GP) between universities and the important role of the Jordanian Ministry of Higher Education (MHEJ) for the universities. The findings of this research indicate that GP is the most important factor in SFs category because it enables universities to cooperate in infrastructure which reduces the cost of services, supports direct communication and interaction, and promotes the maintenance of long-term relationships between close competitor universities. Universities also need to recognise the critical role of the MHEJ because it has legislative and administrative authority to control universities' activities, establishes standards to facilitate the evaluation of universities' performances, explains and outlines regulations to universities, and approves budgeting plans in terms of programs, performance and admission policies. This research found that the MHEJ's role has a strong and positively influence on COS outcomes, and universities need to be aware of this role to successfully maintain COS. However, GP and MHEJ are correlated and integrated because both factors lead to improved coopetition outcomes and sustain relationships between universities. In addition, MHEJ encourages nearby universities to share infrastructure and save on costs and limited resources in HESJ.

However, as the Critical Success Model (see Figure 7.1) indicates, the CSFs for COS in the MM, MR and SFs categories are integrated and correlated to enhanced COS success in PJUs. In addition, these CSFs have a strong influence on the successful adoption for COS and ultimately lead to a better COP (e.g. improve services quality, enhance effectiveness and productivity, increase profits) for PJUs.

The CSFMCM for PJUs identifies the aspects of each area that needs to be addressed to achieve COS success and so could be used as a guide to manage COS in PJUs successfully. This model is appropriate to private universities in the Jordanian context providing account is taken of the issues identified in this research.

However, the applications of the model are not limited to just advice for the field of PJUs and the Jordanian educational sector, but can be generalised to the Middle East region where there are similar social and cultural circumstances and, to some extent, internationally. The CSFMCM for PJUs is useful and helps the management of universities enrich their knowledge and increase their understanding of the most

suitable ways to manage CSFs for COS successfully into the future. The model helps universities to be more effective and efficient in the management of CSFs for COS and improve COP. It also provides a platform for the user to continually improve their skills for the management of successful COS by paying more attention to the CSFs for COS and managing the COS model successfully.

7.2.2 Strategic Management Process for Implementation of COS

Based on the findings of the present research, the researcher has developed a Strategic Management Process for Implementation Coopetition strategy (SMPICOS) as shown in Figure 7.2. This framework, adapted from Wheelen et al. (2017), can be used for the implementation COS with the integration of the CSFMCM for PJUs. The formulation and implementation of COS should be driven from an overall university strategy (see Figure 7.2). This figure illustrates that process consisting of four strategic steps.

Step 1: Environmental scanning: The monitoring, evaluation and dissemination of information from the external environment (e.g. natural physical environment, societal environment and task environment or Industry) and internal environments (e.g. structure, culture, and resources) to key people within the universities to identify strategic factors that will determine the future of the universities. This scanning happens through an analysis of strengths, weaknesses, opportunities and threats (SWOT analysis).

Step 2: Strategy formulation: The development of long-range plans for the effective management of environmental opportunities based on the SWOT analysis. It includes defining the university mission, specifying achievable objectives, developing strategies and setting policy guidelines. Universities should use a strategic mindset to enable their leaders to establish COS and determine the university's direction. In this step, universities first need to be committed to working with selective competitors for the long-term using formal or informal agreement. Then the university's strategic leaders provide a clear vision and mission to create the COS, devote enough resources to the strategy, and obtain stakeholders' support. To adopt COS, universities also need to assess the benefits of COS and believe in the COR and select the successful COS activities between competitors. After that, the strategy needs support from top

management to maintain relationships, provide clear objectives and expend more effort in supporting COS.

Step 3: Strategic implementation: The process by which strategies and policies are put into action through the development of programs, budgets and procedures. This process might involve changes in the culture, structure, and/or management system of the university. Strategy implementation often involves day-to-day decisions about resource allocation. In this step, universities need to develop trust relationships with competitors by providing common goals, developing interpersonal relationships between competitor universities' leaders and staff, increasing interdependency and harmony with partners, and relying on transparency and clarity in coopetive activities. TD between competitors (as shown in the CSFMCM model Figure 7.2) encourages universities to share knowledge and information with partners and enhance their willingness and ability to learn from each other and invest more money in partnership activities. The MR category needs SFs to develop and sustain CORs which follow the rules and laws of the MHEJ, such as outlining regulations, establishing standards and approving budgeting plans. In addition, they should utilise GP between universities to develop relationships through cooperation in services and activities provided to students and staff to save costs and maintain relationships with competitors.

Step 4: Strategic evaluation and control: A process in which universities' activities and performance results are monitored so that actual performance can be compared with desired performance. The universities used four main indicators to measure COS success (e.g. services quality, effectiveness and productivity, costs and profits, and social responsibility). The CSFs for COS lead to improved COS indicators and enhanced COS performance.

Managers at all levels must use information from the evaluation of strategies and performance outcomes to take corrective actions and resolve problems. Although evaluation and control are the final major elements of strategic management, they can also pinpoint weaknesses in previously implemented strategic plans and thus stimulate the entire process to begin again.

As explained in Figure 7.2, this process is not linear as shown by arrows coming from each part of the model and taking information to each of the previous parts of the

model. As a university develops strategies, programs and the like, it must often go back to revise or correct decisions made earlier in the process.
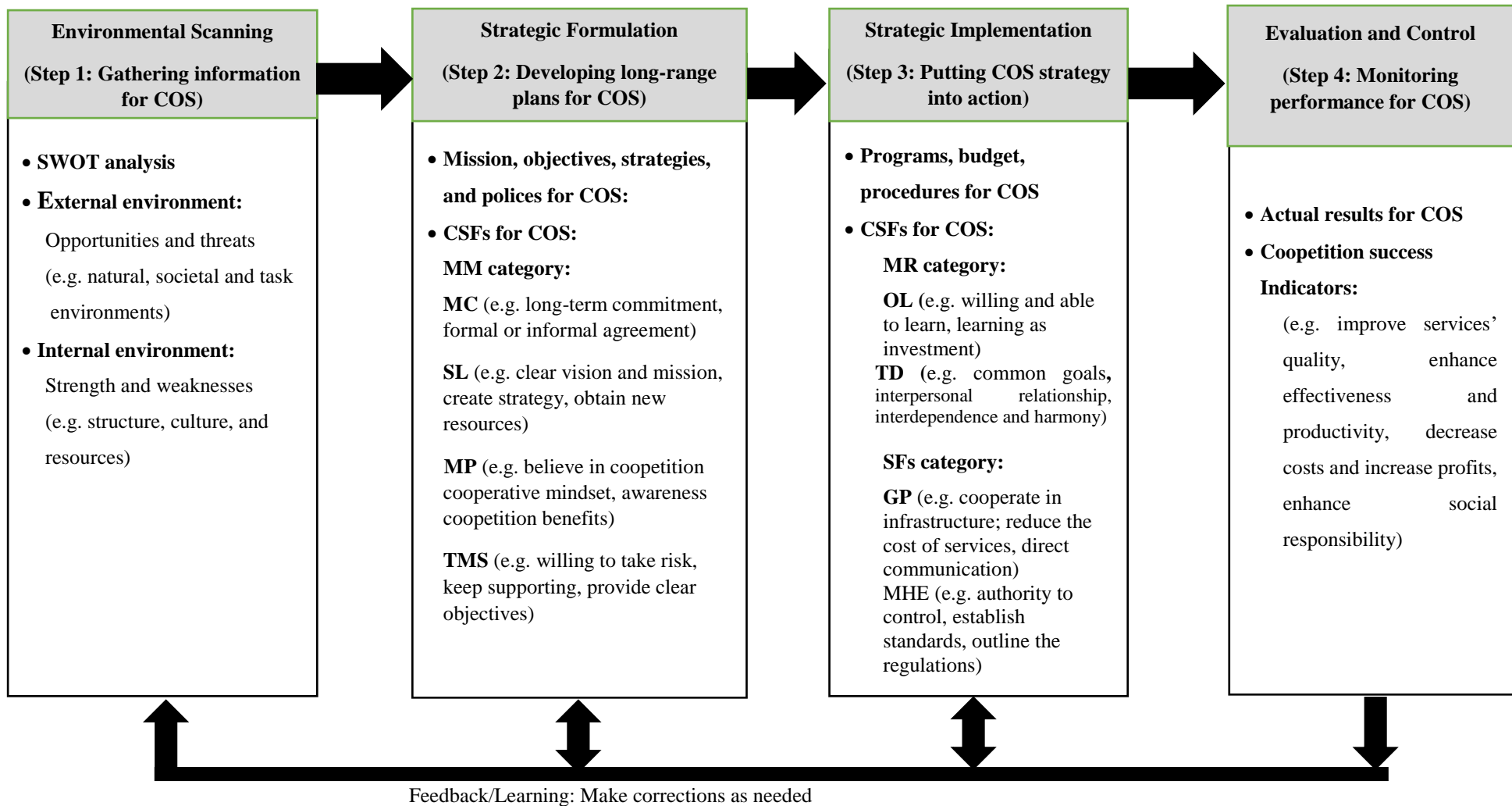
| Environmental Scanning (Step 1: Gathering information for COS) | Strategic Formulation (Step 2: Developing long-range plans for COS) | Strategic Implementation (Step 3: Putting COS strategy into action) | Evaluation and Control (Step 4: Monitoring performance for COS) |

Environmental Scanning
(Step 1: Gathering information for COS)

- **SWOT analysis**
- **External environment:**
  Opportunities and threats
  (e.g. natural, societal and task
  environments)
- **Internal environment:**
  Strength and weaknesses
  (e.g. structure, culture, and
  resources)

Strategic Formulation
(Step 2: Developing long-range plans for COS)

- **Mission, objectives, strategies, and polices for COS:**
- **CSFs for COS:**
  MM category:
  MC (e.g. long-term commitment, formal or informal agreement)

  SL (e.g. clear vision and mission, create strategy, obtain new resources)

  MP (e.g. believe in coopetition cooperative mindset, awareness coopetition benefits)

  TMS (e.g. willing to take risk, keep supporting, provide clear objectives)

Strategic Implementation
(Step 3: Putting COS strategy into action)

- **Programs, budget, procedures for COS**
- **CSFs for COS:**
  MR category:
  OL (e.g. willing and able to learn, learning as investment)
  TD (e.g. common goals**,** interpersonal relationship, interdependence and harmony)

  SFs category:
  GP (e.g. cooperate in infrastructure; reduce the cost of services, direct communication)
  MHE (e.g. authority to control, establish standards, outline the regulations)

Evaluation and Control
(Step 4: Monitoring performance for COS)

- **Actual results for COS**
- **Coopetition success**
  Indicators:
  (e.g. improve services' quality, enhance effectiveness and productivity, decrease costs and increase profits, enhance social responsibility)

Feedback/Learning: Make corrections as needed

Figure 7.2: Strategic management process for implementation COS**; Adapted from** Wheelen et al. (2017)

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7.3 Theoretical Contributions

The research aimed to provide a contribution to the area of COS by exploring factors which enable COS to succeed in PJUs. In addition, one of the major goals of this research, in addition to exploring CSFs, was to deliver a validated successful COS management model, which is named CSFMCM. The model was developed based on the study findings in the qualitative and quantitative stages, which can be used to identify the significance of different constructs detailed in the CSFMCM.

In the early stage of this research, the researcher built the initial proposed conceptual framework (see Figure 2.5) based on an extensive literature review of previous studies for COSFs in different sectors (with the exception of the education sector due to the scarcity of studies). The initial conceptual framework used was based on the Chin model (2008) validated in the manufacturing sector (see Figure 2.4). The researcher added other significant factors not mentioned in Chin model (2008) and drawn from other studies in the literature (see Table 2.7). Further, the research was based on the (Bengtsson & Raza-Ullah 2016) model which measures successful COS performance (see Table 2.8).

Therefore, the initial proposed conceptual framework was based on the consideration of 15 factors and their effects on successful COS performance (see Figure 2.5). The initial proposed conceptual framework was used as an indicator to guide this study in the following stages before exploring the COSFs for PJUs. Only a few researchers have considered the influence of COSFs on the successful adoption of COS in different sectors, and there are few studies of COSFs and their successful adoption in the education sector, particularly between PJUs.

A preliminary qualitative research was carried out to explore factors and related variables, and a new initial research proposed model emerged. This model included 14 factors and 88 variables, (see Figure 4.16 and Table 4.37). After this qualitative phase, a new model was proposed, tested and validated empirically with a number of statistical tools to identify the applicability of the model for PJUs. The final model included eight CSFs for success COS and 52 variables (eight exogenous latent constructs with 48 observations (CSFs), and one endogenous latent construct with four observations (coopetition success indicators COSIs), see Figure 7.1 CSFMCM for PJUs).

For this study, it is important to mentioned that CSFMCM is a new model for the Jordanian HE sector. This model adds new empirical factors and new items to measure CSFMCM constructs, which have not been mentioned in the studies of other sectors.

The outcomes of this research contribute to the rising body of literature on COSFs and the successful adoption of COS by exploring the effects of these factors on the indicators of a successful COS adoption. This finding also shows the significance of this research by adding these constructs to the research area. Thus, CSFMCM has the capacity to be utilised in PJUs and the HESJ.

7.4 Practical Contributions

This research aims to contribute, not only to future COS and COSFs research projects, but also to the improvements of PJUs and HESJ. The findings offer support for PJUs to manage COS more effectively and efficiently by considering the influence of different COSFs. The following discussion considers the implications of this research for universities' management and governance.

7.4.1 Implications for University Management

One of the major challenges decision makers face is the uncertainty of a rapidly evolving business environment. Decision makers in universities can use CSFMCM to develop their decision making process in this environment. CSFMCM in this research supports decision making to identify the COSFs and develop knowledge about the important factors that influence the outcome of such adoptions.

As demonstrated by the empirical analysis, the COSFs will play a significant role in the successful adoption of a COS in PJUs. These results imply that managers and decision makers should investigate and evaluate the advantages of the existence of these factors to improve their knowledge and awareness of successful COS management and improve their decision-making processes to manage COS successfully. The development of COS management will support a decrease in the level of uncertainty associated with COS adoption and support an understanding of how COS can enhance the efficiency of their work by increasing their productivity.

The outcomes of this research aim to deliver a set of verified and reliable measures for COSFs and successful COS adoption. Managers must play a vital role in managing COS between universities. As explained earlier, the factors in the MM group (MC, SL,

MP and TMS), MR group (TD and OL), and SFs group (MHE and GP) can be considered as the most important factors when adopting COS in universities. It is these factors that will enable managers to successfully manage COS.

The experience that managers develop by managing a successful COS through CSFMCM adoption will enable them to employ it for developing CORs. These relationships could be with PJUs as well as with public Jordanian universities and international universities, to improve their services' quality and reputation.

The developed CSFMCM can assist with the following:

- Improve the awareness of university managers about the importance of the CFSs for COS in the MM category (MC, SL, MP and TMS), which underpin successful COS management and their impact on the success of COS adoption

- Improve the awareness of the importance of critical factors in the MR category (TD and OL), which leads to improving managers' interaction and sustaining a healthy relationship with competitors by removing any uncertainties surrounding the COS management

- Improve awareness of the importance of the SFs category (MHE and GP) which leads to the successful adoption of COS in universities

- Improve the awareness of the importance of improving universities' performance indicators (productivity and effectiveness, social responsibility, quality services, and saving of costs and improved profits) due to the adoption of COS.

7.4.2 Implications for Government

The growth and development of COS may lead to the re-evaluation of government policies, strategies, legislation and instructions encouraging the adoption and development of COS by providing incentives to universities. The CSFMCM can support the enhancement of the Jordanian government's plan to make Jordanian universities financially independent to reduce government funding, develop a good network with international universities, improve universities' quality and reputation to attract more students and improve the national income for Jordan. The research outcomes can underpin a comprehensive understanding of the factors that need to be considered when planning to adopt COS in the HESJ. Considering these factors, the

government can consider CSFMCM as a validated model to provide strategies in the establishment and improvement of relationships between universities.

7.5 Limitations and Future Research

Although the study adopted a thorough research design and rigorous statistical analyses, there are several limitations which emerged during the period of study. In addition, the study outcomes increase the opportunities for future research. The limitations and future directions of this research are summarised below:

- This research is intended to enhance knowledge of COSFs management in PJUs. PJUs are just one sector and this study assumes that there are numerous additional sectors that could follow. Although this research represents only a small portion of the vast knowledge area of COS field, it can be regarded as an important resource for improving the knowledge of COSFs. However, there is a need to conduct more research to explore new COSFs which is built upon quantitative and qualitative investigations in tertiary education for other countries

- The study targeted one country (Jordan), one section of the tertiary education sector (the university), and only PJUs. Hence, the generalisability of these results is limited to PJUs. Therefore, there is a requirement for further empirical investigations in different educational institutions (e.g. public universities, schools and other institutions), different areas in Jordan, and in other countries

- The study followed the cross-sectional research design conducted in a specific and short period of time. Since time is an important factor in COS, future research is recommended to adopt a longitudinal research design. Thus, the research can be conducted in different slices of time, which allow the researchers to draw better understandings and observations about the phenomena

- This research was limited to a number of persons who were participants in strategic decision-making, such as in Trustees' Councils, University Councils, and Deans' Councils. Increasing the number of participants from a multitude of sectors may provide a better representation of trends in the respective sectors as well as facilitate comparisons that are more reliable

- The sampling approach of this study can be considered to be one of its limitations. Because of time and resource constraints, the random sample approach could not be applied. Future research should attempt to apply the random sampling approach and increase the number of interviews. This will improve the generalisability of the outcomes as well as the validation of the model

- Mixed methods approach (qualitative and quantitative) was used for data collection and achieving the research objectives. However, for future research on COSFs, a quasi-experimental approach could be used to obtain actual experience before responding to the survey or participating in the interview

- There is a need of in-depth research into other potential factors of the successful management and implementation of COS in the HE sectors in Jordan. These include tension and conflict between partners, the cultural and organisational implication of COS, stakeholder's implications, value and belief systems for top managers, managerial and strategic behaviour, and challenges which may be associated with implementing COS.

7.6 Recommendations

These research findings and the CSFMCM have implications for PJUs and the Jordanian HE sector. This section makes recommendations for universities' management and the MHEJ, and considers future research needs. It considers the importance of developing successful COS management for PJUs to improve university performance and reputation. Based on the research conclusions, the following practical recommendations can be made.

7.6.1 Recommendation 1: Relationships between PJUs

In the light of the education sector and environmental dynamics in Jordan and the world, it is suggested that PJUs should develop coopetition relationships with each other and with public universities. Thus, PJUs need to consider the following recommendation for COS areas:

- *Develop a balance between cooperation and competition in academic activities, sharing interests and attracting more students*

7.6.2   Recommendation 2: Important Factors for COS between PJUs

According to the study findings, it is suggested that the universities could consider the important factors for COS. Therefore, the following recommendation could be considered for these factors:

- *Universities should develop their flexibility by responding to changes and reallocating their resources*
- *Universities should find ways to exchange benefits with their partners and avoid opportunistic behaviour*
- *Universities should share their compatible and complementary resources and capabilities with partners to develop their competitiveness*
- *Universities need to improve their attention to communication and interaction with their competitors and exchange information*
- *Universities should create mechanisms and rules to monitor cooperative activities with the partners and to improve institutionalisation.*

7.6.3   Recommendation 3: COS Success Adoption Indicators for PJUs

According to the study results, the following recommendation for success indicators could be considered:

- *Universities should make more effort to improve coopetition performance by improving services' quality, productivity and effectiveness, and enhance their social responsibility.*

7.6.4   Recommendation 4: COSFs for PJUs

According to the study results, it is suggested that PJUs should pay more attention and prioritise the CSFMCM (see Figure 7.1). Therefore, the following suggestion is recommended:

- *The universities should focus on developing the critical factors for coopetition strategy in the three categories: management mindset, management relationship, and supporting factors as a means of enhancing services' quality, effectiveness and productivity, and social responsibility, as well as reducing costs and raising profits.*

7.7   Concluding Remarks

Despite the importance of COSFs in HE sectors, it is rare to find studies about COSFs, and there are no studies to be found in Jordan. The current study attempts to fill the need for such extensive research in the education sector, particularly in Jordan. This research builds an initial proposed research model providing answers to the primary research questions and objectives. The initial proposed model was assessed, and modifications were made based on SEM analysis for the better assignment of modification indices, which aimed at developing a better fitting model. It was revealed that eight COSFs have a positive impact on US in the adoption of COS, which included MC, SL, MP, TMS, TD, OL, GP and MHE. In comparison, FCH, MB, SRC, CM and INS were revealed to be important factors, but not critical. This research aimed to explore the factors that enable COS and, in particular, the CSFs for COS to succeed for PJUs. To gain a complete understanding of the utilisation of COSFs, sequential mixed methods were used to obtain the final model for this study. The results obtained from this research can be used as a foundation for future research in the area of COSFs, as well as providing guidelines for designing a successful implementation of COS management.

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9 APPENDICES

9.1 Appendix A1 Table 1: The differences between competition, cooperation and coopetition

Criteria	Competition	Cooperation	Coopetition
Scholar	Porter school 1980	Barnard school 1938	Brandenburger & Nalebuff School 1996
Concepts	Dispute by the agents for the same resources that cannot be achieved individually	Division of skills or additional resources for mutual or superior benefit	Cooperation in areas different from where they compete or in a chain that adds value to the firm.
Paradigm	Maximisation of individual interest.	Looking for mutual benefits	Looking for value creation and sharing interest
	Dominant paradigm in strategic management during the 1980's.	Up surged in the marketing management field (1976) and developed in strategic management on the turn of the decade 80's to 90's.	At the beginning of its life cycle since 1996.
	Entirely diverging interest structures.	Entirely converging interest structures.	Partially convergent interest & goal structure
	Transactional marketing paradigm.	Transition from transactional to relational marketing paradigm	Mix paradigm
	Independent	Interdependent	Mix relationships.
Drivers	Satisfying own interests, regardless of the impact on other parties to the game.	Complexity of technological increasing turbulence in the competitive scenario.	Fast moving complex environment.
Objectives	Gains profits higher than the competitors.	Interfirm relationships are considered as strategic assets and source of strategic leadership, strategic flexibility, and learning capability.	Aim for economic and competitive benefits.
	Gains new and unique resources to produce distinctive product or services.	Resource sharing to access new markets, creation of entry barriers and focusing on target activity.	Creation of opportunities, removal of external obstacles, or neutralization of threats
	Aiming for an advantageous position in the industry through value-creation strategies and determining economic exchanges/sharing through value appropriation strategies.	Seeking to share knowledge, complementarity resources and capabilities, reduce cost and time, increase revenue and economic value.	Seeking to Value creation in knowledge value by increase in interfirm knowledge stock and to economic value by cost reduction and revenue increase, speed favours entrepreneurial oriented behaviour.

Criteria	Competition	Cooperation	Coopetition
Theory	Competitive advantage and distinctive competencies	Resource Based View	Game Theory, Transaction Cost theory, Resource Based View.
Premises	Conflict, bargaining power.	Harmony, trust, reciprocity.	Interdependence, dynamism, complexity.
Characteristics	Independent decisions about common goals.	Development of joint actions to achieve mutual benefits and common goals.	Interest structure and partially convergent goals.
	Search for a balance between the agents.	Agents avoid conflict by making cooperative agreements as a formal or informal agreement.	Overcoming possible intentions of selfish behaviour by overlapping interests.
Restrictions	Not achieving a performance higher than the others' performance, thus generating a competitive advantage or distinctive competencies that are difficult to imitate.	Lack of trust between the agents. Strategic misalignment between the agents and opportunistic behaviour.	Agents invest resources to increase the total to be shared, which will not necessarily be divided equally.
Criticism	Lack of recognition of the dependence of the firm's decisions on the industry and economic imperfections.	Lack of recognition of competitive forces or these being seen as negative influences.	Opportunism, asymmetry, perception of justice between those involved, and difficulty to replicate the predictive model based on the Game Theory for the coopetitive environment.
Market system	Short- term supplier relationships.	Long term supplier relationships	Short term and long-term stable supplier relationships.
	Atomistic structure based on instant exchange.	Interactive & continuous relationships in which firms progressively strengthen reciprocal commitments and realize a process of mutual adaptation & joint value creation.	Interactivity could be limited to project simple level and in dyadic or network as complex level in the value chain.
	Exit-based procurement strategy	Cooperation procurement strategy	Voice-based procurement strategy
	Reputation is a source of competitive advantages and reputation incentives are strong.	Reputational concerns keep partners aligned to trustworthy behaviour.	Reputation incentives are weak.
	Highly chance for opportunistic behaviour.	Reduced the chance for opportunistic behaviour.	Development of increased trust weakens firm control processes resulting in an incentive to opportunistic behaviour.
Creation value	Occurs within the organization.	Joint process occurs from a network of strategic interdependence of organizations.	Occurs from firm interdependence by means of coopetitive advantage.
	Influenced by the inter-firm interactions according to allocative efficiency.	Mutual benefits, the more successful partner the bigger benefits for the other partners & vice versa.	Mutual benefit by value sharing.

Criteria	Competition	Cooperation	Coopetition
Appropriation value	Instant fairness principle or use of opportunistic behaviour	Fair benefit distribution.	Uncertain & not necessarily fair benefit distribution
Inter-firms functions	Organization resources diminish if they are shared.	Convergent Interest.	Partial or incomplete interest congruence.
Structure of interdependence	win- lose	win- win	win- win/win- lose
Nature of interdependence	fully negative	fully positive	positive/negative
Function	value distribution	value generation	value generation/ value distribution
Overall structure	zero- sum	positive	positive- but- variable
Norms and values	The destination serves the company interest.	Company serves the destination interest.	Serve mix interest
Strategic thinking	Micro	Macro	Hybrid thinking
Community feeling	Detached	Involved	Mix feeling

Source: Adapted from (Wang & Krakover 2008; Osarenkhoe 2010a; Roux 2010; Dagnino et al. 2012; Dal-Soto & Monticelli 2017; Monticelli et al. 2018)

9.2 Appendix A2 Table 2: Coopetition strategy definitions in strategic management field

Author	Definition
Dagnino and Padula (2002)	"*CS is a matter of incomplete interest and goal harmony regarding organisations' interdependence.*" (p. 2) "*a game structure where actors interact on the basis of partially convergent, overlapping interests*" (p. 7)
Luo (2005)	"*A mindset, process, or phenomenon of combining cooperation and competition*" (p. 72)
Sun and Xu (2005)	It is defined "*as the phenomenon that differs from competition or cooperation, and stresses two faces of one relationship, cooperation and competition, in the same situation, in which competitors can strengthen their competitive advantages by cooperation.*" (p. 105)
Breznitz (2007)	Co-opetition as "*a systemic institutional configuration that shapes the capabilities and behaviour of specific industries and clusters of firms*" (p. 3)
Luo (2007a)	"*CS is the simultaneous competition and cooperation between two or more rivals*" (p. 130)
(Eriksson 2008a)	"*CS is here defined as the balance between cooperation and competition in a specific transaction relationship, derived from the actors' simultaneous cooperative and competitive behaviours*" (p. 103)
Ritala (2010)	"*A collaborative relationship between two or more independent economic actors simultaneously involved in product-market competition*" (p. 21)
Gnyawali and Park (2011)	"*A simultaneous pursuit of collaboration and competition between a pair of organisations*" (p. 651)
Pellegrin et al. (2013)	"*CS represents an organisational behaviour that is both cooperative and competitive, between firms that offer the same type of product/service to the same consumer segment*" (p. 73)
Niemczyk and Stańczyk (2014)	"*A system of actors operating on the basis of the partial compliance of interests and purposes*" (p. 8)
Bengtsson & Kock (2014)	"*a paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions, regardless of whether their relationship is horizontal or vertical*" (p. 182)
Gast et al. (2015)	"*It is a cooperation and competition between direct competitors, therefore actors can operate in the same market, producing the same products or services*" (p. 507)
Kedia et al. (2015)	"*It is simultaneous cooperation and competition between two individuals, organizations or institutions to reach a mutually beneficial end*" (p. 6)
Snow (2015)	"*It refers to simultaneous cooperation and competition between competitors, therefore the maximization of total benefit occurs when organizations cooperate in the production of value (creating the pie) while still competing for their own share of the higher outcome (dividing the pie)*" (p. 434)
Czernek and Czakon (2016)	"*It includes the simultaneous use of collaboration and competition in order to reach better collective and individual results*" (p. 381)
(Dahl 2017)	"*A paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions*" (p. 8)
Petter et al. (2017)	"*CS is based on the concept that it is possible to simultaneously compete and cooperate generating competitiveness, as rival organizations complement each other, allowing for mutual cooperation with the aim of strengthening competitive forces*" (p. 44)

9.3   Appendix B1 Table 1: Universities' ranking, number of students, faculties, location

University code	Students no.	*Ranking	Faculties	Location
PJU1	1423	20	8	Amman
PJU2	3100	8	9	Amman
PJU3	5249	2	10	Amman
PJU4	6345	11	8	Amman
PJU5	5124	4	8	Amman
PJU6	5959	21	10	Amman
PJU7	6440	10	8	Amman
PJU8	7870	16	8	Amman
PJU9	2744	8	5	Amman

Source: Author based on PJUs sites and ranking webs

*Ranking: http://www.4icu.org/jo/, and http://www.webometrics.info/en/Asia/jordan

9.4   Appendix B2 Table 2: Scanning and analysing method for PJUs websites

University code	Website	*Cooperation	*Competition	Both
PJU1	www.aau.edu.jo	√	√	√
PJU2	www.meu.edu.jo	√	√	√
PJU3	www.ammanu.edu.jo	√	√	√
PJU4	www.asu.edu.jo	√	√	√
PJU5	www.philadelphia.edu.jo	√	√	√
PJU6	www.iu.edu.jo	√	√	√
PJU7	www.uop.edu.jo	√	√	√
PJU8	www.zuj.edu.jo	√	√	√
PJU9	www.psut.edu.jo	√	√	√

Source: Author based on PJUs sites

*Areas of Cooperation: collaborative teaching, research projects, joint academic and scientific activities (courses, conferences, seminars, symposia or lectures), exchange of research and teaching personnel, exchange of publications and other materials of common interest and exchange of students.
*Areas of Competition: Students, quality insurance, World universities ranking (QS), financing researches, Academic reputation, and employer reputation and research impact (research citation).

9.5   Appendix B3: Interview Main Questions

1.   Please Tell me a little about your background

2.   What do you think is the current relationship between your university and other private Jordan universities in regards to cooperation and competition? (Please explain)

3.   What do you think are the cooperative aspects between your university and other private Jordan universities? (Please explain)

4.   What do you think are the competitive aspects between your university and other private Jordan universities? (Please explain)

5.   What do you think are the significant anticipated benefits (advantages) of cooperation with other private Jordan universities? (Please explain)

6.   What do you think are the issues (disadvantages) of cooperation with other private Jordan universities? (Please explain)

7.   What do you thinks is the level of cooperation and competition relationship between your university and other Private Jordan universities and why? (Please explain)

8.   What are the factors that need to be considered when your university focusing on the adoption cooperation with other private Jordan universities? (Please explain in details).

9.   Could you please rate the previous factors from 1-7 as 1 is strongly not critical, and, 7 strongly critical.

10.   How do you know your cooperation with other private universities is success, and how we can measure the success of cooperation with your competitor's universities? (Please explain).

11.   Please provide any additional comments that you feel may be appropriate.
Thank you for your time and information!

9.6   Appendix B4 Table 3: PJUs participants in Councils

University code	Trustees Councils	Universities Councils	Deans Councils	College councils	Faculties	Departments	Location
PJU1	13	15	7	15	5	15	Amman
PJU2	13	21	13	20	11	20	Amman
PJU3	13	18	10	27	8	27	Amman
PJU4	13	18	10	17	8	17	Amman
PJU5	13	18	10	24	8	24	Amman
PJU6	13	19	11	16	9	16	Amman
PJU7	13	17	9	24	7	25	Amman
PJU8	13	17	9	21	7	21	Amman
PJU9	13	14	6	10	4	10	Amman
Total	**117**	**157**	**85**	**174**	**67**	**175**	
Total numbers of top and middle management level: 533							

Source: Developed by researcher for PJUs Law Number 18 for 2018

9.7   Appendix B5: Invitation Letter for Interviews

Invitation Letter for Interview's participant

Full Project Title: Exploring Factors That Enable Coopetition Strategy Success in Private Universities in Jordan

Principal Researcher: Mr Zeyad Al-Najaifi

PhD Business candidate
USQ, Australia

……………………………………………………………………………….

My name is Zeyad Al-Najaifi; I am a PhD candidate in School of Management and Enterprise, Faculty of Business, Education, Law and Arts, University of Southern Queensland (USQ), Australia. I would like to invite you to take part in my research project. This study aims to explore the idea of what factors enable coopetition strategy success in private universities in Jordan. Your participation will involve a telephone interview. The call will be to your mobile phone or work phone during work hours and will happen after permission is granted from your administrator or outside of work hours at any time convenient to the investigator and participant.

Semi-structured in depth interviews will be used in collecting data. The questions will be open ended to enable participants to relate their experiences coopetition strategy success. The results will be used in the development of an effective coopetition strategy success model and program(s) to be implemented in the higher educational sector in Jordan to increase the chance of coopetition strategy success among Jordan private universities in Jordan.

Your participation will be voluntary and you have the right to withdraw from the study without penalty at any time. All participants will be informed that the interviews will be for my PhD research project. The researcher will maintain participant confidentiality and to ensure security by confirming that the information is to be used for research purposes only.

If you have any concerns or complaints about the ethical conduct of the project you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 2214 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

9.8   Appendix B6: Ethics Approval USQ

UNIVERSITY
OF SOUTHERN
QUEENSLAND

6 April 2017

Mr Zeyad Al-Najaifi

Dear Zeyad

The USQ Human Research Ethics Committee has recently reviewed your responses to the conditions placed upon the ethical approval for the project outlined below. Your proposal is now deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* and full ethical approval has been granted.

Approval No.	**H17REA052**
Project Title	Exploring factors that enable coopetition strategy success in private universities in Jordan
Approval date	6 April 2017
Expiry date	6 April 2020
HREC Decision	**Approved**

The standard conditions of this approval are:

(a)   Conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC
(b)   Advise (email: human.ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project
(c)   Make submission for approval of amendments to the approved project before implementing such changes
(d)   Provide a 'progress report' for every year of approval
(e)   Provide a 'final report' when the project is complete
(f)   Advise in writing if the project has been discontinued, using a 'final report'

For (c) to (f) forms are available on the USQ ethics website:
http://www.usq.edu.au/research/support-development/research-services/research-integrity-ethics/human/forms

Samantha Davis
Ethics Officer

9.9   Appendix B7: Ethical approval from Ministry of higher education

9.10 Appendix B8: Interview Participant Information Sheet

Participant Information Sheet for USQ Research Project Interview

Project Details	
Title of Project:	***Exploring factors that enable coopetition strategy success in private universities in Jordan***
Human Research Ethics Approval Number:	H17REA052

Research Team Contact Details	
Principal Investigator Details	**Supervisor Details**
Zeyad Abdulazeez Al-Najaifi	**Associate Professor Dorothy Andrews**
Email: ZeyadAbdulazeez.Al-Najaifi@usq.edu.au	Email: Dorothy.Andrews@usq.edu.au
Telephone:+61746311088	phone:
Mobile:+61401656838	Mobile:

Description

This project is being undertaken as part of PhD Project.

The purpose of this project is to The purpose of this project is to explore factors that enable coopetition strategy to succeed in Private Jordan Universities .These factors will be used to inform the development of coopetition success factors model which enables sustainability of the success in coopetition strategy among Private Jordan Universities.

The researcher requests your assistance to provide information which will assist to explore factors that enable coopetition strategy success in private Jordan universities and develop a model which enables them to sustain the success in coopetition strategy.

Participation

Your participation will involve participation in interviews that will take approximately 30- 60 Minutes of your time. The interview will take place at a time and venue that is convenient to you.

Questions will include one or two indicative questions of the overall theme of the questions that you will be asking. The interview will be audio recorded. Please, note a sample attached of interview questions.

Your participation in this project is entirely voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. You may also request that any data collected about you be destroyed. If you do wish to withdraw from this project or withdraw data collected about you, please contact the Research Team (contact details at the top of this form).

Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland. Also, the participation will not impact on the relationship with Jordan University.

Expected Benefits

It is expected that this project will directly benefit you in two ways. Firstly, it will address a current gap in the body of the knowledge regarding how organizations can manage successful coopetition strategy. Secondly, it will make a contribution to coopetition strategy research by not only exploring coopetition success factors in the education sector, but also by adding and developing a new model

of coopetition success factors and managing successful coopetition among Private Jordan Universities. Apart from the contribution to knowledge in this area, make a number of contributions to practice. Firstly, it will help universities better understand coopetition success factors that can be used to improve the efficiency and performance such as cost reductions, sharing knowledge, access to new resources and capabilities. Secondly, it may help universities in Higher Educational sector in Jordan to understand and manage successful coopetition strategy. Finally, the study is useful for Vice Chancellors and top management levels of Private Jordan Universities who are responsible for the management of successful cooperation with competitors.

Risks

There are no anticipated risks beyond normal day-to-day living associated with your participation in this project.

Privacy and Confidentiality

All comments and responses will be treated confidentially.

- The interviews will be audio recorded.
- Only the principle investigator will access to recording.

The interview outcomes can used for future research. The researcher can provide a summary of results by an email address to the interviewers if they request it.

Any data collected as a part of this project will be stored securely as per University of Southern Queensland's Research Data Management policy.

Consent to Participate

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate in this project. Please return your signed consent form to a member of the Research Team prior to participating in your interview.

Questions or Further Information about the Project

Please refer to the Researchers Contact Details at the top of the form if you have any questions or to request further information about this project.

Concerns or Complaints Regarding the Conduct of the Project

If you have any concerns or complaints about the ethical conduct of the project you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 2214 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this sheet for your information.

9.11 Appendix B9: Interview Consent Form

<table>
<tr>
<td colspan="2" style="text-align:center">U n i v e r s i t y   o f   S o u t h e r n
Q u e e n s l a n d</td>
</tr>
<tr>
<td colspan="2" style="text-align:center">Consent Form for USQ Research Project
Interview</td>
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<tr>
<td colspan="2">Project Details</td>
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<tr>
<td>Title of Project:</td>
<td><i>Exploring factors that enable coopetition strategy success in private universities in Jordan</i></td>
</tr>
<tr>
<td>Human Research Ethics Approval Number:</td>
<td>H17REA052</td>
</tr>
<tr>
<td colspan="2">Research Team Contact Details</td>
</tr>
<tr>
<td>Principal Investigator Details</td>
<td>Supervisor Details</td>
</tr>
<tr>
<td>Zeyad Abdulazeez Al-Najaifi

Email: ZeyadAbdulazeez.Al-Najaifi@usq.edu.au
Telephone:+61746311088
Mobile:+61401656838</td>
<td>Associate Professor Dorothy Andrews
Email: Dorothy.Andrews@usq.edu.au
Telephone
Mobile:</td>
</tr>
<tr>
<td colspan="2">Statement of Consent</td>
</tr>
<tr>
<td colspan="2">
By signing below, you are indicating that you:

Have read and understood the information document regarding this project.
Have had any questions answered to your satisfaction.
Understand that if you have any additional questions you can contact the research team.
Understand that the interview will be audio recorded.
Understand that you will be provided with a copy of the transcript of the interview for your perusal and endorsement prior to inclusion of this data in the project if you request it.
Understand that you are free to withdraw at any time, without comment or penalty.
Understand that you can contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 2214 or email researchintegrity@usq.edu.au, if you have any concern or complaint about the ethical conduct of this project.
Are over 18 years of age?
Understand that any data collected may be used in future research.
Agree to participate in the project.

</td>
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<tr>
<td>Participant Name</td>
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<td>Participant Signature</td>
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<td>Date</td>
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<tr>
<td colspan="2">☐ Please tick this box and provide your email address below if you wish to receive a summary of the research results.</td>
</tr>
</table>

9.12 Appendix B10 Table 4: Interviews codes

University Number	Private Jordanian	Universities	Target universities	Participants number	Interview codes
1	PJ	U	A	P1;P2	PJ-UA-P1; PJ-UA-P2
2	PJ	U	B	P3;P4	PJ-UB-P3; PJ-UB-P4
3	PJ	U	C	P5;P6	PJ-UC-P5; PJ-UC-P6
4	PJ	U	D	P7;P8	PJ-UD-P7; PJ-UD-P8
5	PJ	U	E	P9;P10	PJ-UE-P9; PJ-UE-P10
6	PJ	U	F	P11; P12	PJ-UF-P11; PJ-UF-P12
7	PJ	U	G	P13;P14	PJ-UG-P13; PJ-UG-P14
8	PJ	U	H	P15; P16	PJ-UH-P15; PJ-UH-P16
9	PJ	U	I	P17;P18	PJ-UI-P17; PJ-UI-P18

9.13 Appendix B11: First Draft Survey questionnaire

Dear Participants,

You are invited to participate in a research study which aims to explore factors that enable coopetition strategy to succeed in private Jordanian universities. These factors will be used to inform the development of a coopetition success factors model which enables the sustainable success of coopetition strategy among private Jordanian universities. Formal ethics approval has beeen acquired from USQ Human Research Ethics Committee (Approval H17REA052) as well as the Ministry of Higher education in Jordan (Approval 5/3/2848).

Completion of the survey is expected to take 10-15 minutes.

All information provided will remain confidential and only aggregate data will be published. In other words, no individual information will be released to any third party.

Thank you for taking the time complete the questionnaire. Your views are critical to the success of this research study.

Yours sincerely,

Zeyad Al-Najaifi

PhD candidate

School of Management &Enterprise

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Associate Professor Dorothy Andrews

Director Leadership Research (LRI)

School of Linguistics, Adult and Specialist Education

Faculty of Business, Education, Law & Arts
University of Southern Queensland
West St. Toowoomba, QLD, 4350, Australia
Tel:+61 7 4631 2346
Email: Dorothy.Andrews@usq.edu.au

A. Your Background:

1. Please tick the item that best describes your role (position) at the university.

☐	Chairman of Trustees Board
☐	Deputy Chairman
☐	President
☐	Vice President
☐	Dean
☐	Deputy Dean
☐	Trustees Board's Member
☐	University Board Member
☐	Manager
☐	Head of the department
☐	Dean Council Member
☐	College Council Member
☐	Other (please specify)

2.   Please tick the item that best describes your highest qualification.

☐ PhD

	Master
	Bachelor
	Diploma
	Other (please specify)

3. Please tick the item that best describes your title.

	Professor
	Associate Professor
	Assistant Professor
	Lecturer
	Other (please specify)

4. Please tick the item that best describes your specialty.

	Business
	Engineering
	Science
	Education
	Law
	Linguistic
	Pharmacy
	Media
	Nursing
	Other (please specify)

5. Number of years in related to your experience in universities.

	1-10
	11-20
	21-30
	+31

6. Number of years in this position.

	1-5
	6-10
	10-15
	+16

B. Current Status in your University

7. Please, tick the real relationship between your university and other private Jordanian universities.

	Cooperation
	Competition
	Both
	Other (please specify)

❖ **Cooperation and Competition Strategy Levels**

8. Please rate the following cooperation areas in your relationships with private Jordanian universities.

Cooperation Aspects	Strongly disagree	Disagree	Slightly disagree	Moderate	Slightly agree	Agree	Strongly agree
	1	2	3	4	5	6	7
Academic activities (i.e. collaborative teaching, research, supervision).							

Sharing interests (i.e. knowledge, experience, publications, and course materials).							
Applying government policy (i.e. laws & legislation, instructions, regulations).							
University services (i.e. health insurance, social and athletic activities, community services).							

9. Please rate the following competition areas in your relationships with private Jordanian universities.

Competition Aspects	Strongly disagree	Disagree	Slightly disagree	Moderate	Slightly agree	Agree	Strongly agree
	1	2	3	4	5	6	7
Reputation (i.e. quality assurance, university ranking, university image, and brand)							
Students (i.e. opening new programs and colleges, quality services, fees)							
Higher revenue (i.e. profit, market value, stakeholders' satisfaction)							

10. Please rate the level of these cooperation areas in your relationships with private Jordanian universities.

Cooperation Aspects	Very Low	Low	Slightly Low	Moderate	Slightly High	High	Very high
	1	2	3	4	5	6	7
Academic activities (i.e. collaborative teaching, research, supervision).							
Sharing interests (i.e. knowledge, experience, publications, and course materials).							
Applying government policy (i.e. laws & legislation, instructions, regulations).							
University services (i.e. health insurance, social and athletic activities, community services).							

11. Please rate the level of these competition areas in your relationships with private Jordanian universities.

Competition Aspects	Very Low	Low	Slightly Low	Moderate	Slightly High	High	Very high
	1	2	3	4	5	6	7
Reputation (i.e. quality assurance, university ranking, university image, and brand)							
Students (i.e. opening new programs and colleges, quality services, fees)							
Higher revenue (i.e. profit, market value, stakeholders' satisfaction)							

❖ **Types of Coopetition Strategy (cooperation and competition strategy)**

12. According to your experience and knowledge, which of the following type's best describes your university's relationships with competitor universities in Jordan.

Coopetition types	Description	
Type 1	University does not interact significantly with competitors, maintaining a low degree of competition and a low degree of cooperation with competitors.	
Type 2	University competes with competitors for market power, competitive position, and market share, maintaining a high degree of competition and a low degree of cooperation.	
Type 3	University maintains a high degree of cooperation and a low degree of competition with other universities in search of joint synergies created by complementary resources and capabilities.	
Type 4	Universities are mutually dependent on one another to achieve their respective goals, maintaining a high degree of cooperation as well as a high degree of competition.	

C. Research Model

Research conceptual model includes constructs and items to measure management mindset, management relationships and supporting factors as independent variables as well as measuring university success using indicators of a successful cooperation strategy with competitor universities.

❖ **Management Mindset Factors** (These factors are: university commitment, strategic leadership, flexibility to change, management perception and top management support)

13. Please rate the following statements regarding your **university's commitment** to collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
University must be committed to support cooperative relationships with competitor universities	M1							
University has a long-term commitment to competitor universities	M2							
University has a formal or informal agreement (at least a memorandum of understanding) with competitor universities	M3							
University accepts mutual strengths and weaknesses to maintain cooperative relationship with competitor universities	M4							
Relationships with competitor universities are very important to my university	M5							
University is reviewing relationships in regular meetings to evaluate cooperation with competitors universities	M6							

14. Please rate the following statements regarding the **strategic leadership** of collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
I can establish a clear vision, and objectives to sustain cooperative relationships with competitor universities.	SL1							
I can create strategy to manage successful collaborative relationships with competitor universities.	SL2							

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
I can solve conflict arising from collaborative relationships with competitor universities.	SL3							
I can obtain and allocate new resources to support collaborative relationships with competitor universities.	SL4							
I engage with stakeholders regularly for their feedback to enhance collaborative relationships with competitor universities.	SL5							
I can create a teamwork's in university to support cooperation relationships with competitor's universities.	SL6							

15. Please rate the following statements regarding the **flexibility to change** in collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
Flexibility in response to requests for changes is a characteristic of the university's relationships with competitor universities.	FCH1							
University has the managerial capabilities to adopt collaborative relationships with competitor universities	FCH2							
University accepts new values to achieve a cultural fit with competitor universities.	FCH3							
University re-allocates resources effectively to support collaborative relationships with competitor universities.	FCH4							
University strategy reflects a high level of flexibility in managing risks (i.e. political, economic, and financial) to maintain collaborative relationships with competitor universities.	FCH5							

16. Please rate the following statements regarding the **management perception** of collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
University leaders believe in cooperative relationships with competitor universities.	MP1							
University leaders have good experience about managing successful collaboration with competitor universities.	MP2							
University leaders have cooperative mindset to establish successful cooperative relationships with competitor universities.	MP3							
University leaders have a good perception about change in the educational sector in regards to competition and cooperation regulations.	MP4							
University leaders are aware of the anticipated benefits from collaboration with competitor universities.	MP5							
University leaders have a clear understanding in managing collaboration relationships with competitors universities	MP6							

17. Please rate the following statements regarding the **top management support** for collaborative relationships with competitor universities.

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Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
Top management is willing to take risks (i.e. financial and organizational) involved in adopting cooperative relationships with competitor universities	TMS1							
Top management provides resources to support collaboration relationships with competitor universities.	TMS2							
Top management is enthusiastic to keep supporting collaborative relationships with competitor universities.	TMS3							
Top management provides clear objectives to support collaborative relationships with competitor universities.	TMS4							
Top management is willing to make more efforts to build successful collaborative relationships with competitor universities.	TMS5							
Top management supports common projects with competitor's universities at appropriate times and ways.	TMS6							

❖ **Management relationship factors** (trust development, mutual benefits, sharing resources and capabilities, organizational learning, management communication).

18. Please rate the following statements regarding the **trust development** in collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
University encourages academics and staff to develop an interpersonal relationship with competitor universities.	TD1							
University adopts common goals to enhance the relationships with competitor universities.	TD2							
University relies on transparency and clarity to develop collaborative relationships with competitor universities.	TD3							
University has a strong interdependence and harmony to sustain trust with competitor universities.	TD4							
Honesty, and willingness are essential to developing collaborative relationships with competitor universities.	TD5							
University has a good intention and mutual confidence with competitors to develop cooperation relationships.	TD6							
University has common responsibilities and mutual respects with competitors to develop cooperation relationships.	TD7							

19. Please rate the following statements regarding the **mutual benefit** of collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
Success relationships with competitors occur when cooperative universities provide actual and equal contributions.	MB1							
University is willing to share resources to get into collaborative relationships with competitor universities.	MB2							

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
University is ready to avoid opportunistic behaviour to get into collaborative relationships with competitor universities.	MB3							
Success relationships with competitors occur when expected benefits come to all cooperative universities.	MB4							
University has mutually dependent relationships with competitor's universities to increase mutual benefits.	MB5							

20. Please rate the following statements regarding **sharing resources and capabilities** in collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
University looks for complementary resources and capabilities to enhance cooperative relationships with competitor universities.	SRC1							
Compatible resources and capabilities enable the university to collaborate successfully with competitor universities.	SRC2							
Sharing resources and capabilities with competitor universities enables the university to increase competitiveness.	SRC3							
Sharing experience, technology, and skills with competitor universities enables the university to reconfigure resources and capabilities.	SRC4							
University is willing to establish collaborative relationships with competitor universities to share knowledge and academic information.	SRC5							
Cooperation with competitors enables university to get new resources and capability in cheap way	SRC6							

21. Please rate the following statements regarding the **organizational learning** in collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
University is willing to learn via collaborating with competitor universities.	OL1							
University agrees that the ability to learn is the key to a successful collaboration with competitor universities.	OL2							
University believes that willingness to learn from competitor universities is an investment to improve performance.	OL3							
University encourages academics and staff to learn from collaborative relationships with competitor universities.	OL4							
University believes that working with competitor universities increases the chance of learning.	OL5							
University establishes a culture of learning to support collaboration relationships with competitor's universities.	OL6							

22. Please rate the following statements regarding **communication management** in collaborative relationships with competitors.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7

	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
University has effective information support system to coordinate information with competitor universities.	CM1							
University has an appropriate monitoring system to solve problems with competitor universities.	CM2							
University is willing to share internal and external information with competitor universities.	CM3							
University frequently keeps informed of new developments within competitor universities.	CM4							
University uses information technology to exchange information with competitor universities.	CM5							

❖ **Environmental Supporting Factors** (These factors include institutionalisation, ministerial laws, and geographic proximity)

23. Please rate the following statements regarding the **institutionalisation** of collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
University has a mechanism to deal with the diversity of partners within a standardised structure.	INS1							
The results of cooperation with competitor universities are published into society.	INS2							
University adopts the process of ensuring that routinised actions occur in cooperative activities with partners.	INS3							
University relies on institutional norms to achieve successful cooperative relationships with competitor universities.	INS4							
University's board of directors has the authority to monitor cooperative activities with competitor universities.	INS5							

24. Please rate the following statements regarding the **Ministry of Higher Education laws** about collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
The Ministry of Higher Education in Jordan obligates universities to apply the instructions and rules in the higher education.	MHE1							
The Ministry of Higher Education in Jordan has a full authority to control private universities in Jordan.	MHE2							
The Ministry of Higher Education has established standards to facilitate the evaluation of universities' performances.	MHE3							
The role of the Ministry of Higher Education is explained by outlining the regulations which are related to private universities.	MHE4							
The Ministry of Higher Education is in charge of approving budgeting plans in terms of their programs, performance and admission policies.	MHE5							
Ministry of higher education has a regular meeting with private Jordanian universities to discuss the new instructions.	MHE6							

25. Please rate the following statements regarding the **geographic proximity** of competitor universities with collaboration relationships.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
The universities which are located in nearby geographical areas cooperate in providing infrastructure (e.g. transportation, health insurance, and adequate housing services) for students and staff at the universities.	GP1							
Cooperative relationships among nearby universities reduce the cost of services.	GP2							
Geographic proximity among universities makes communication among them direct.	GP3							
University's interactions with nearby universities are expected to be far into the future.	GP4							
Maintaining a long-term relationship with nearby universities is important to my university.	GP5							
Geographic proximity enables university to increase social activities with nearby competitors.	GP6							

❖ **Strategy's success**
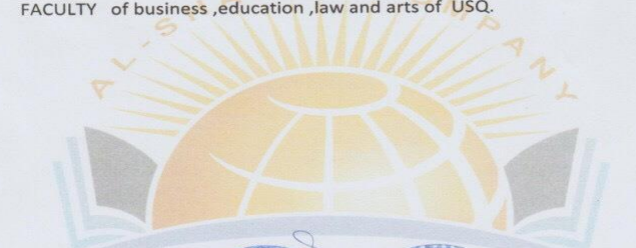
26. Please rate the following statements regarding the cooperation and competition strategy's success in collaborative relationships with competitor universities.

Items	Code	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
		1	2	3	4	5	6	7
Working with competitors enables the university to provide educational needs to students.	US1							
Collaboration with competitor universities provides supporting factors to improve education services' quality.	US2							
Collaborative relationships with competitors help the university to enhance its productivity and effectiveness.	US3							
Collaborative relationships with competitors help the university to save costs and increase profits.	US4							
Working with competitors enables the university to grow in size (i.e., open new programs, colleges, and increase the number of students).	US5							
Collaboration with competitors enables the university to maintain a good image and reputation in the Jordanian education sector.	US6							
The university has a social responsibility.	US7							
The university successfully retains a prestigious place in various university ranking systems.	US8							
Working with competitors enables the university to obtain quality assurance from the accreditation body in Jordan.	US9							
The university response to change effectively to survive and continue in Jordanian educational sector.	US10							

27. **Any other Comments**

Thank you for valuable time and information

9.14 Appendix B12: Professional translation certificate

NO .   Date :   /   / 2012

TO WHOM IT MAY CONCERN

SUBJECT / CERTIFICATE

This is to certify that this English written text is almost identical to the original Arabic and I translated it very honestly without changes in the spirit of this text , therefore I signed it .

I heard the interview but it covered the meaning of the original Arabic interview of the doctorate student(ZEYAD ABD ULAZEEZ AL NAJAIFI) with one of the doctors of management and enterprise school BELA FACULTY of business ,education ,law and arts of USQ.

20/7/2017

Kamal Hassan omar

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9.15 Appendix B13: Survey questionnaire Arabic version

أعزائي المشاركين ،

أنت مدعو للمشاركة في دراسة بحثية تهدف إلى استكشاف العوامل التي تمكن استراتيجية التعاون التنافسي من النجاح في الجامعات الأردنية الخاصة. سوف تستخدم هذه العوامل لتطوير نموذج لعوامل نجاح استراتيجية التعاون التنافسي و استدامتها بين ا الجامعات الخاصة في الأردن. من المتوقع أن يستغرق املاء الاستبانة 10-15 دقيقة.

ستظل جميع المعلومات المقدمة سرية ولن يتم نشرها لانها ستكون مجرد ارقام ورموز. بمعنى آخر ، لن يتم الإفصاح عن أي معلومات فردية لأي طرف ثالث. آراؤك حاسمة لنجاح هذه الدراسة البحثية نشكرك على الوقت الذي منحته لنا في املاء هذه الاستبيانة.

تفضلوا بقبول فائق الاحترام والتقدير.

طالب الدكتوراه : زياد النجيفي

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<u>اولا: المعلومات العامة</u>

- الرجاء وضع علامة (✓) امام وضعك الحالي بالجامعة

1. المنصب الحالي

	نائب رئيس الجامعة		رئيس الجامعة		عضو مجلس		نائب رئيس المجلس		رئيس المجلس
	اخرى		مدير		رئيس قسم		معاون عميد		عميد

2. شهادتك العلمية

	اخرى		دبلوم		بكالوريوس		ماجستير		دكتوراه

3. درجتك العلمية

	اخرى		مدرس		استاذ مساعد		استاذ مشارك		استاذ

4. تخصصك العلمي

	القانون		الاداب واللغات		العلوم		الهندسة		ادارة الاعمال
									اخرى

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5. عدد سنوات خبرتك في الجامعات

	31 فما فوق		30-21		20-11		10-1

6. عدد سنوات الخدمة في منصبك الحالي

	31 فما فوق		30-21		20-11		10-1

ثانيا. العلاقة مع الجامعات الاخرى

7. علاقة جامعتك مع الجامعات الاردنية الخاصة الاخرى

	غير ذلك		تعاون وتنافس		تنافس		تعاون

8. الرجاء تقييم مستوى التعاون بين جامعتك و الجامعات الاردنية الخاصة

عالي جدا (7)	عالي (6)	عالي قليلا (5)	متوسط (4)	واطئ قليلا (3)	واطئ (2)	واطئ جدا (1)	جوانب التعاون
							الأنشطة الأكاديمية (مثل، التعاون في التدريس ، البحوث ، الإشراف)
							تشارك الاهتمامات (مثل ،المعرفة ، الخبرات ، المنشورات ، الدورات)
							تنتفيذ قرارات وزارة التعليم العالي (أي القوانين والتشريعات والتعليمات والتنظيم)
							الخدمات الجامعية (أي التأمين الصحي ، الأنشطة الاجتماعية والرياضية ، الخدمات المجتمعية)

9. الرجاء تقييم مستوى التنافس بين جامعتك و الجامعات الاردنية الخاصة

عالي جدا (7)	عالي (6)	عالي قليلا (5)	متوسط (4)	واطئ قليلا (3)	واطئ (2)	واطئ جدا (1)	جوانب التنافس
							السمعة (مثل ضمان الجودة ، وترتيب الجامعة ، وصورة الجامعة ، والعلامة التجارية)
							الطلاب (مثل ، فتح برامج اواقسام ا وكليات جديدة ، جودة الخدمات ، الرسوم)
							إيرادات أعلى (أي الربح ، والقيمة السوقية ، ورضا أصحاب المصلحة)

● **أنواع استراتيجية التعاون التنافسي**

10. استنادا لخبرتك ومعرفتك ، أي الأنواع التالية تصف علاقة جامعتك مع الجامعات الاردنية الخاصة الاخرى في الأردن، يرجى اختيار نوع واحدة فقط

	التفاصيل	انواع التعاون التنافسي
	لا تتفاعل الجامعة بشكل كبير مع الجامعات الاخرى ، تحافظ على درجة منخفضة من التنافس ودرجة منخفضة من التعاون مع المنافسين	النوع الاول
	تتنافس الجامعة مع الجامعات الاخرى للحصول على مركز سوقي افضل ، وموقف تنافسي اقوى ، وحصة سوقية اكبر ، وتحافظ على درجة عالية من المنافسة ودرجة منخفضة من التعاون مع المنافسين	النوع الثاني
	تحافظ الجامعة على درجة عالية من التعاون ودرجة منخفضة من التنافس مع الجامعات الأخرى فهي تبحث عن تشارك الموارد والقدرات التكميلية مع الجامعات المناظرة لها او المتفوقة عليها	النوع الثالث
	تعتمد الجامعات على بعضها البعض لتحقيق أهدافها ، والحفاظ على درجة عالية من التعاون بالإضافة إلى درجة عالية من المنافسة	النوع الرابع

ثالثا ـ نموذج البحث

تضمن نموذج البحث عوامل لقياس عقلية الإدارة ،وإدارة العلاقات وعوامل الدعم البيئي كمتغير مستقل بالإضافة إلى قياس نجاح الجامعة في تبني استراتيجية تعاون تنافسي ناجحة مع المنافسين.

- **عوامل عقلية الادارة: التزام الجامعة ، القيادة الإستراتيجية ، المرونة في التغيير ، إدراك الإدارة ، دعم الإدارة العليا**

11. **يرجى تقييم العبارات التالية فيما يتعلق بالتزام الجامعة بعلاقات التعاون مع المنافسين**

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							تلتزم الجامعة بدعم علاقات تعاون ناجحة مع الجامعات المنافسة
							الجامعة لديها التزام طويل الأمد مع الجامعات المنافسة
							لدى الجامعة اتفاق رسمي أو غير رسمي (على الأقل مذكرة تفاهم) مع الجامعات المنافسة
							تحتاج الجامعة إلى تبني نقاط القوة والضعف المتبادلة مع الجامعات المنافسة للحفاظ على شراكاتها
							العلاقات مع الجامعات المنافسة مهمة جدا لجامعتي

12. **يرجى تقييم العبارات التالية فيما يتعلق بالقيادة الاستراتيجية لعلاقات التعاون مع المنافسين**

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							يمكنني إنشاء رؤية وأهداف واضحة للحفاظ على العلاقات التعاونية مع الجامعات المنافسة
							يمكنني إنشاء استراتيجية لإدارة العلاقات التعاونية الناجحة مع الجامعات المنافسة
							يمكنني حل النزاعات الناتجة عن العلاقات التعاونية مع الجامعات المنافسة
							يمكنني الحصول على موارد جديدة للجامعة واعادة تخصيصها لدعم علاقات التعاون مع الجامعات المنافسة
							أشارك أصحاب المصلحة بانتظام للحصول على أفكارهم وتعليقاتهم لتعزيز علاقات التعاون مع المنافسين

13. **يرجى تقييم العبارات التالية فيما يتعلق بالمرونة في التغيير لتعزيز علاقات التعاون مع المنافسين.**

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							المرونة في الاستجابة للتغيير هي سمة من سمات علاقة الجامعة مع المنافسين
							تتمتع الجامعة بقدرات إدارية وهيكل تنظيمي مرن يعزز علاقات التعاون مع الجامعات المنافسة
							تتقبل الجامعة قيم وثقافة تنظيمية جديدة لتطوير علاقات التعاون مع الجامعات المنافسة
							تعيد الجامعة تخصيص الموارد والقدرات بفاعلية لدعم علاقات التعاون مع الجامعات المنافسة
							تعكس إستراتيجية الجامعة درجة عالية من المرونة في إدارة المخاطر (السياسية والاقتصادية والمالية) للحفاظ على علاقات التعاون مع الجامعات المنافسة

14. **يرجى تقييم العبارات التالية فيما يتعلق بادراك الادارة العليا لعلاقات التعاون مع المنافسين**

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							يؤمن قادة الجامعة بعلاقات التعاون مع الجامعات المنافسة
							يتمتع قادة الجامعات بخبرة ومعرفة جيدة حول إدارة التعاون الناجح مع الجامعات المنافسة
							لدى قادة الجامعة عقلية مفتوحة وتعاونية لإقامة علاقات ناجحة مع المنافسين
							يدرك قادة الجامعات الفوائد المتوقعة من التعاون مع الجامعات المنافسة
							لدى قادة الجامعات تصور جيد حول التغيير في قطاع التعليم وقواعد المنافسة والتعاون.

15. يرجى تقييم العبارات التالية فيما يتعلق بدعم الإدارة العليا لعلاقات التعاون مع المنافسين

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							الإدارة العليا على استعداد لتحمل المخاطر (المالية والتنظيمية) لدعم علاقات التعاون مع المنافسين
							تقدم الإدارة العليا الموارد اللازمة لدعم التعاون مع المنافسين
							تحرص الإدارة العليا على مواصلة دعم علاقات التعاون مع الجامعات المنافسة
							تقدم الجامعة أهدافًا واضحة وهيكلًا مناسبًا لدعم علاقات التعاون مع الجامعات المنافسة
							ترغب الجامعة في توفير المزيد من الجهود والاستثمارات لبناء علاقات تعاون ناجحة مع المنافسين

● **ادارة العلاقات (تطوير الثقة ، المنافع المتبادلة ، تقاسم الموارد والقدرات ، التعلم التنظيمي ، وادارة الاتصالات)**

16. يرجى تقييم العبارات التالية فيما يتعلق بتطوير الثقة مع المنافسين

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							تشجع الجامعة الموظفين الأكاديميين والإداريين على تطوير علاقة شخصية مع الجامعات المنافسة
							تتبنى الجامعة أهدافًا مشتركة مع الشركاء لتعزيز العلاقات مع المنافسين
							تقبل الجامعة تبادل القيم والثقافته التنظيمية مع المنافسين لتطوير علاقاتها بهم
							تعتمد الجامعة على الشفافية والانفتاح والوضوح مع الشركاء لتطوير التعاون مع المنافسين
							تتمتع الجامعة بترابط قوي وانسجام مع الشركاء لتطوير الثقة مع المنافسين

17. يرجى تقييم العبارات التالية فيما يتعلق بتبادل المنافع والمصالح مع المنافسين

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							يقدم الشركاء مساهمات حقيقية ومتساوية لنجاح علاقات التعاون مع المنافسين
							ترغب الجامعة في تبادل المنافع والموارد مع الشركاء لتعزيز علاقات التعاون مع المنافسين
							تدخل الجامعة في علاقات تعاون مع منافسيها لتعزيز مركزها التنافسي
							لدى الجامعة أهدافا مشتركة مع منافسيها تمكنهم من تبادل المنافع والمصالح المشتركة
							تعتمد الجامعة على الاعتماد المتبادل والعلاقات مع المنافسين لزيادة المصالح والمنافع المتبادلة بينهم

18. يرجى تقييم االعبارات التالية بشأن مشاركة الموارد والقدرات مع المنافسين.

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							تبحث الجامعة عن موارد وقدرات تكميلية لتعزيز علاقات التعاون مع المنافسين
							يمكن التوافق في الموارد والقدرات بين الجامعة ومنافسيها من التعاون بنجاح
							تقاسم الموارد والقدرات مع المنافسين يمكن الجامعة من تطوير قدراتها ومزاياها التنافسية
							تشارك الخبرات والتكنولوجيا والمهارات مع المنافسين تمكن الجامعة من إعادة تجديد مواردها وقدراتها
							ترغب الجامعة في إقامة علاقات تعاون مع منافسيها لتبادل المعرفة والمعلومات الأكاديمية

19. يرجى تقييم العبارات التالية فيما يتعلق بالتعلم التنظيمي لتعزيز علاقات التعاون مع المنافسين.

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							ترغب الجامعة في التعلم من خلال التعاون مع الجامعات المنافسة
							تؤمن الجامعة بان القدرة على التعلم مفتاح التعاون الناجح مع الجامعات المنافسة
							تعتقد الجامعة أن رغبة موظفيها في التعلم من المنافسين استثمار وليست كلفة لتحسين أداء التعاون
							تشجع الجامعة الموظفين على المساهمة في علاقات التعاون والتعلم من المنافسين
							تعتقد الجامعة أن العمل المشترك مع الجامعات المنافسة يزيد من فرص التعلم

20. يرجى تقييم العبارات التالية فيما يتعلق بادارة الاتصالات لدعم علاقات التعاون مع المنافسين.

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							تمتلك الجامعة نظام فعال لدعم تبادل وتنسيق المعلومات مع المنافسين
							تمتلك الجامعة نظام مراقبة لتحديد مشكلات التعاون مع المنافسين وحلها في الوقت والمكان المناسبين
							الجامعة على استعداد لتبادل المعلومات الداخلية والخارجي معومنافسيها
							تنوي الجامعة دائمًا الإطلاع على التطور الحاصل لمنافسيها
							تعتزم الجامعة الاعتماد على تكنلوجيا المعلومات لتبادل المعلومات مع المنافسين

- **عوامل الدعم البيئي وتشمل (المؤسساتية ، القوانين الحكومية ، القرب الجغرافي)**

21. يرجى تقييم العبارات التالية فيما يتعلق بالمؤسساتية في ادارة علاقات التعاون مع المنافسين.

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							لدى الجامعة آلية لإدارة ومراقبة كيفية التعامل مع تنوع الشركاء وهياكلهم التنظيمية
							تعتمد الجامعة نشرنتائج علاقات التعاون مع المنافسين للمجتمع
							تتبنى الجامعة ضمان حدوث الاجراءات الروتينية في أنشطة التعاون مع المنافسين
							تعتمد الجامعة على المعايير والقيم المؤسسية لتحقيق علاقة تعاون ناجحة مع المنافسين
							يتمتع مجلس إدارة الجامعة بسلطة مراقبة أنشطة التعاون مع الجامعات المنافسة

22. يرجى تقييم البيانات التالية فيما يتعلق بالقوانين والتشريعات الحكومية بخصوص علاقات التعاون مع المنافسين

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							تشجع وزارة التعليم العالي الأردنية الجامعات على تبادل المعرفة كمعيار لضمان الجودة في التعليم
							تتمتع وزارة التعليم العالي الأردنية بسلطة كاملة لمراقبة الجامعات الخاصة
							تمتلك وزارة التعليم العالي الاردنية معايير خاصة لتسهيل مراقبة وتقييم أداء الجامعات
							تقوم وزارة التعليم العالي الاردنية بتحديد الخطوط العامة للجامعات الخاصة عن طريق شرح اللوائح والتعليمات
							تتولى وزارة التعليم العالي مسؤولية الموافقة على الموازنة وخطط تطويرها في ضوء برامجها وأدائها التعليمي وسياسات القبول

23. يرجى تقييم العبارات التالية فيما يتعلق بالتقارب الجغرافي ودورها في تعزيز علاقات التعاون مع المنافسين.

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							تتعاون جامعتنا مع الجامعات المجاورة في توفير البنية التحتية (مثل خدمات النقل والتأمين الصحي والسكن الملائم) للطلاب والموظفين فيها
							تقلل علاقات التعاون بين الجامعات القريبة تكلفة الخدمات المقدمة للشركاء
							القرب الجغرافي بين الجامعات المتنافسة يجعل التواصل بينهم مباشر وفعال
							علاقة جامعتنا مع الجامعات القريبة مقبولة الان ومن المتوقع أن تكون اقوى في المستقبل
							المحافظة على علاقة طويلة الأمد مع الجامعات القريبة أمر مهم بالنسبة لجامعتنا

- **نجاح الجامعة**

24. يرجى تقييم العبارات التالية فيما يتعلق بنجاح علاقات التعاون مع المنافسين

اوافق بشدة (7)	اوافق (6)	اوافق قليلا (5)	متوسط (4)	لا اوافق قليلا (3)	لا اوافق (2)	لا اوافق بشدة (1)	العناصر
							الجامعة لديها قناعة تامة بالمتطلبات التعليمية المتميزة التي توفرها للطلبة نتيجة لتعاونها مع المنافسين
							التعاون مع المنافسين يمكن الجامعة من تحسين نوعية خدماتها وفقًا لمعايير وزارة التعليم العالي وهيئة الاعتماد الاردنية
							تساعد علاقات التعاون مع المنافسين الجامعة على تعزيز إنتاجيتها وفاعليتها
							تساعد علاقات التعاون مع المنافسين الجامعة على توفير التكلفة وزيادة الأرباح
							يمكن العمل مع المنافسين الجامعة من النمو في الحجم (أي ، فتح برامج جديدة ، اقسام او كليات جديدة ، زيادة أعداد الطلاب)
							يتيح التعاون مع المنافسين للجامعة الحفاظ على صورة جيدة وسمعة مميزة في القطاع التعليمي الاردني
							تهتم الجامعة بالايفاء بمسؤولياتها الاجتماعية والبيئية
							تحتفظ الجامعة بمكانة متميزة في نظام تصنيف الجامعات الاردنية
							يتيح العمل مع المنافسين للجامعة الحصول على ضمان الجودة من وزارة التعليم العالي وهيئة الاعتماد

أية تعليقات أخرى

نشكر تعاونكم معنا

9.16 Appendix B14: Final Draft Survey

Dear Participants,

You are invited to participate in a research study which aims to explore factors that enable coopetition strategy to succeed in private Jordanian universities.These factors will be used to inform the development of a coopetition success factors model which enables the sustainable success of coopetition strategy among private Jordanian universities. Formal ethics approval has beeen acquired from USQ Human Research Ethics Committee (Approval H17REA052) as well as the Ministry of Higher education in Jordan (Approval 5/3/2848).

Completion of the survey is expected to take 10-15 minutes.

All information provided will remain confidential and only aggregate data will be published. In other words, no individual information will be released to any third party.

Thank you for taking the time complete the questionnaire. Your views are critical to the success of this research study.

Yours sincerely,

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A. Your Background:

1. Please tick the item that best describes your role (position) at the university.

	Chairman of Trustees Board
	Deputy Chairman
	President
	Vice President
	Dean
	Deputy Dean
	Trustees Board's Member

	University Board Member
	Manager
	Head of the department
	Dean Council Member
	College Council Member
	Other (please specify)

2.　　　　Please tick the item that best describes your highest qualification.

	PhD
	Master
	Bachelor
	Diploma
	Other (please specify)

3. Please tick the item that best describes your title.

	Professor
	Associate Professor
	Assistant Professor
	Lecturer
	Other (please specify)

4.　　Please tick the item that best describes your specialty.

	Business
	Engineering
	Science
	Education
	Law
	Linguistic
	Pharmacy
	Media
	Nursing
	Other (please specify)

5.　　Number of years in related to your experience in universities.

	1-10
	11-20
	21-30
	+31

6.　　Number of years in this position.

	1-5
	6-10
	10-15
	+16

B. Current Status in your University

1. Please, tick the real relationship between your university and other private Jordanian universities.

	Cooperation

☐ Competition
☐ Both
☐ Other (please specify)

❖ **Cooperation and Competition Aspects and Levels**

2. Please rate the following cooperation areas in your relationships with private Jordanian universities.

Cooperation Aspects	Strongly disagree	Disagree	Slightly disagree	Moderate	Slightly agree	Agree	Strongly agree
	1	2	3	4	5	6	7
Academic activities (i.e. collaborative teaching, research, supervision).							
Sharing interests (i.e. knowledge, experience, publications, and course materials).							
Applying government policy (i.e. laws & legislation, instructions, regulations).							
University services (i.e. health insurance, social and athletic activities, community services).							

3. Please rate the following competition areas in your relationships with private Jordanian universities.

Competition Aspects	Strongly disagree	Disagree	Slightly disagree	Moderate	Slightly agree	Agree	Strongly agree
	1	2	3	4	5	6	7
Reputation (i.e. quality assurance, university ranking, university image, and brand)							
Students (i.e. opening new programs and colleges, quality services, fees)							
Higher revenue (i.e. profit, market value, stakeholders' satisfaction)							

4. Please rate the level of these cooperation areas in your relationships with private Jordanian universities.

Cooperation Aspects	Very Low	Low	Slightly Low	Moderate	Slightly High	High	Very high
	1	2	3	4	5	6	7
Academic activities (i.e. collaborative teaching, research, supervision).							
Sharing interests (i.e. knowledge, experience, publications, and course materials).							
Applying government policy (i.e. laws & legislation, instructions, regulations).							
University services (i.e. health insurance, social and athletic activities, community services).							

5. Please rate the level of these competition areas in your relationships with private Jordanian universities.

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Competition Aspects	Very Low	Low	Slightly Low	Moderate	Slightly High	High	Very high
	1	2	3	4	5	6	7
Reputation (i.e. quality assurance, university ranking, university image, and brand)							
Students (i.e. opening new programs and colleges, quality services, fees)							
Higher revenue (i.e. profit, market value, stakeholders' satisfaction)							

❖ **Types of Coopetition Strategy (cooperation and competition strategy)**

6. According to your experience and knowledge, which of the following type's best describes your university's relationships with competitor universities in Jordan.

Coopetition types	Description	
Type 1	University does not interact significantly with competitors, maintaining a low degree of competition and a low degree of cooperation with competitors.	
Type 2	University competes with competitors for market power, competitive position, and market share, maintaining a high degree of competition and a low degree of cooperation.	
Type 3	University maintains a high degree of cooperation and a low degree of competition with other universities in search of joint synergies created by complementary resources and capabilities.	
Type 4	Universities are mutually dependent on one another to achieve their respective goals, maintaining a high degree of cooperation as well as a high degree of competition.	

C. Research Model

> Research conceptual model includes constructs and items to measure management mindset, management relationships and supporting factors as independent variables as well as measuring university success using indicators of a successful cooperation strategy with competitor universities.

❖ **Management Mindset Factors** (These factors are: university commitment, strategic leadership, flexibility to change, management perception and top management support)

7. Please rate the following statements regarding your **university's commitment** to collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
University must be committed to support cooperative relationships with competitor universities							
University has a long-term commitment to competitor universities							
University has a formal or informal agreement (at least a memorandum of understanding) with competitor universities							
University accepts mutual strengths and weaknesses to maintain cooperative relationship with competitor universities							

Relationships with competitor universities are very important to my university							

8. Please rate the following statements regarding the **strategic leadership** of collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
I can establish a clear vision, and objectives to sustain cooperative relationships with competitor universities.							
I can create strategy to manage successful collaborative relationships with competitor universities.							
I can solve conflict arising from collaborative relationships with competitor universities.							
I can obtain and allocate new resources to support collaborative relationships with competitor universities.							
I engage with stakeholders regularly for their feedback to enhance collaborative relationships with competitor universities.							

9. Please rate the following statements regarding the **flexibility to change** in collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
Flexibility in response to requests for changes is a characteristic of the university's relationships with competitor universities.							
University has the managerial capabilities to adopt collaborative relationships with competitor universities							
University accepts new values to achieve a cultural fit with competitor universities.							
University re-allocates resources effectively to support collaborative relationships with competitor universities.							
University strategy reflects a high level of flexibility in managing risks (i.e. political, economic, and financial) to maintain collaborative relationships with competitor universities.							

10. Please rate the following statements regarding the **management perception** of collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
University leaders believe in cooperative relationships with competitor universities.							
University leaders have good experience about managing successful collaboration with competitor universities.							
University leaders have cooperative mindset to establish successful cooperative relationships with competitor universities.							

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
University leaders have a good perception about change in the educational sector in regards to competition and cooperation regulations.							
University leaders are aware of the anticipated benefits from collaboration with competitor universities.							

11. Please rate the following statements regarding the **top management support** for collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
Top management is willing to take risks (i.e. financial and organizational) involved in adopting cooperative relationships with competitor universities							
Top management provides resources to support collaboration relationships with competitor universities.							
Top management is enthusiastic to keep supporting collaborative relationships with competitor universities.							
Top management provides clear objectives to support collaborative relationships with competitor universities.							
Top management is willing to make more efforts to build successful collaborative relationships with competitor universities.							

❖ **Management relationship factors** (trust development, mutual benefits, sharing resources and capabilities, organizational learning, management communication).

12. Please rate the following statements regarding the **trust development** in collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
University encourages academics and staff to develop an interpersonal relationship with competitor universities.							
University adopts common goals to enhance the relationships with competitor universities.							
University relies on transparency and clarity to develop collaborative relationships with competitor universities.							
University has a strong interdependence and harmony to sustain trust with competitor universities.							
Honesty, and willingness are essential to developing collaborative relationships with competitor universities.							

13. Please rate the following statements regarding the **mutual benefits** of collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
Success relationships with competitors occur when cooperative universities provide actual and equal contributions.							

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
University is willing to share resources to get into collaborative relationships with competitor universities.							
University is ready to avoid opportunistic behaviour to get into collaborative relationships with competitor universities.							
Success relationships with competitors occur when expected benefits come to all cooperative universities.							
University has mutually dependent relationships with competitor's universities to increase mutual benefits.							

14. Please rate the following statements regarding **sharing resources and capabilities** in collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
University looks for complementary resources and capabilities to enhance cooperative relationships with competitor universities.							
Compatible resources and capabilities enable the university to collaborate successfully with competitor universities.							
Sharing resources and capabilities with competitor universities enables the university to increase competitiveness.							
Sharing experience, technology, and skills with competitor universities enables the university to reconfigure resources and capabilities.							
University is willing to establish collaborative relationships with competitor universities to share knowledge and academic information.							

15. Please rate the following statements regarding the **organizational learning** in collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
University is willing to learn via collaborating with competitor universities.							
University agrees that the ability to learn is the key to a successful collaboration with competitor universities.							
University believes that willingness to learn from competitor universities is an investment to improve performance.							
University encourages academics and staff to learn from collaborative relationships with competitor universities.							
University believes that working with competitor universities increases the chance of learning.							

16. Please rate the following statements regarding **communication management** in collaborative relationships with competitors.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
University has effective information support system to coordinate information with competitor universities.							

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
University has an appropriate monitoring system to solve problems with competitor universities.							
University is willing to share internal and external information with competitor universities.							
University frequently keeps informed of new developments within competitor universities.							
University uses information technology to exchange information with competitor universities.							

❖ **Environmental Supporting Factors** (These factors include institutionalisation, ministerial laws, and geographic proximity)

17. Please rate the following statements regarding the **institutionalisation** of collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
University has a mechanism to deal with the diversity of partners within a standardized structure.							
The results of cooperation with competitor universities are published into society.							
University adopts the process of ensuring that routinized actions occur in cooperative activities with partners.							
University relies on institutional norms to achieve successful cooperative relationships with competitor universities.							
University's board of directors has the authority to monitor cooperative activities with competitor universities.							

18. Please rate the following statements regarding the **Ministry of Higher Education laws** about collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
The Ministry of Higher Education in Jordan obligates universities to apply the instructions and rules in the higher education.							
The Ministry of Higher Education in Jordan has a full authority to control private universities in Jordan.							
The Ministry of Higher Education has established standards to facilitate the evaluation of universities' performances.							
The role of the Ministry of Higher Education is explained by outlining the regulations which are related to private universities.							
The Ministry of Higher Education is in charge of approving budgeting plans in terms of their programs, performance and admission policies.							

19. Please rate the following statements regarding the **geographic proximity** of competitor universities with collaboration relationships.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

	1	2	3	4	5	6	7
The universities which are located in nearby geographical areas cooperate in providing infrastructure (e.g. transportation, health insurance, and adequate housing services) for students and staff at the universities.							
Cooperative relationships among nearby universities reduce the cost of services.							
Geographic proximity among universities makes communication among them direct.							
University's interactions with nearby universities are expected to be far into the future.							
Maintaining a long-term relationship with nearby universities is important to my university.							

❖ **Strategy's success**

20. Please rate the following statements regarding the cooperation and competition strategy's success in collaborative relationships with competitor universities.

Items	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
Working with competitors enables the university to provide educational needs to students.							
Collaboration with competitor universities provides supporting factors to improve education services' quality.							
Collaborative relationships with competitors help the university to enhance its productivity and effectiveness.							
Collaborative relationships with competitors help the university to save costs and increase profits.							
Working with competitors enables the university to grow in size (i.e., open new programs, colleges, and increase the number of students).							
Collaboration with competitors enables the university to maintain a good image and reputation in the Jordanian education sector.							
The university has a social responsibility.							
The university successfully retains a prestigious place in various university ranking systems.							
Working with competitors enables the university to obtain quality assurance from the accreditation body in Jordan.							
The university response to change effectively to survive and continue in Jordanian educational sector.							

21. Any other Comments

Thank you for valuable time and information

<table>
<tr><td></td><td>U n i v e r s i t y   o f   S o u t h e r n
Q u e e n s l a n d</td></tr>
<tr><td></td><td>**Participant Information for USQ Research
Project
Questionnaire**</td></tr>
</table>

Project Details

Title of Project:	***Exploring factors that enable coopetition strategy success in private universities in Jordan***
Human Research Ethics Approval Number:	H17REA052

Research Team Contact Details

Principal Investigator Details	**Supervisor Details**
Zeyad Abdulazeez Al-Najaifi Email: ZeyadAbdulazeez.Al-Najaifi@usq.edu.au Telephone:+6174631 1088 Mobile:+61401656838	**Associate Professor Dorothy Andrews** Email: Dorothy.Andrews@usq.edu.au Telephone: Mobile:

Description

This project is being undertaken as part of PhD Project.

The purpose of this project is to explore factors that enable coopetition strategy to succeed in Private Jordan Universities .These factors will be used to inform the development of coopetition success factors model which enables sustainability of the success in coopetition strategy among Private Jordan Universities.

The researcher requests your assistance to provide information which will assist in the exploration of factors that enable coopetition strategy success in private Jordan universities and to develop a model which enables the universities to sustain the success in coopetition strategy.

Participation

Your participation will involve completion of a questionnaire that will take approximately 15 -20 minutes of your time.

Your participation in this project is entirely voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. If you wish to withdraw from the project after you have submitted your responses, please contact the Research Team (contact details at the top of this form)

Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland. Also, the participation will not impact on relationship with Jordan University.

Expected Benefits

It is expected that this project will directly benefit you in two ways. Firstly, it will address a current gap in the body of the knowledge regarding how organizations can manage successful coopetition strategy. Secondly, it will make a contribution to coopetition strategy research by not only exploring coopetition success factors in the education sector, but also by adding and developing a new model of coopetition success factors and managing successful coopetition among Private Jordan Universities. Apart from the contribution to knowledge in this area, make a number of contributions to practice. Firstly, it will help universities better understand coopetition success factors that can be used to improve the efficiency and performance such as cost reductions, sharing knowledge, access to new resources and capabilities. Secondly, it may help universities in Higher

Educational sector in Jordan to understand and manage successful coopetition strategy. Finally, the study is useful for Vice Chancellors and top management levels of Private Jordan Universities who are responsible for the management of successful cooperation with competitors.

Risks

There are no anticipated risks beyond normal day-to-day living associated with your participation in this project.

Privacy and Confidentiality

All comments and responses will be treated confidentially.
The names of individual persons are not required in any of the responses.
The researcher will provide a summary of results by an email address to the participant if they request it.
The data may be used for future research purposes.
Any data collected as a part of this project will be stored securely as per University of Southern Queensland's Research Data Management policy.

Consent to Participate

The return of the completed questionnaire is accepted as an indication of your consent to participate in this project.

Questions or Further Information about the Project

Please refer to the Researcher's Contact Details at the top of the form if you have any questions or to request further information about this project.

Concerns or Complaints Regarding the Conduct of the Project

If you have any concerns or complaints about the ethical conduct of the project you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 2214 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this sheet for your information.

9.18 Appendix B16: Invitation Letter for questionnaire participants

	U n i v e r s i t y o f S o u t h e r n Q u e e n s l a n d
	Invitation Letter for questionnaire participants

Project Details

Project Title: Exploring Critical Factors That Enable Coopetition Strategy Success in Private Universities in Jordan

Principal Researcher: Mr Zeyad Al-Najaifi

PhD Business candidate
USQ, Australia
……………………………………………………………………………………………….

My name is Zeyad Al-Najaifi; I am a PhD candidate in School of Management and Enterprise, Faculty of Business, Education, Law and Arts, University of Southern Queensland (USQ), Australia. I would like to invite you to take part in my research project. This study aims to explore the idea of what factors enable coopetition strategy success in private universities in Jordan. Your participation will involve a completion of a questionnaire about coopetition success factors in private Jordan universities.

Questionnaire survey will be used in collecting data. The survey will be closed ended to enable participants to relate their experiences coopetition strategy success. The results will be used in the development of an effective coopetition strategy success model and program(s) to be implemented in the higher educational sector in Jordan to increase the chance of coopetition strategy success among Jordan private universities in Jordan.

Your participation will be voluntary and you have the right to withdraw from the study without penalty at any time. All participants will be informed that the survey will be for my PhD research project. The researcher will maintain participant confidentiality and to ensure security by confirming that the information is to be used for research purposes only.

If you have any concerns or complaints about the ethical conduct of the project you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 2214 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

9.19 Appendix B17: Consent Form for USQ questionnaire participants

<table>
<tr>
<td rowspan="2">UNIVERSITY OF SOUTHERN QUEENSLAND AUSTRALIA</td>
<td>**U n i v e r s i t y   o f   S o u t h e r n   Q u e e n s l a n d**</td>
</tr>
<tr>
<td>**Consent Form for USQ Research Project Questionnaire**</td>
</tr>
</table>

Project Details

Title of Project:	***Exploring factors that enable coopetition strategy success in private universities in Jordan***
Human Research Ethics Approval Number:	H17REA052

Research Team Contact Details

Principal Investigator Details	**Supervisor Details**
Zeyad Abdulazeez Al-Najaifi Email: ZeyadAbdulazeez.Al-Najaifi@usq.edu.au Telephone: +6174631 1088 Mobile:+61401656838	**Associate Professor Dorothy Andrews** Email: Dorothy.Andrews@usq.edu.au Telephone Mobile:

Statement of Consent

By signing below, you are indicating that you:

- Have read and understood the information document regarding this project.
- Have had any questions answered to your satisfaction.
- Understand that if you have any additional questions you can contact the research team.
- Understand that you are free to withdraw at any time, without comment or penalty.
- Understand that you can contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 2214 or email researchintegrity@usq.edu.au, if you have any concern or complaint about the ethical conduct of this project.
- Are over 18 years of age.
- Agree to participate in the project.

Participant Name	
Participant Signature	
Date	

☐ Please tick this box and provide your email address below if you wish to receive a summary of the research results.

9.20 Appendix B18 Table 5: Coding measuring variables

Latent variable	Items	Questions
Management Commitment (MC)	MC1	University must be committed to support cooperative relationships with competitor universities
	MC2	University has a long-term commitment to competitor universities
	MC3	University has a formal or informal agreement with competitor universities
	MC4	University accepts mutual strengths and weaknesses to maintain cooperative relationship with competitor universities
	MC5	Relationships with competitor universities are very important to my university
Strategic Leadership (SL)	SL1	I can establish a clear vision, and mission to sustain cooperative relationships with competitor universities.
	SL2	I can create strategy to manage successful collaborative relationships with competitor universities.
	SL3	I can solve conflict arising from collaborative relationships with competitor universities.
	SL4	I can obtain and allocate new resources to support collaborative relationships with competitor universities.
	SL5	I engage with stakeholders regularly for their feedback to enhance collaborative relationships with competitor universities.
Flexibility to Change (FCH)	FCH1	Flexibility in response to requests for changes is a characteristic of the university's relationships with competitor universities.
	FCH2	University has the managerial capabilities to adopt collaborative relationships with competitor universities
	FCH3	University accepts new values to achieve a cultural fit with competitor universities.
	FCH4	University re-allocates resources effectively to support collaborative relationships with competitor universities.
	FCH5	University strategy reflects a high level of flexibility in managing risks to maintain collaborative relationships with competitor universities.
Management Perception (MP)	MP1	University leaders believe in cooperative relationships with competitor universities.
	MP2	University leaders have good experience about managing successful collaboration with competitor universities.
	MP3	University leaders have cooperative mindset to establish successful cooperative relationships with competitor universities.
	MP4	University leaders have a good perception about change in the educational sector in regards to competition and cooperation regulations.
	MP5	University leaders are aware of the anticipated benefits from collaboration with competitor universities.
Top Management Support (TMS)	TMS1	Top management is willing to take risks involved in adopting cooperative relationships with competitor universities
	TMS2	Top management provides resources to support collaboration relationships with competitor universities.
	TMS3	Top management is enthusiastic to keep supporting collaborative relationships with competitor universities.
	TMS4	Top management provides clear objectives to support collaborative relationships with competitor universities.
	TMS5	Top management is willing to make more efforts to build successful collaborative relationships with competitor universities.

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Trust Development (TD)	TD1	University encourages academics and staff to develop an interpersonal relationship with competitor universities.
	TD2	University adopts common goals to enhance the relationships with competitor universities.
	TD3	University relies on transparency and clarity to develop collaborative relationships with competitor universities.
	TD4	University has a strong interdependence and harmony to sustain trust with competitor universities.
	TD5	Honesty, and willingness are essential to developing collaborative relationships with competitor universities.
Mutual Benefits (MB)	MB1	Success relationships with competitors occur when cooperative universities provide actual and equal contributions.
	MB2	University is willing to share resources to get into collaborative relationships with competitor universities.
	MB3	University is ready to avoid opportunistic behaviour to get into collaborative relationships with competitor universities.
	MB4	Success relationships with competitors occur when expected benefits come to all cooperative universities.
	MB5	University has mutually dependent relationships with competitor's universities to increase mutual benefits.
Sharing Resources and Capabilities (SRC)	SRC1	University looks for complementary resources and capabilities to enhance cooperative relationships with competitor universities.
	SRC2	Compatible resources and capabilities enable the university to collaborate successfully with competitor universities.
	SRC3	Sharing resources and capabilities with competitor universities enables the university to increase competitiveness.
	SRC4	Sharing experience, technology, and skills with competitor universities enables the university to reconfigure resources and capabilities.
	SRC5	University is willing to establish collaborative relationships with competitor universities to share knowledge and academic information.
Organisational Learning (OL)	OL1	University is willing to learn via collaborating with competitor universities.
	OL2	University agrees that the ability to learn is the key to a successful collaboration with competitor universities.
	OL3	University believes that willingness to learn from competitor universities is an investment to improve performance.
	OL4	University encourages academics and staff to learn from collaborative relationships with competitor universities.
	OL5	University believes that working with competitor universities increases the chance of learning.
Communication Management (CM)	CM1	University has effective information support system to coordinate information with competitor universities.
	CM2	University has an appropriate conflict management system to solve problems with competitor universities.
	CM3	University is willing to share internal and external information with competitor universities.
	CM4	University frequently keeps informed of new developments within competitor universities.
	CM5	University uses information technology to exchange information with competitor universities.
Institutionalisation (Ins)	Ins1	University has a mechanism to deal with the diversity of partners within a standardised structure.
	Ins2	The results of cooperation with competitor universities are published into society.
	Ins3	University adopts the process of ensuring that routinised actions occur in cooperative activities with partners.
	Ins4	University relies on institutional norms to achieve successful cooperative relationships with competitor universities.
	Ins5	University's board of directors has the authority to monitor cooperative activities with competitor universities.

Ministry of Higher Education (MHE)	MHE1	The Ministry of Higher Education in Jordan obligates universities to apply the instructions and rules in the higher education.
	MHE2	The Ministry of Higher Education in Jordan has a full authority to control private universities in Jordan.
	MHE3	The Ministry of Higher Education has established standards to facilitate the evaluation of universities' performances.
	MHE4	The role of the Ministry of Higher Education is explained by outlining the regulations which are related to private universities.
	MHE5	The Ministry of Higher Education is in charge of approving budgeting plans in terms of their programs, performance and admission policies.
Geographic Proximity (GP)	GP1	The universities which are located in nearby geographical areas cooperate in providing infrastructure for students and staff at the universities.
	GP2	Cooperative relationships among nearby universities reduce the cost of services.
	GP3	Geographic proximity among universities makes communication among them direct.
	GP4	University's interactions with nearby universities are expected to be far into the future.
	GP5	Maintaining a long-term relationship with nearby universities is important to my university.
University Success (US)	US1	Working with competitors enables the university to provide educational needs to students.
	US2	Collaboration with competitor universities provides supporting factors to improve education services' quality.
	US3	Collaborative relationships with competitors help the university to enhance its productivity and effectiveness.
	US4	Collaborative relationships with competitors help the university to save costs and increase profits.
	US5	Working with competitors enables the university to grow in size.
	US6	Collaboration with competitors enables the university to maintain a good image and reputation in the Jordanian education sector.
	US7	The university has a social responsibility.
	US8	The university successfully retains a prestigious place in various university ranking systems.
	US9	Working with competitors enables the university to obtain quality assurance from the accreditation body in Jordan.
	US10	The university response to change effectively to survive and continue in Jordanian educational sector.

9.21 Appendix B19 Table 6: Missing data, normality and data distribution of research model variables

Code	N statistic	Cases missing count	Cases missing %	Minimum statistic	Maximum statistic	Skewness statistic	Skewness Std.Error	Kurtosis statistic	Kurtosis Std.Error	Collinearity Statistics (model 1) VIF	Collinearity Statistics (model 1) Tolerance
MC						Management Commitment					
MC1	303	0	0.00	3.00	7.00	-.688-	.140	.773	.279	4.076	.245
MC2	303	0	0.00	3.00	7.00	-.759-	.140	.480	.279	4.048	.247
MC3	303	0	0.00	3.00	7.00	-.349-	.140	-.099-	.279	1.262	.792
MC4	303	0	0.00	3.00	7.00	-.528-	.140	.493	.279	4.149	.241
MC5	303	0	0.00	3.00	7.00	-.588-	.140	.443	.279	4.640	.216
SL						Strategic Leadership					
SL1	303	0	0.00	3.00	7.00	-.512-	.140	.722	.279	2.732	.366
SL2	303	0	0.00	3.00	7.00	-.606-	.140	.847	.279	2.610	.383
SL3	303	0	0.00	3.00	7.00	-.668-	.140	.780	.279	4.184	.239
SL4	303	0	0.00	3.00	7.00	-.579-	.140	.657	.279	3.773	.265
SL5	303	0	0.00	3.00	7.00	-.704-	.140	.950	.279	4.651	.215
FCH						Flexibility to Change					
FCH1	303	0	0.00	3.00	7.00	-.785-	.140	.956	.279	5.050	.198
FCH2	303	0	0.00	3.00	7.00	-.844-	.140	.849	.279	3.974	.252
FCH3	303	0	0.00	3.00	7.00	-.631-	.140	1.037	.279	5.102	.196
FCH4	303	0	0.00	3.00	7.00	-.043-	.140	-.151-	.279	4.672	.214
FCH5	303	0	0.00	3.00	7.00	-.552-	.140	.265	.279	4.716	.212
MP						Management Perception					
MP1	303	0	0.00	3.00	7.00	-.080-	.140	-.235-	.279	4.095	.244
MP2	303	0	0.00	3.00	7.00	-.568-	.140	.185	.279	4.975	.201
MP3	303	0	0.00	3.00	7.00	-.094-	.140	-.249-	.279	2.557	.391
MP4	303	0	0.00	3.00	7.00	-1.094-	.140	1.830	.279	5.882	.170
MP5	303	0	0.00	3.00	7.00	-.727-	.140	.731	.279	5.235	.191
TMS						Top Management Support					
TMS1	303	0	0.00	3.00	7.00	-.806-	.140	1.362	.279	4.830	.207

	303	0	0.00	3.00	7.00	-.179-	.140	-.070-	.279	5.208	.192
TMS2	303	0	0.00	3.00	7.00	-.179-	.140	-.070-	.279	5.208	.192
TMS3	303	0	0.00	3.00	7.00	-1.014-	.140	1.676	.279	4.629	.216
TMS4	303	0	0.00	3.00	7.00	-.560-	.140	1.234	.279	4.566	.219
TMS5	303	0	0.00	3.00	7.00	-.710-	.140	.712	.279	1.257	.795
TD	**Trust Development**										
TD1	303	0	0.00	3.00	7.00	-.490-	.140	1.066	.279	3.464	.288
TD2	303	0	0.00	3.00	7.00	-.177-	.140	-.133-	.279	3.463	.288
TD3	303	0	0.00	3.00	7.00	-.389-	.140	-.018-	.279	1.279	.781
TD4	303	0	0.00	3.00	7.00	-.158-	.140	-.143-	.279	1.033	.968
TD5	303	0	0.00	3.00	7.00	-.416-	.140	1.122	.279	1.037	.963
MB	**Mutual Benefits**										
MB1	303	0	0.00	3.00	7.00	-.229-	.140	1.753	.279	4.291	.233
MB2	303	0	0.00	3.00	7.00	-.185-	.140	1.332	.279	4.175	.240
MB3	303	0	0.00	3.00	7.00	-.550-	.140	1.092	.279	3.543	.282
MB4	303	0	0.00	3.00	7.00	-.903-	.140	1.329	.279	5.440	.184
MB5	303	0	0.00	3.00	7.00	-.770-	.140	1.233	.279	2.298	.435
SRC	**Sharing resources and capabilities**										
SRC1	303	0	0.00	3.00	7.00	-.485-	.140	.912	.279	4.178	.239
SRC2	303	0	0.00	3.00	7.00	-.867-	.140	1.307	.279	1.249	.800
SRC3	303	0	0.00	3.00	7.00	-.846-	.140	1.321	.279	1.123	.890
SRC4	303	0	0.00	3.00	7.00	-.461-	.140	2.077	.279	3.984	.251
SRC5	303	0	0.00	3.00	7.00	-.570-	.140	1.196	.279	2.857	.352
OL	**Organisational learning**										
OL1	303	0	0.00	3.00	7.00	-.724-	.140	1.293	.279	3.095	.323
OL2	303	0	0.00	3.00	7.00	-.389-	.140	.706	.279	3.816	.262
OL3	303	0	0.00	3.00	7.00	-.975-	.140	1.669	.279	4.464	.224
OL4	303	0	0.00	3.00	7.00	-.074-	.140	1.181	.279	2.732	.366
OL5	303	0	0.00	3.00	7.00	-1.499-	.140	2.013	.279	3.517	.284
CM	**Communication management**										
CM1	303	0	0.00	3.00	7.00	-.290-	.140	1.074	.279	1.165	.859
CM2	303	0	0.00	3.00	7.00	-.337-	.140	1.003	.279	2.882	.347
CM3	303	0	0.00	3.00	7.00	-1.045-	.140	1.736	.279	1.063	.941

|											
CM4	303	0	0.00	3.00	7.00	-.744-	.140	1.523	.279	3.453	.290
CM5	303	0	0.00	3.00	7.00	-.235-	.140	.341	.279	1.203	.831
Ins					**Institutionalisation**						
Ins1	303	0	0.00	3.00	7.00	-.663-	.140	.606	.279	5.263	.190
Ins2	303	0	0.00	3.00	7.00	-.843-	.140	1.296	.279	2.304	.434
Ins3	303	0	0.00	3.00	7.00	-.593-	.140	.280	.279	3.030	.330
Ins4	303	0	0.00	3.00	7.00	-.959-	.140	1.600	.279	2.590	.386
Ins5	303	0	0.00	3.00	7.00	-.555-	.140	.138	.279	3.164	.316
MHE					**Ministry of Higher Education**						
MHE1	303	0	0.00	3.00	7.00	-.542-	.140	.277	.279	3.003	.333
MHE2	303	0	0.00	3.00	7.00	-.498-	.140	.848	.279	3.597	.278
MHE3	303	0	0.00	3.00	7.00	-.481-	.140	.954	.279	3.424	.292
MHE4	303	0	0.00	3.00	7.00	-.610-	.140	1.226	.279	2.680	.373
MHE5	303	0	0.00	3.00	7.00	-.595-	.140	1.099	.279	2.695	.371
GP					**Geographic Proximity**						
GP1	303	0	0.00	3.00	7.00	-.677-	.140	-.160-	.279	3.309	.302
GP2	303	0	0.00	3.00	7.00	-.992-	.140	.366	.279	3.846	.260
GP3	303	0	0.00	3.00	7.00	-1.035-	.140	1.062	.279	3.906	.256
GP4	303	0	0.00	3.00	7.00	-.181-	.140	-.947-	.279	2.739	.365
GP5	303	0	0.00	3.00	7.00	-1.040-	.140	1.235	.279	3.294	.304
US					**University Success**						
US1	303	0	0.00	3.00	7.00	-1.007-	.140	.810	.279	0	0
US2	303	0	0.00	3.00	7.00	-1.165-	.140	1.589	.279	0	0
US3	303	0	0.00	3.00	7.00	-1.040-	.140	1.015	.279	0	0
US4	303	0	0.00	3.00	7.00	-.589-	.140	.000	.279	0	0
US5	303	0	0.00	3.00	7.00	-.512-	.140	.343	.279	0	0
US6	303	0	0.00	3.00	7.00	-.827-	.140	.551	.279	0	0
US7	303	0	0.00	3.00	7.00	-1.179-	.140	1.075	.279	0	0
US8	303	0	0.00	3.00	7.00	-.797-	.140	.680	.279	0	0
US9	303	0	0.00	3.00	7.00	-.730-	.140	.176	.279	0	0
US10	303	0	0.00	3.00	7.00	-.703-	.140	.437	.279	0	0

9.22 Appendix B20: Normal distribution for independent variable

(i.e.: Histogram and Q-Q Plot for MC2 and CM4)

Histogram for CM2
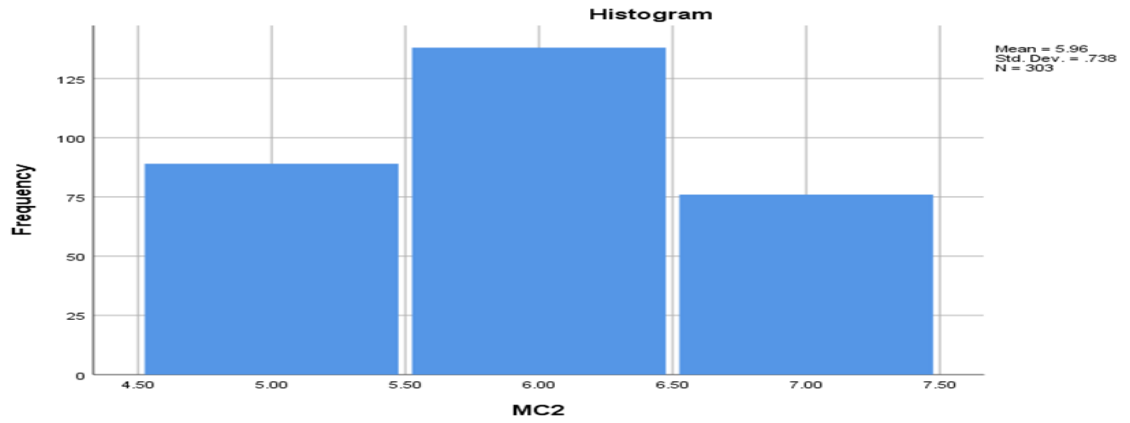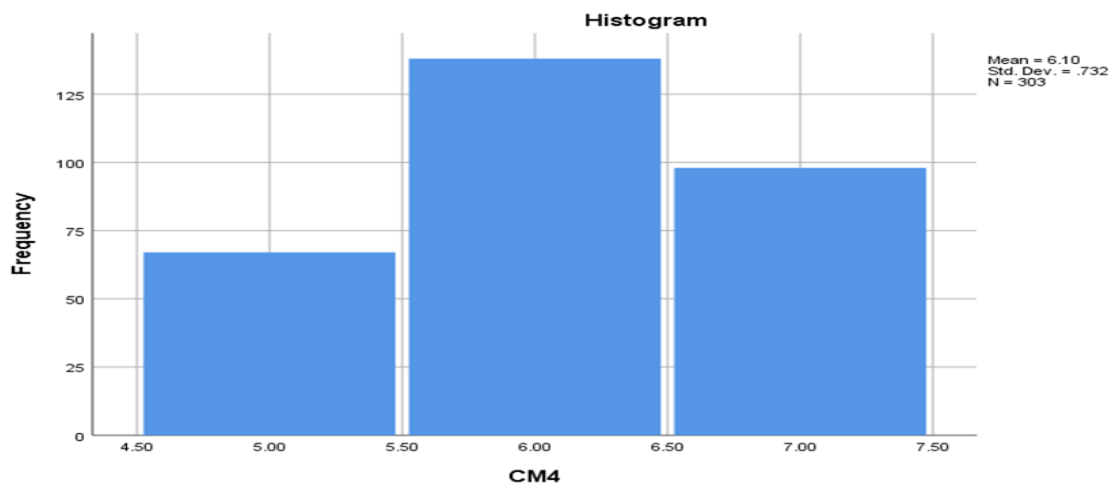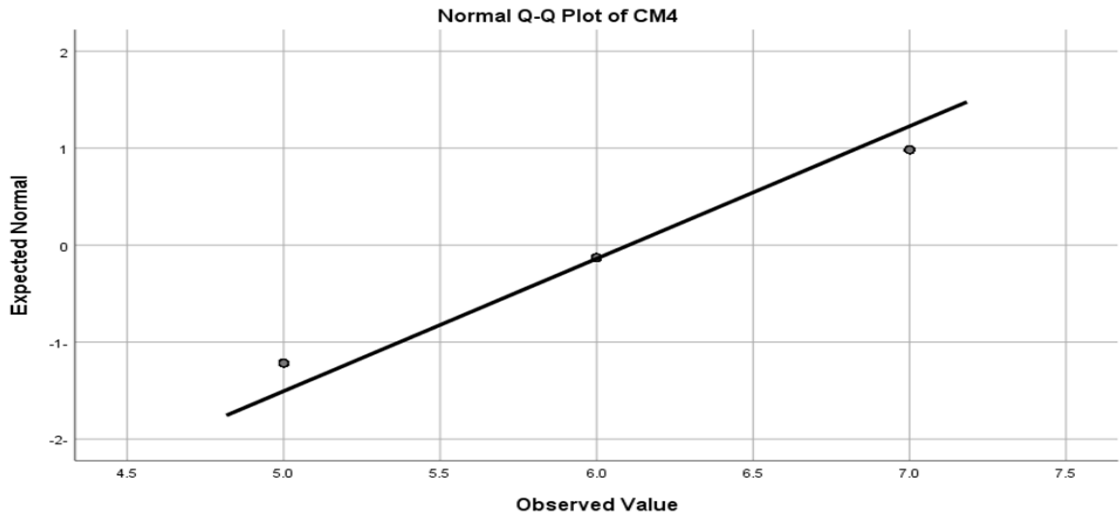

Q-Q Plot for MC2
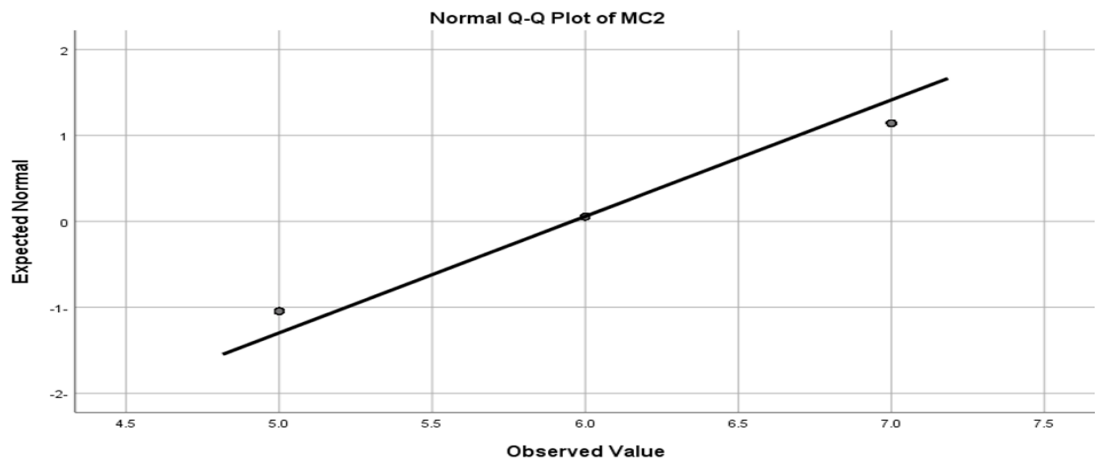
Histogram for CM4

Q-Q Plot for MC4

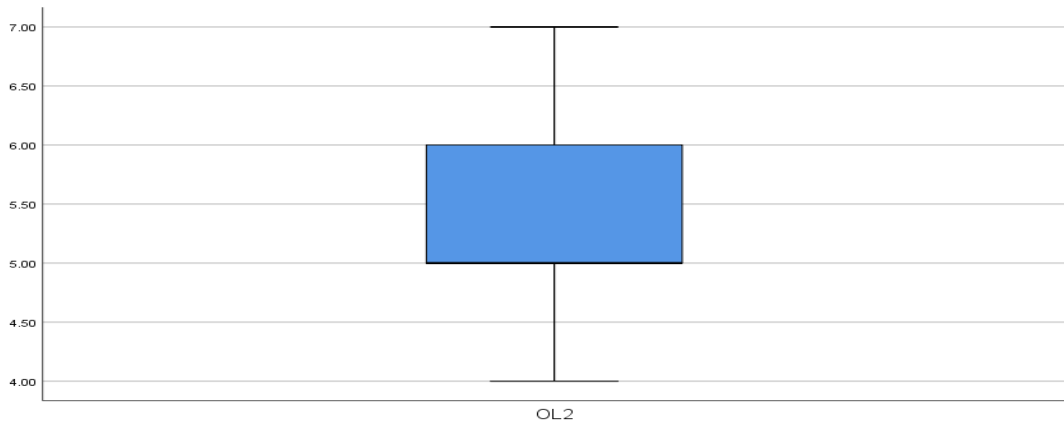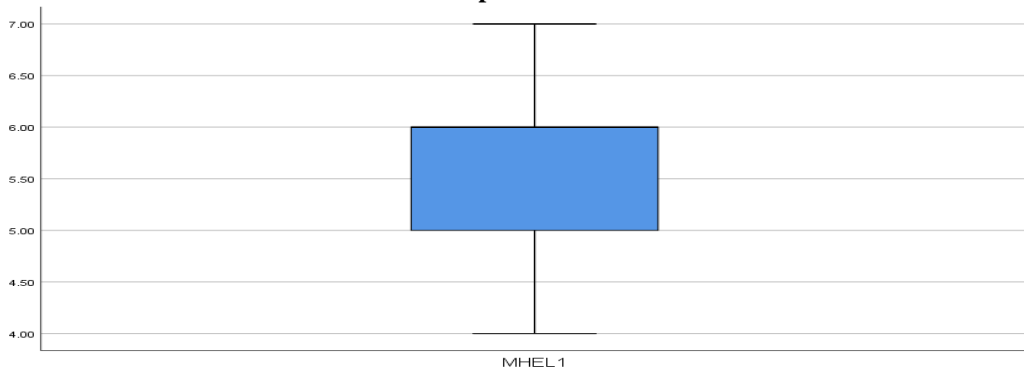Normal Q-Q Plot of CM4

9.23 Appendix B21: Multivariate outliers for observations

(i.e.: Boxplot for OL2 and MHE1)

Boxplot for OL2

Boxplot for MHE1

9.24 Appendix B22 Table 7: Standard score for testing multivariate outliers for observations (n=303)

				Z score for observations					
N:1-10	**N:11-20**	**N:21-30**	**N:31-40**	**N:41-50**	**N:51-60**	**N:61-70**	**N:71-80**	**N:81-90**	**N:91-100**
-1.71-	-1.71-	-2.82-	.00	1.16	1.00	.73	.34	.82	.43
-1.71-	-2.76-	-2.82-	.50	1.00	.82	.21	-.14-	.16	.82
-1.71-	-2.76-	.58	-.07-	.82	.82	.82	.08	.82	.82
-1.71-	-2.76-	.58	.15	.82	1.00	.43	-.20-	1.00	.00
-1.71-	-2.82-	.22	.50	.58	.14	.29	.43	.82	.33
-1.71-	-2.82-	.58	.31	1.00	.82	.34	.52	.82	.82
-1.71-	-2.82-	.58	-.07-	.82	.33	-.01-	.87	.82	.82
-1.71-	-2.82-	.63	.50	.16	1.00	.88	.94	.82	.82
-1.71-	-2.82-	.58	.69	.47	.45	.16	.72	-.34-	.45
-1.71-	-2.82-	.82	.50	.82	.82	.60	.43	.82	.61
N:101-110	**N:111-120**	**N:121-130**	**N:131-140**	**N:141-150**	**N:151-160**	**N:161-170**	**N:171-180**	**N:181-190**	**N:191-200**
.75	.82	-.11-	-.43-	-.23-	-.04-	.60	-.04-	.39	-.04-
.30	.82	-.39-	-.43-	-.43-	-.04-	-.04-	.54	-.43-	.29
.43	.30	.30	-.04-	.08	-.04-	.86	.43	-.42-	1.36
.82	.83	.30	-.43-	-.04-	-.20-	.19	-.15-	-.42-	.46
.82	-.06-	-.04-	-.43-	.41	-.04-	-.04-	-.04-	-.04-	.61
.63	-.11-	-.43-	-.04-	-.04-	.58	.56	.41	-.04-	.12
.30	.09	-.43-	.16	.39	-.04-	.85	.52	-.04-	1.01
.15	.55	-.43-	-.04-	.30	-.04-	.71	-.43-	-.04-	1.36
.45	.34	.30	-.04-	-.09-	-.04-	.43	-.43-	-.04-	.87
.31	.16	.07	-.04-	-.09-	-.04-	-.04-	-.43-	-.04-	-.03-
N:201-210	**N:211-220**	**N:221-230**	**N:231-240**	**N:241-250**	**N:251-260**	**N:261-270**	**N:271-280**	**N:281-290**	**N:291-300**
-.04-	-.11-	-.04-	-.21-	-.43-	.50	-.43-	.09	-.43-	-.43-
-.04-	-.05-	-.30-	-.12-	.44	1.30	-.43-	-.43-	-.43-	-.43-
-.04-	-.08-	-.07-	-.04-	.45	1.29	-.43-	-.43-	-.43-	-.43-
.51	-.04-	-.12-	-.04-	.52	1.25	-.43-	-.07-	.48	-.43-
-.04-	-.12-	-.08-	.30	.57	-.36-	-.43-	-.43-	-.43-	-.43-

-.15-	-.16-	-.02-	-.41-	.48	-.18-	-.06-	-.07-	-.43-	-.43-
-.04-	-.20-	-.10-	-.35-	.56	-.42-	-.43-	.34	-.07-	-.43-
-.04-	-.12-	-.04-	-.31-	.52	-.07-	-.43-	.43	-.01-	-.43-
-.04-	-.13-	-.23-	-.30-	.52	-.43-	-.43-	-.43-	-.43-	-.43-
.00	-.08-	-.15-	-.43-	.55	-.43-	-.43-	.44	-.43-	-.06-

N:301-303
-.43-
-.43-
.08

9.25 Appendix C 1 Table 8: Item-total correlation and Cronbach Alpha for

research items scale

Items	Corrected Item–total correlation	Cronbach's alpha If-Item-Deleted
Management Commitment		
MC1	0.690	0.861
MC2	0.695	0.860
MC3	0.845	0.821
MC4	0.740	0.849
MC5	0.615	0.877
Strategic Leaderships		
SL1	0.805	0.927
SL2	0.872	0.915
SL3	0.826	0.923
SL4	0.821	0.924
SL5	0.835	0.922
Flexibility to Change		
FCH1	0.661	0.868
FCH2	0.610	0.878
FCH3	0.804	0.841
FCH4	0.771	0.847
FCH5	0.787	0.838
Management Perception		
MP1	0.773	0.883
MP2	0.653	0.909
MP3	0.849	0.866
MP4	0.679	0.902
MP5	0.881	0.860
Top Management Support		
TMS1	0.900	0.945
TMS2	0.878	0.950
TMS3	0.864	0.951
TMS4	0.901	0.945
TMS5	0.886	0.947
Trust Development		
TD1	0.844	0.925
TD2	0.861	0.922
TD3	0.851	0.924

TD4	0.868	0.923
TD5	0.789	0.936
Mutual Benefits		
MB1	0.664	0.726
MB2	0.725	0.705
MB3	0.700	0.714
MB4	0.692	0.719
MB5	0.545	0.782
Sharing Resources and Capabilities		
SRC1	0.606	0.869
SRC2	0.817	0.814
SRC3	0.762	0.829
SRC4	0.666	0.854
SRC5	0.656	0.855
Organisational Learning		
OL1	0.646	0.746
OL2	0.681	0.733
OL3	0.743	0.717
OL4	0.739	0.713
OL5	0.532	0.798
Communication Management		
CM1	0.758	0.882
CM2	0.829	0.866
CM3	0.605	0.912
CM4	0.855	0.865
CM5	0.779	0.881
Institutionalisation		
Ins1	0.874	0.934
Ins2	0.884	0.932
Ins3	0.87	0.934
Ins4	0.885	0.931
Ins5	0.800	0.947
Ministry of Higher Education		
MHE1	0.355	0.950
MHE2	0.837	0.831
MHE3	0.841	0.834
MHE4	0.865	0.827
MHE5	0.816	0.837
Geographic Proximity		
Gp1	0.645	0.877
GP2	0.690	0.866
GP3	0.852	0.830
GP4	0.969	0.865
GP5	0.736	0.856
University Success		
US1	0.434	0.837
US22	0.578	0.826
US3	0.577	0.825
US4	0.614	0.820
US5	0.565	0.826
US6	0.533	0.828
US7	0.596	0.825
US8	0.610	0.821
US9	0.501	0.833
US10	0.432	0.838