DEVELOPING AN INTEGRATED KANO-QFD-SWOT APPROACH TO RECOMMEND PRIORITISED INSTITUTIONAL REQUIREMENTS BASED ON SOCIAL AND ACADEMIC EXPECTATIONS OF ARABIC INTERNATIONAL STUDENTS AT THREE QUEENSLAND UNIVERSITIES

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ABSTRACT

The internationalisation of higher education continues to increase and contribute to national economies as higher education institutions increasingly rely on the revenue stream from tuition fees paid by international students. In recent years, the population of students who study abroad has dramatically increased which has led to increasing competition globally to attract these students. Higher education institutions are consequently focused on enhancing the quality of their offerings and student experience to meet or exceed demands and expectations in order to stand out and be attractive in this ever-increasing competitive global education market. This study presents a method for integration of the Kano model into the Quality Function Deployment (QFD) method to identify and meet the needs of Arabic International Students (AIS) at three Queensland universities. The use of the Kano-QFD analysis fills a major gap in university planning because most methodologies used to determine strategies to recruit, enrol and support international students do not focus on either capturing the international students' voice or align these institutional requirements (IRs) to enhance the opportunities for successful completion of a degree and to meet students' personal and professional expectations.

A Kano survey instrument was developed to generate student requirements (SRs) through focus group interviews and a piloting exercise. In addition to the Kano survey instrument, a review of policy and in-depth interviews with staff who have direct contact with international students were conducted to identify applicable university requirements to begin the QFD analysis. A house of quality (HOQ) was then developed from the data collected by the Kano survey instrument and the processes used to identify university priorities based on the institutional requirements corresponding to the student requirements. The results of this study demonstrate the benefits of applying the Kano-QFD-SWOT analysis model to identify and analyse the strategic implications about AIS for each of three cases representing different types of universities in Queensland. The findings confirm that the application of the Kano model is useful for improved comprehension of student needs and expectations, while its integration in the QFD matrix will assist universities to determine the most important elements needed to improve educational services quality design linked to strategic decisions made by these universities. This study offers major contributions to

both practice and theory regarding the quality provision for international students in higher education by providing empirical quality measurement tools to assist universities in targeted and effective decision-making. The unique application of the Kano-QFD-SWOT in this study contributes to an approach that will be useful for research in other contexts to better discriminate the needs of other groups of students. In addition, integration in the QFD matrix as applied in this study, will help HEIs to determine the most important service development activities required to achieve maximum student satisfaction.

The research findings suggest the use of the Kano model is instrumental for extracting students' needs and expectations while integrating it with the QFD matrix will assist universities to determine elements of educational services quality improvement. The study offers major contributions both in practice and theory about the provision of education quality of international higher education students by providing empirical tools for universities in their effective decision-making processes.

CERTIFICATION OF THESIS

I certify that the ideas, experimental work of **Ahmed Mansour Mohsin** except where otherwise acknowledged. The work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Professor Karen Trimmer

Principal Supervisor

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Student and supervisors' signatures of endorsement are held at the University.

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DEDICATION

To my late mother ….

I dedicate this thesis to the living memory of my mother who breathed her last during the fourth year of my PhD journey. My beloved mother, thank you very much for your relentless support, love, and compassion in bringing me to this stage.

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Mohsin, A. M., and Trimmer, K., (2018). Meeting the cultural and service needs of Arabic international students by using QFD matrix. In R. Erwee, P. Danaher, M. Harmes, B. Harmes, and F.F. Padró (Eds.), *Postgraduate Education in Higher Education. University Development and Administration*. (pp. 315-336). Singapore: Springer International Publishing. https://doi.org/10.1007/978-981-10-0468-1_35-1.

LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACI	Adjusted Importance Student
AHEIs	Australian Higher Education Institutions
AISs	Arabic International Students
APR. Intern	Australian Postgraduate Research Intern
ARs	Academic Requirements
AHP	Analytical Hierarchy Process
ASI	American Supplier Institute
COVID-19	Coronavirus Disease of 2019.
CQI	Continuous Quality Improvement
CR	Customer Requirements
CS	Customer Satisfaction
CSFs	Critical Success Factors
CV	Customer Value
DVC	Deputy Vice-Chancellor
HE	Higher Education
HEIs	Higher Education Institutions
HOQ	House of Quality
IAIW	Institutional Absolute Importance Weight
IPA	Importance-Performance Analysis
IRIW	Institutional Relative importance Weight
IRs	Institutional Requirements
ISO	International Organisation for Standardisation
ISs	International Students
KC	Kano Category
KET	Kano Evaluation Table
KM	Kano Model
KW	Kano Weight
P&Ps	Policies and Procedures
PRs	Personal Requirements

PVC	Pro Vice-Chancellor
QA	Quality Assurance
QFD	Quality Function Deployment
QUT	Queensland University of Technology
RIW	Relative Importance Weight
SAE	Social and Academic Experiences
SC	Satisfaction Coefficient
SD	Student Dissatisfaction
SQ	Service Quality
SMRs	Student Main Requirements
SP	Sales Point
SRs	Student Requirements
SS	Student Satisfaction
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TD	Technical Difficulty
TEQSA	Tertiary Education Quality and Standards Agency
TQM	Total Quality Management
TR	Technical Requirements
TR	Technical Requirements
TVET	Technical Vocational Education and Training
UK	United Kingdom
UQ	The University of Queensland
UR	University Requirements
US	United States
USQ	University of Southern Queensland
VOC	Voice of Customer
VOD	Voice of Developer
VOM	Voice of Market
VOO	Voice of Organisation
VOS	Voice of Student
WTO	World Trade Organisation

GLOSSARY OF TERMS

Important key concepts and operational definitions of the constructs developed for this research are as follows:

Affinity diagram: A graphical brainstorming of new quality management tools used to promote creative thinking, group facts, breaking down barriers, and arranging ideas and customer desires into categories (Awasthi & Chauhan, 2012; Shahin et al., 2010).

Cross-functional team (CFT): A multidisciplinary team, consists of members from different functional areas such as engineering, manufacturing, or marketing (Feng et al., 2010). By the use of CFTs, organisations attempt to improve coordination and integration in order to generate new ideas and resolve complex design and business issues through teamwork.

House of quality (HOQ): A product planning matrix that is built to show how customer requirements relate directly to the ways and methods companies can use to achieve those requirements. House of Quality diagrams use a design that resembles the outline of a house and can be created using technical and competitive benchmarking data. HOQ is considered the primary tool used during quality function deployment to help facilitate group decision-making (ASQ, 2020a).

International student: An "international student" is here understood to be "a student who is not an Australian citizen or permanent resident and is enrolled or proposes to enrol at an institution in Australia" (Australian Bureau of Statistics [ABS], 2011b).

Kano model: It is a technique to identify the various types of customer requirements and expectations. In general, the function of Kano's model is the belief that the product/service criteria, which have a great influence on the customer's satisfaction can be distinguished (Ji et al., 2014). This technique helps to structure customer needs and determine its impact on satisfaction as a factor to success.

Matrix diagram: The most frequent use of QFD tools, a matrix is a structure that provides rows and columns that represent the variables under investigation (Aikens, 2011). The heart of QFD matrix is an example of one of the many matrix diagrams now used for planning reasons and quality improvement as a means of facilitating the

identification of the relationships between the identified factors (J. Evans, 2008; Goetsch & Davis, 2013; Shahin et al., 2010).

Quality: The features and characteristics of a product or service that bear on its ability to satisfy stated and implied requirements of the customer and providing superior value (Özgener, 2003; Singal, 2012). It is also conformance to a standard that is required (ASQ, 2020b; Patel, 2016).

Quality function deployment (QFD): A planning technique specifically focusing on customer requirements and expectations to assure quality and customer satisfaction by converting customer expectations into appropriate technical requirements for each stage of product or service development and production (ASQ, 2020b; Sahney et al., 2004a). It uses a cross-functional team to identify and resolve issues involved in providing products, processes, services, and strategies to meet or exceed customer expectations (Sharma & A. Rawani, 2008).

Student satisfaction: Generally, satisfaction can be defined as a judgement that a product or service provided gives a "*pleasurable* level of consumption-related fulfillment, including levels of under- or overfulfillment" (Oliver, 1997, p. 13). Student satisfaction is a complex phenomenon, referring to the students' favourable subjective evaluation of the various outcomes and experiences associated with their educational experience that is continually shaped by their university experiences (Elliott & Shin, 2002). More recently, satisfaction has become linked to the recognition that they have met, or are meeting, their goal of increasing their employability throughout their study experience (Oliver, 2015). In other words, it is a function of the relative level of expectations and perceived performance (Hasan et al., 2009).

Total quality management (TQM): More recently referred to as a quality management system (QMS), according to ASQ, it is "a management system for a customer-focused organisation that involves all employees in continual improvement. It uses strategy, data, and effective communications to integrate the quality discipline into the culture and activities of the organisation" (https://asq.org/quality-resources/quality-management-system).

CHAPTER 1: INTRODUCTION

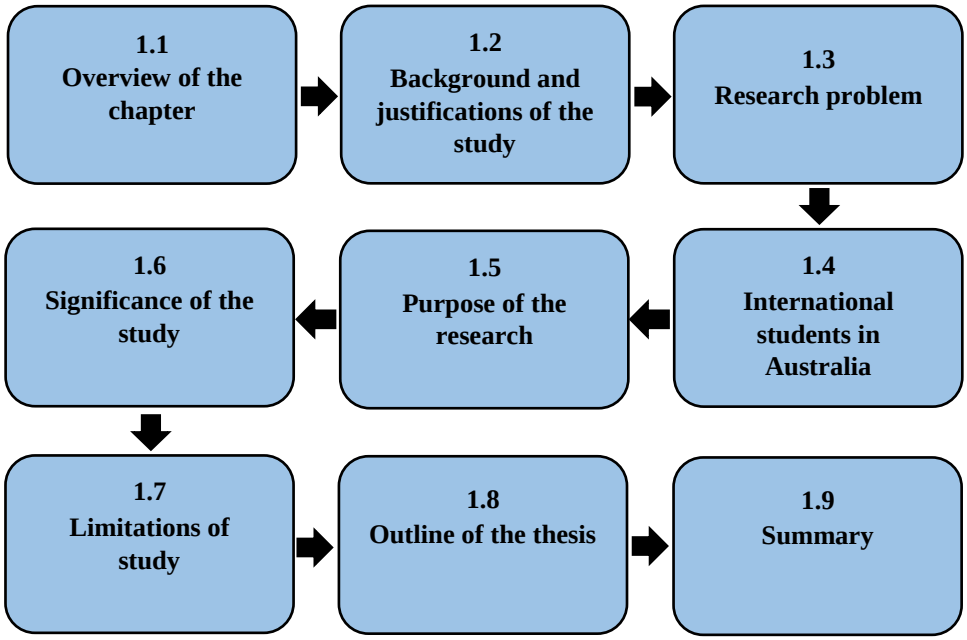
1.1. Overview

Higher education in a multicultural environment has become a significant trend in many nations based on a mutual understanding of the importance of preparing young people to operate in a more globalised world (Hayden & Thompson, 1995; Li et al., 2010). The internationalisation of higher education continues to increase and contribute to national economies as higher education institutions (HEIs) have increasingly come to rely on the revenue stream from tuition fees paid by international students (ISs) (Arthur, 2017; Hughes et al., 2017). This reality makes ISs an important market for HEIs seeking to export their services (Bianchi, 2013; Hughes et al., 2017).

In recent years, the population of ISs has dramatically increased (Lee, 2017). For this reason, there is increasing competition between HEIs globally to attract students (Sagnak et al., 2017). As a result, they are pressured to continuously enhance the quality of offerings and student experience to meet or exceed demands and expectations in order to stand out and be attractive in an ever-increasing competitive global education market (Sagnak et al., 2017). To enhance their quality of education in order to compete, universities have first to identify the requirements of ISs, and their perceptions, and expectations based on needs and wants, to determine how to enhance the quality of their educational offerings and student experiences. They then have to reorganise themselves to be able to fulfill and exceed their requirements, perceptions, and expectations (Arefi et al., 2012; Tsinidou et al., 2010). To achieve the goal of quality improvement, it is critical to determine, analyse, and adapt to student expectations. One common and effective method is the use of combining Quality Function Deployment (QFD) and the Kano model (Gangurde & Patil, 2018; Koç, 2015). This research focuses on using the integrated Kano-QFD technique to develop strategies to assist the Australian higher education sector recruit, retain and graduate ISs.

This chapter introduces the background and justifies the research and the research problem, highlights the gaps in the literature, the significance of the study, and the methodology that will lead to the conclusions of the research. The chapter consists of nine sections as shown in Figure 1.1. These sections are outlined to set the path for the investigation process in the next chapters.

Figure 1. 1: Outline of Chapter 1.



Source: Developed for this research

International education contributed $37.6 billion Australian dollars (AUD) to the Australian economy in 2018, according to a news release from the Minister of Education on 22 November 2019 (https://ministers.dese.gov.au/tehan/international-education-makes-significant-economic-contribution). Marshman and Larkins (2020) reported a lower contribution at $33.94 billion AUD, with this amount representing a 33% increase between 2009 and 2018. Actual revenue to universities increased during this period by 260% to $8.8 billion AUD, with ISs revenue representing 26.2% of total university sector revenues (Marshman & Larkins, 2020). Until recently, much of the revenue has gone into the research performed by Australian universities as part of their

competition to improve their international rankings that, in turn, would help attract more ISs, according to Australian higher education finance expert (Norton, 2020).

The Australian government had anticipated a 45% increase in enrolments by 2025 before the global COVID-19 pandemic broke out (Department of Education and Training, 2016); however, modelling by Marshman and Larkins (2020) suggested a loss ranging between $11.5 billion AUD by 2023 in an optimistic scenario and $18.1 billion AUD by 2024 in a pessimistic scenario while Universities Australia noted a potential loss of revenue of up to $16 billion AUD between 2020 and 2023 due to lower IS enrolments (https://www.universitiesaustralia.edu.au/media-item/covid-19-to-cost-universities-16-billion-by-2023/). Reasons for the now lower expected number of ISs are travel restrictions, limited marketing opportunities and increased competition for ISs from different countries (Marshman & Larkins, 2020). Around 20% of ISs who were supposed to begin in the first semester in 2020 were not able to arrive and the situation is expected to be worse for the second semester when, according to Norton, this is when a large number of ISs begin their coursework (Masige, 2020). The negative outlook seems to be borne out by the lower number of student visa applications lodged in the fiscal year 2019-2020, with 164,234 primary applicants up to the end of May 2020 in comparison to 206,637 applications lodged in 2018-2019. This is a reduction of 42,403 applications (Department of Home Affairs, 2020) or a 20.5% reduction.

The Australian Department of Education Skills and Employment [DESE], 2019a) *End of Year Summary of International Student Data 2019* indicated that there were 956,773 IS enrolments across all education sectors that translated to 758,154 full-fee paying ISs in Australia on a student visa in 2019 (ICEF, 2000). The 758,154 full-fee paying ISs made Australia the world's second most popular study destination after the United States (ICEF, 2020). Most of these enrolments were in the higher education sector, which had 442,219 or 46.2% of all university IS enrolments. This number represents an increase of 11.1% over 2018 higher education IS enrolments (DESE, 2019a). Over half of the ISs enrolling at universities came from China (37.3%) and India (20.5%).

One country that had a number of students coming to study at Australian universities in 2019 was Saudi Arabia. The overall enrolment of 4,192 students represented an increase of 54.8% over 2018, and the country was ranked as 23rd country of origin of

Australian ISs (DESE, 2019b). While this is less than the 6,123 Saudi students in Australia in 2011, it approximates to the number of Saudi students in Australia in 2016, which was 4,441 (DESE, 2020). Worth noting is the increase of 57.9% in the number of commencing students from Saudi Arabia to 1,984 in 2019, from 1,148 in 2018. This was the highest number since 2010 when 2,851 new Saudi students came to Australia (DESE, 2020) compared with an overall increase of 7.9% in comparison to 2018, as part of a total of 178,744 new ISs coming to Australia (DESE, 2019b), although the overall number of students enrolled from Saudi Arabia in relation to all ISs studying in Australia has continued to contract between 2015 to 2019 (Table 1.1). One question these data raised in the pre-COVID environment was whether the increase in commencements was an aberration or represented a change within a trend of lower enrolments overall. Post-COVID concerns are similar, but with a different emphasis: how will the disruption of IS travel and the effects of national treatment of ISs impact the potential to at least maintain a similar level of enrolments?

Table 1.1: Overall enrolment and commencements of Saudi Arabia students at Australian universities 2015-19

Higher Education Sector	2015	2016	2017	2018	2019
Total number of enrolments*	4,750	4,441	3,971	3,658	4,424
Total number of commencements	1,706	1,536	1,263	1,148	1,984
Total number of international student enrolment in Australia	271,656	305,322	349,120	398,140	442,219
Percentage of Saudi Arabia enrolments to all international student enrolments	**1.7 %**	**1.5 %**	**1.1 %**	**0.9 %**	**1.0 %**

* IS enrolment data generally does not represent the number of overseas students in Australia in DESE data. Enrolments are the key data point. There can be more enrolments than actual students because a student attending two different courses in the same reference period will have both enrolments counted.

Source: Adapted from Department of Education Skills and Employment [DESE] (2020): International student data, pivot table 2002 onward.

Saudi Arabian students have represented the largest number of enrolments by ISs in Australia from what are traditionally considered the 22 Arab countries that are members of the Arab league (Algeria, Bahrain, Egypt, Comoro Islands, Djibouti, Iraq,

Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen) (Alshammari et al., 2019).

As Table 1.2 indicates, Arab international students (AIS) account for a small and decreasing percentage of international students studying in Australia, although at one time Australia was one of the top three destinations for international students from Arab countries (Shepherd, 2010). As a group, Arab international students (AISs) show how enrolment trends change and how these numbers are impacted by deliberate strategic choices, or lack of these, in the pursuit of international students from particular regions. Reasons for the trend changes from 2002 to the present (DESE, 2020) are difficult to identify because of the lack of research performed by western universities on this group of IS (Al-Mansouri, 2014; Shepherd, 2010).

In many countries, demand for places has exceeded supply, so it has been paramount for universities in western countries to develop competitive strategies to maximise their share of this important market. It has been argued that Australia, in particular, requires a more comprehensive globalisation strategy for its universities (Montgomery, 2010; Cameron et al., 20119) and there is a concern that Australian universities may lack the expertise, knowledge, and resources to compete sustainably in the global education market (Hill et al., 2017). Australia's dependence on IS revenues has corresponded with a continued decline in government funding to the sector (Altbach & de Wit, 2020; Clayton, 1 May 2020; Marshman & Larkins, 2020). Because of its distance from other countries and its small population, Australia may not experience growth in the international student market in the future unless it operates effectively and strategically (beyond improving on the international rankings of universities – e.g. Cahill et al. (2019)) in this large global market. This study focuses on AISs studying in Australia to determine how Australian universities can shape recruitment and retention strategies through a deeper understanding of the expectations, experiences, and intercultural competency of AISs who are studying in the universities.

Table 1. 2: Overall enrolments in Australian universities by IS from Arab countries 2015-2019

Total number of Arab countries students' enrolments* in AHES	2015	2016	2017	2018	2019
Algeria	3	5	6	7	14
Bahrain	49	54	51	45	36
Comoro Islands	-	-	-	1	1
Djibouti	-	-	1	-	-
Egypt	221	258	289	316	328
Iraq	695	677	552	404	251
Jordan	312	352	377	386	378
Kuwait	1,223	1,052	931	734	481
Lebanon	434	497	537	554	502
Libya	132	74	33	20	9
Mauritania	1	1	-	-	-
Morocco	24	28	34	31	30
Oman	487	598	748	799	872
Palestine	29	28	25	32	25
Qatar	17	26	20	19	18
Saudi Arabia	**4,750**	**4,441**	**3,971**	**3,658**	**4,424**
Somalia	0	2	2	2	2
Sudan	24	28	35	36	43
Syria	27	25	23	20	20
Tunisia	11	15	13	17	12
United Arab Emirates	368	316	293	309	302
Yemen	6	8	21	30	35
Total number of enrolments in Australia from Arab countries	**8813**	**8485**	**7962**	**7420**	**7783**
Percentage of enrolments from the Arab region in relation to all international student enrolments	**7.5 %**	**6.5 %**	**5.35 %**	**4.48 %**	**4.35 %**

*IS enrolment data generally does not represent the number of overseas students in Australia in DESE data. Enrolments are the key data point. There can be more enrolments than actual students because a student attending two different courses in the same reference period will have both enrolments counted.

Source: Adapted from (Department of Education Skills and Employment [DESE], 2020) International student data, pivot table 2002 onward.

1.2. Background to the study

During the past few decades “Quality” has become an important factor for universities in establishing and maintaining a viable and sustainable position in a fiercely competitive environment (Qunxiang et al., 2010). The most important reason is the intensive global competition, and the demand for better quality by current and prospective students, stakeholders and end-users has encouraged universities to realise the benefits of providing quality education to successfully compete (Lam & Zhao, 1998).

Quality in higher education may be more difficult to define than in most other sectors, given the comparative and contextual aspects of what quality entails (Harvey & Green's, 1993; Padró et al., 2019). Harvey and Green's (1993) definition of quality in higher education still applies and provides perspectives that shape perceptions of individual universities and national systems: being exceptional, having perfection/consistency, being fit for purpose, providing value for money, and being transformative. Padró et al. (2019) also add fitness *of* purpose as another element shaping perceptions, based on Swan's (1998) view that universities should be “doing the right thing and in their right way” (p. 273). Universities should review their own fitness for purpose to remain viable in these times when the value of higher education is challenged and changing if, for no other reason, prospective domestic and internal students are judging universities by their ability to meet their expectations for a return on their investment in terms of a better job and social prospects (Anchor et al., 2011), especially in the wake of COVID-19.

Universities are places where students develop both their intellectual abilities and networks that will be useful throughout their lives (Bayraktaroğlu & Özgen, 2008; Nursyamsiah et al., 2018). However, many HEIs have marketing problems due to the decline in prospective students, government funding, changes in student needs and societal expectations (Taghizadeh & Mohamadi, 2013). Faced with these challenges, most universities have implemented new policies and adopted new tools that have been developed to increase the effectiveness of their performance. As a result, HEIs have realised that improving the quality of services can improve customer satisfaction (CS) (Hwarng & Teo, 2001) and market standing (Miguel & Carnevalli, 2008).

Treating students as customers is a controversial practice in HEIs (Mohsin et al., 2018; Singh et al., 2008) as is the extent to which universities engage with surveys on student responses in relation to their satisfaction (Porter, 2011). However, the use of total quality management (TQM) approaches, and tools that help identify and understand students (customers) and their requirements, allow universities to improve their performance and overall quality by improving CS (Qureshi et al., 2012) and to place student views in the context of HEI requirements.

TQM principles provide several tools that focus on the voice of the customer (VOC) and continuous improvement, which help improve student perceptions and commitment to a university (Singh et al., 2008; Nadim & Al-Hinai, 2016). One of the most important TQM quantitative tools and techniques is Quality Function Deployment (QFD), which can be used to translate HEI student requirements and specifications (SRs – the equivalent of customer requirements or CR in the literature) into appropriate technical or service requirements (Deros et al., 2009). According to Zairi and Youssef (1995) and Singh et al. (2008), QFD is considered to be a prerequisite for achieving TQM because it is a methodology for the development or deployment of features, attributes, or functions that give high quality to a product or service (Hamza, 2011). QFD can help answer the question of how to deliver quality products and services based on the needs of customers (Hwarng & Teo, 2001; Mustafa & Kelesbayev, 2018) or students in this case. Hwarng and Teo (2001) discussed how HEIs have different customers because there are multiple stakeholders and all their voices need to be heard. They consider that "identifying students as the primary customers and striving to meet their genuine needs is an important step to developing quality programmes in higher education" (p. 199). What is important is where the different voices are captured within the QFD matrix.

Focusing on listening to what students have to say ensures the activities and operations of an organisation are driven by an understanding of their expectations and needs (Shen et al., 2000b). QFD enhances CS by integrating expressed student expectations, wants, and needs, which often translates into higher profitability in most organisations (Singh et al., 2008; Zairi & Youssef, 1995). For instance, QFD has been used to improve teaching effectiveness and thus student satisfaction (Hwarng & Teo, 2001). It has also been used to analyse admissions systems (Lanser, 1996), library services

(Chen & Chou, 2011; Garibay et al., 2010; Wulandari et al., 2017) system planning, and strategic research decisions (Hwarng & Teo, 2001) among other aspects of HEI operations. Universities have seen success when QFD analysis has been performed, suggesting that this type of analysis can help HEIs improve the quality of services such as enrolment management, accommodation (residence halls), safety and security (risk management), parking, student health and other forms of student services. The quality of these services directly impacts student satisfaction.

Researchers have to take into account the fact that QFD analysis does have some limitations. One of these limitations is that the relationship between service performance and customer satisfaction is treated as linear. Identifying student (customer) wants alone is not sufficient. These wants need to be prioritised based on the importance of the attributes to be identified as requirements (Priyono, 2016); however, the final importance of student (customer) requirements acquired in QFD does not fully reflect the customer needs accurately and requires a supporting mechanism to capture these requirements, such as a Kano Model or SERVQUAL (Cudney & Elrod, 2011; Meng & Jiang, 2011). The Kano model is an effective method to categorise the characteristics of service attributes required by customers (Priyono, 2016). The Kano model can also show differences in attributes of services to determine to what extent these attributes can enhance services to customers based on the clear expressions of what consequences are important to them (Cudney & Elrod, 2011). When combined with QFD, these views from the customer can be translated as operation development to improve quality because QFD is a technique that applies customer quality demands in different stages of service (Safi'i et al., 2019).

The Kano model defines quality by using a two-dimensional model that takes into account the non-linear relationship between customer satisfaction and product and service performance. It is therefore valuable for practitioners who want to understand customer needs accurately in order to develop products and services based on empirical evidence (Meng & Jiang, 2011; Priyono, 2016; Raharjo et al., 2009). Using an integrated Kano model-QFD approach will help to identify and more accurately determine the priority of improvement in the quality of services based on the final importance of customer requirements (Liu, 2012). In other words, integrating the Kano model with QFD provides an effective decision-making technique for identifying and

selecting performance areas needing improvement due to its capacity to clarify relevant issues by obtaining information to maximise CS (Liu, 2012). This integrated approach is also a useful tool for evaluating the quality of service by listening to customer voices (VOCs) about issues that must be improved to augment CS (Garibay et al., 2010; Ji et al., 2014).

In the context of higher education, strategic planning helps an institution focus on its success in responding to changes in the local and global HE environment (Mushkarova et al., 2021). The SWOT analysis has become a well-used technique for organisations to evaluate their position in the market, and is broadly used to examine and analyse the internal and external environments of organisations during times of uncertainty. SWOT analysis' major aim is to assist HEIs become more aware of the factors affecting their business decisions by examining the internal and external aspects that might influence decision feasibility (Paraggua et al., 2022). The four components identify either internal or external considerations. Strengths refer to the internal elements of an organisation that facilitate reaching its goals, while weaknesses are those internal elements that interfere with organisational success. Opportunities—external aspects that help an organization reach its goals—are not only positive environmental aspects but also opportunities to address gaps and initiate new activities. Threats, on the other hand, are aspects of the organisation's external environment that are barriers or potential barriers to reach its goals.

As indicated in section 1.1 above, HEIs are seeking other sources of revenue, requiring them to reinvent themselves in their efforts to be more internationally attractive to cater to the increasing demands arising from international enrolments (Azmat et al., 2013; Islam & Hasin, 2014). This is a complex task because ISs who are choosing to study in Australia come from all over the world, representing a wide range of cultures and national identities. This study will serve as a pilot for Australian universities to identify proactively those markers impacting the academic satisfaction and success of these ISs. The research will focus on a particular group of international students, Arabic students, to determine the viability of integration Kano-QFD as a technique. This target group was selected for the following reasons: (1) AIS tend to be more homogeneous than other international student populations based on shared ethnic and religious considerations, (2) the researcher is familiar with this group of ISs (which allows both

greater access to, and affinity with, the participants), and (3) this is a group that has had both increasing and decreasing student enrolment demand trends in the Australian higher education sector since 2002 (Al-Mansouri, 2014; DESE, 2020; Orth, 2015).

This research also extends to research conducted with AIS students in Australia. While current research across a range of contexts and fields has been undertaken to examine Muslims studying in Australia or ISs generally, the same is not the case for AIS (Shepherd, 2010). The cultural background of AIS differs from Australian cultural mores and practices. Understanding and accounting for these differences, (especially during their first year), and how these impact their social and academic experiences (SAE) while studying in Australia, is crucial to maintain the attractiveness and reputation of Australian HEIs, which in turn should assure a steady flow of students in the future (Azmat et al., 2013). Previous research has addressed a number of issues regarding the SAE for AIS in Australian educational systems, including identified strategies to help to address these issues (Al-Mansouri, 2014). However, no attention has been paid to the use of QFD as a technique to understand and address the SAE of AIS. Thus the main purpose of this study is to determine how QFD techniques can help Australian HEIs improve the quality of the SAE of AIS.

1.3. Statement of the research problem

Nowadays, universities provide different services for both domestic and ISs to meet their needs and improve their satisfaction with the HEIs they have selected to attend (Lee et al., 2019). The internationalisation of education is important in Australia and it has become an integral aspect of the Australian economy (Australian Bureau of Statistics [ABS], 2011a). Presently, there is increased competition around the world among universities to attract more ISs (Department of Education and Training, 2015b). As Norton and Cherastidtham (2015) have pointed out:

> "International students usually pay significantly more, and never less, than domestic students in the same course. Their fees are set in a global, commercially-oriented market in which prestigious universities charge

> international students a substantial fee premium over less well-known universities" (Norton & Cherastidtham, 2015, p. 1)

Income from ISs, along with that from domestic students, cross-subsidises research from available discretionary funds because of the gap in funding that has existed from the time of implementation of the Dawkins reforms from 1988 onwards, and based on diminished government funding (Larkins, 2018b; Marshman & Larkins, 2020; Smith, 25 May 2020). This places an obligation on HEIs to identify and look at the requirements of IS to properly contextualise these expectations concerning the services and support they can provide because AIS – like other international students – bring to Australia their expectations about teaching and learning, which are culture-bound and different (Alhazmi & Nyland, 2010).

Studying overseas is not an easy task. There are language differences, dietary differences, and normative and sector systemic differences that at times place international students in conflict with university requirements, codes of conduct, learning and teaching practices, and general expectations. Most studies of IS students in Australia, as in the USA, have focused on students from Asia (Al-Mansouri, 2014; Heyn, 2013; Shepherd, 2010). There are few studies found in the literature addressing specific issues of culturally different subgroups of IS such as AIS (Heyn, 2013; Shaw, 2009), and none of these have used QFD methodology to improve the SAE experiences of IS in Australia. As Heyn (2013) has suggested, most of the research is centred on mental health/psychological concerns associated with acculturation.

AIS face similar challenges to other ISs (Terkla et al., 2005); however, particular differences require specific attention. Academic and professional staff need to be aware that AIS come from different educational systems and their expectations are different from students from Western nations such as Australia (Heyn, 2013). One particular difference relates to the expectation by Western academics for students to be active participants in their learning (Silverman & Casazza, 2000), as cited in Shaw (2009); instead, they "see themselves as passive recipients of knowledge—they are empty vessels into which the teacher must pour knowledge" (p. 9). Like many international students from non-native English speaking (NNES) backgrounds, AIS are not familiar and find it hard to cope with the Western learning system and its

expectation that learners are independent (Ringer et al., 2010). Other issues commonly faced by AIS and IS in general include:

- The level of English language competency, even if they may have passed the English language requirement (Bone & Reid, 2013);
- Difficulties in being understood by the lecturers, tutors, and professional staff (Bone & Reid, 2013);
- Overcoming the difference in pedagogical and assessment approaches between western universities and home countries (teacher-centred classroom environment in contrast to learner-centred (Alshehri, 2001; Islam & Borland, 2006), and
- Developing the appropriate cultural awareness to adjust to Australian learning environments in order to manage course content and avoid inadequate performance (Burke & Wyatt-Smith, 1996).

International students need to be aware of and understand the principles underpinning their new learning experiences and their teachers' expectations. Conversely, universities need to be aware of these differences and provide assistance to overcome international students' negative views about western educational settings and their confused underpinning philosophy. Much remains unknown about the adjustment of international students. Some studies do show that international students experience more difficulties than domestic students, but few have been conducted using comparison groups or have compared these groups to identify the nature and sources of differences based on a range of variables (Khawaja & Dempsey, 2012). University success is based on measures such as student and graduate satisfaction, retention, progression, and completion (graduation) rates. These metrics are part of the Tertiary Education Quality and Standards Agency (TEQSA – 2019) Risk Assessment Framework (https://www.teqsa.gov.au/sites/default/files/teqsa-risk-assessment-framework-v2-3-4-horizontal-layout-web.pdf?v=1564542617) and satisfaction is reported through the *Quality Indicators for Learning and Teaching* (QILT – https://www.qilt.edu.au/).

To ensure success, HEIs and their staff need to be aware of the impact that cultural and linguistic differences may have on ISs' learning experiences. As Crichton et al. (2004) said:

> If a university enrolls students from linguistically and culturally different backgrounds then the university has to develop the knowledge and capabilities of these students for them to be able to respond effectively to the new cultural contexts in which they are studying. (p.71)

Improving the quality of the educational services requires understanding student needs, specifically those international students who, arguably, may be considered to be the most important "customers" for HEIs because of the impact they have on revenue. International students also impact some of the international university rankings, with The QS World University Rankings basing 5% of their score on the number of international students studying at a university (https://www.topuniversities.com/qs-world-university-rankings/methodology). AIS experience different kinds of services when they start studying at Australian universities. According to Cuthbert (1996), the quality of the service experience becomes an important factor when there is competition, such as the one seen in the Australian higher education sector for international students. There are some units where the transactional (exchange) nature of the relationship lends itself to a customer satisfaction perspective in the student services and support areas that are mainly found in the student services units: admissions and enrolment management, bursary's office/financial aid, bookstore, orientation, dining services, housing, student activities, counselling and health services, career counselling, international students office, library, learning centres, etc. (Council for the Advancement of Standards in Higher Education [CAS], 2012). Nonetheless, there are some aspects within academic practice, depending on organisational contexts, such as research, academic integrity/appeals, and academic advising, that also have a negotiated, exchange-like component to them (Hines, 1984). HEIs may face limitations responding to student needs either in transactions-based exchange situations or more academic-related matters that are discursive in nature, but it is important that interactions with students are conducted with integrity, timeliness, clarity, consistency, fairness, and adaptability to meet student needs (Miller, 2011).

This study has focused on improving the quality of the student experience across the campus for ISs at Australian HEIs through the application of an integrated Kano-QFD approach analysis. The combination of the QFD-Kano model has been introduced and

used in many fields, such as government, banking and accounting, health care, hospitality, information technology, and research (Andronikidis et al., 2009; Singh et al., 2008; Vinayak & Kodali, 2013). The integration of the Kano model into the QFD matrix can be more than a planning tool. If properly deployed, it can become a key element of an organisation's learning process and quality system (Huber, 1991; Tague, 2005). Also, by using the Kano model and integrating it into the QFD, the develop team can enhance their understanding of student needs, leading to superior service design (Tontini, 2007). Its approach and the utilisation of the VOC and the language they use as part of quality control measures (Fuchs, 1999) throughout the university provide HEIs with another systematic process to identify student needs and address them in a timely and more proactive manner, which is a challenge many universities throughout the world face (Zeine et al., 2014). The integrated Kano-QFD's benefits are that it: (1) provides an additional informational link that identifies requirements that processes should address; and (2) establishes a process whereby customer needs can be identified and translated into action in an ever-changing environment (Bouchereau & Rowlands, 2000). As Early and Coletti (1999) pointed out:

> Customer needs keep changing. There is no such thing as a final list of customer needs… [P]lanning teams must realize that even while they are in the middle of the planning process, forces such as technology, competition, social change, and so on, can create new customer needs or may change the priority given to existing needs (p.3.16)

QFD is people-based, bringing together customers and multifunctional organisational teams, directly addressing needs or organising trade-offs between what a customer wants and what the supplier can reasonably do given costs (Bouchereau & Rowlands, 2000). IS suffer logistical and support issues that negatively affect their environment, engagement, and satisfaction levels. Australian universities have usually provided support service units for ISs and their families, to facilitate integration with the university's learning and teaching communities (Robertson et al., 2010). However, the literature suggests that these units have not been as successful as they ought (Slethaug & Manjula, 2012). Examining the Kano-QFD analytical approach to improving the experiences of AIS will test its usefulness for resolving similar problems with other IS subgroups. This will give HEIs a formalised approach to understanding student needs

and improving the quality of IS services (academic, personal, and social) and enhancing student satisfaction. Very little research has investigated AIS experiences and their success or problems in western educational institutions. As discussed, an integrated approach using Kano's model and the QFD technique should lead to better understanding of customer (student) requirements and satisfaction (Shen et al., 2000a). The advantages of integration Kano model and QFD are discussed in detail in the following Chapter 3.

1.4. International students in Australian higher education

ISs constituted approximately 22% of on-campus students in Australian universities in 2018 (https://www.studymove.com/index.php/news/44-what-is-the-percentage-of-international-students-in-australia) before the COVID-19 lockdowns. As students, they were confronted with obstacles to their academic studies in an unfamiliar culture, meaning they had persistently lower marks than Australian-born students (Foster, 2012). As Hughes (2005) noted, marked social, educational, and linguistic differences between the home and host country can add layers of complexity to their study experience. The most recent survey (DESE, 2018) performed by the Australian government back in 2018 shows that ISs are satisfied with their experience at Australian universities. They rated their overall satisfaction at 89%. Table 1.3 breaks down their contentment with the higher education sector experience and specific elements of their engagement within universities.

Table 1. 3: Overall elements of student's engagement with universities

Elements	Higher education student experience in Australia	Student satisfaction with the university environment encountered
Overall satisfaction	89%	
Arrival	93%	
Living	90%	
Learning	88%	
Support	91%	
The expertise of lecturers and academic staff		92%
Virtual learning		92%
Formal welcome		88%
Institutional orientation		90%
Accommodation quality		90%
Safety in Australia		94%
Disability support		95%
Employability		83%

Source: Adapted from *Infographic of the international student survey for higher education* (https://internationaleducation.gov.au/research/research-papers/Documents/ED19-0047%20International%20Student%20Survey%20HIGHER%20EDUCATION%20Infographic_ACC-03.pdf).

Career progression and employment are the two main reasons ISs attend Australian universities (Matthews et al., 2019). Australian Council for Educational Research (ACER) analysis of the 2018 International Student Survey for the Australian government asked over 10,000 IS graduates about their perceptions of having an Australian university degree, with about 10% of respondents being from Africa and the Middle East (Matthews et al., 2019). Most respondents indicated that their degree helped progress their career more quickly back in their country of origin than that of peers who did not attend Australian HEIs (Matthews et al., 2019). According to Matthews et al. (2019), the majority of ISs responding to the survey, 77%, indicated that they self-funded their studies, with family assistance, a loan, or support from their employer. Only about 29% indicated that they received a scholarship from the Australian government or universities, home country or other sources (Matthews et al., 2019). What made them select Australian universities? Reputation was the primary response, although this response was more prevalent at Group of Eight (Go8) university graduates than those attending other Australian universities (Matthews et al., 2019). An underlying premise identified in a study conducted in the USA is the belief that universities in Western countries are better than those in their home countries (Roy et al., 2016), a view reflected by IS students in Australia who said that

the technical knowledge (90%) and soft skills (98%) acquired through their course helped them get their current post (Matthews et al., 2019).

Ammigan and Langton (2018) have indicated that these are the greatest influences of overall student satisfaction in learner engagement; however, the experience is also influenced by arrival, living, learning, and services. Another influence is employment prospects, with IS graduating from Australian universities reporting (at 90%) that 84% of them were employed in their preferred industry (Matthews et al., 2019). Yet, for all of the success noted in these studies, there are some concerns over IS performance and classroom effects as found by Foster (2012), as well as interaction with peers in a collaborative learning environment where English language proficiency can make ISs uncomfortable interacting with peers (Wang & BrckaLorenz, 2018). One reason may be the challenges in adapting to soft skills preparation which is prevalent in the curriculum, including critical thinking and academic integrity because these are not taught in their country of origin (McCrohon & Nyland, 2018; Orth, 2015), which is why graduates value them, as noted above. Thus, these are reasons why quality is more difficult and complex to define in service sectors such as universities (Annamdevula & Bellamkonda, 2016).

Altbach and Knight (2007) proposed looking at international education through the perspective of free trade and how it has driven international academic mobility underpinned by the World Trade Organisation's (WTO) General Agreement on Trade in Services (GATS), treating higher education as a private good rather than a public responsibility. This perspective raises concerns about a competitive, elitist, and primarily market-driven approach (de Wit, 2020). It is also recognition that competition between universities occurs in different areas, which is reflective of a desire to improve reputation and revenue generation (Musselin, 2018).

People in Australia and other Western countries are highly conscious of the social and economic benefits higher education provides for both developed and developing countries in a competitive global economy (Australian Education International, 2011; Gatfield, 1997). Many regions of the world, such as Asia, India, and the Middle East, look upon Western countries such as the United States of America (USA), the United Kingdom (UK), and Australia as highly reputable providers of quality higher education programs in their universities (Organisation for Economic Co-operation and

Development [OECD], 2011; Taylor & Albasri, 2014). Global competition appears vectored by reputation, research capacity, and English language proficiency (Montgomery, 2010; Ramia et al., 2013; de Wit & Altbach, 2021). As a consequence, universities tend to market their experiences and degrees as a good return on investment (ROI), with the marketing highlighting the qualitative aspects of citizenship development, employability, improvement of the quality of research, educational experience, and service to society, in addition to ROI (Rust & Kim, 2012). Yet, pre-COVID-19, Australia was overall still experiencing a slower increase as a result of the earlier impact from the Global Financial Crisis of 2009-2011 (Australian Bureau of Statistics [ABS], 2019). This reality has also meant increased competition to recruit and retain ISs from other universities in Australia and other parts of the world, particularly from other English-speaking countries like the USA, UK, Canada, Ireland, and New Zealand (Doucouliagos & Abbott, 2007). Countries such as Singapore, Malaysia, China, and those in the Middle East, have become increasingly popular destinations for international students as well (Organisation for Economic Co-operation and Development [OECD], 2011). For example, the United Arab Emirates (UAE), with 42 international branch campuses making up its international education hub, is now attracting more students from the Arab region, the broader Muslim world, and ISs from other nations (Johnson, 2020). UAE's approach has similarities with countries like Botswana, Hong Kong, Malaysia, Qatar and Singapore that all have education hubs, which are defined as "concerted and planned effort[s] by a country (or zone, city) to build a critical mass of local and international actors to strengthen its efforts to build the higher education sector, expand the talent pool or contribute to the knowledge economy" (Knight, 2013, p. 375).

Australia's success in increasing the number of ISs studying at its universities has occurred in spite of potential obstacles, such as exacting visa requirements enforced by the Australian government and unfavourable Australian dollar exchange rates over an extended period of time (OECD, 2011). Australia has moved to mitigate some of the potential obstacles generated by visa requirements by adopting many of the findings from the 2011 Knight Review (Knight, 2011). This Review explored the challenges that international students face accessing higher education in Australia and recommended the streamlining of changes to the process of an international student qualifying for and acquiring a visa to study in Australia, as well as being able to work

for longer periods in Australia following receipt of their qualification. The Review's recommendations are important to the current study because they help to contextualise the study of the IS experience of living and studying in Australia.

A potential reason for this has been its approach of system segmentation and the global/national interface in which, regardless of different strategies utilised by Australian universities, the approach is for universities to select a specific market niche, informing prospective students within that target area about their reputation, quality of courses offered and pricing structures (Mahat & Hourigan, 2007; Montgomery, 2010; Pham et al., 2018). In general, Australia has been recognised in recent years as a high-volume provider of international higher education through:

- effective marketing and institutional management;
- entering into partnerships that include creative offshore ventures with universities in other countries;
- providing support services to students and continuously improving these programs;
- having a currency-related price advantage over the USA and UK; and
- processing geographical and social benefits like proximity to Southeast Asia, a temperate climate and a relatively peaceful social atmosphere (Montgomery, 2010; Montgomery, 2016).

Price dependency and over-narrow market riching are two potential challenges to the Australian high education sector noted by Montgomery (2010). Price dependency aligns with the already mentioned issue that market forces seem to be the greatest determining factor in how to create a quality university system (Australian Education International, 2011), making competition for places in the international student marketplace a governing principle guiding university marketing strategies. Competition for IS has also been influenced by the long-standing, ongoing Government review of university funding that determines the number of domestic student places that will be funded in an academic year (Australian Education International, 2011; Gatfield, 1997).

Marshall (2010) also saw the perception of Australian universities as being "global polytechnics", focusing on a small range of industry-specific programs as a potential

challenge. This may not prove to be a strong negative because IS students who come to Australia have come here based on a decision related to chosen career and personal interest (QS Enrolment Solutions, 2019). According to the QS *International Student Survey* for Australia (2019), the highest-rated reason for coming to Australia was high-quality teaching. It therefore makes sense that Australian universities are increasingly required to attract international students by improving the quality of courses they offer and their delivery methods as part of their marketing strategies to attract new students. Hellstén (2010) contended that universities cannot simply see international students as a source of important funding, but instead should view them more holistically like "customers" who are purchasing a service that can be accessed from other parts of the world. While the "student as consumer" approach generates other challenges about student identity (Kek et al., 2022), it does increase student demands and expectations from universities and their staff in terms of in- and out-of-class student experiences (Bunce et al., 2017). It can therefore be argued that pursuing global competition for IS should be linked with offering experience quality (Cathcart et al., 2006).

This study has been framed with a clear understanding of international students as more than "customers" and accepts that "it is not easy to be a cross-cultural learner. It requires courage, determination, and persistence to succeed in doing so. There are many cultural elements that the learners need to adjust to, get used to, learn, or unlearn" (Abukhattala, 2013, p. 36). The following section takes a closer look at students from Arab countries who are the focus of this study.

1.4.1. Arabic international students

Shepherd and Rane (2012) posited that "significant differences exist between the Arab international student (AIS) cohort [in Australia] and international students of other nationalities such as Chinese or Indian" (p. 2). This section introduces some of the cultural backgrounds which differentiate Arab students from other international cohorts.

This study focuses on Arabic international students who come from Arabian countries and are studying in Australia. Roald (2001) defines an Arab as a person who speaks Arabic as their first language. For the purpose of this study, Arab ISs are those whose

origins are in the following 22 Arab countries: Egypt, Algeria, Morocco, Tunisia, Sudan, Libya, Iraq, Kingdom of Saudi Arabia (KSA), Kuwait, Bahrain, United Arab Emirates (UAE), Oman, Qatar, Jordan, Lebanon, Palestine, Syria, Yemen, Djibouti, Comoro Islands, Mauritania, Somalia (Alshammari et al., 2019; Safhi, 2009). All the people in these countries speak Arabic and the majority believe in Islam.

Despite the pattern of increases in the number of AIS (the majority from Saudi Arabia) coming to study in Australia, especially earlier in the 21st century (Shepherd, 2010; Terraschke & Wahid, 2011), very little research has been done to understand their experiences and how they bridge the educational and cultural differences to become successful students (Abukhattala, 2013; Alsahafi & Shin, 2017). This study has sought to investigate and identify the key factors: academic, social, language, cultural, and integration issues facing Arab students and the strategies they use to cope with the new environment (Shepherd, 2010; Townsend & Jun Poh, 2008). Findings should address a gap in the literature while providing Australian universities with approaches to assist the recruitment and retention of AIS through strategic planning capabilities. Results are geared toward enhancing the educational experiences of AIS and international students in general, which may lead to increased international rankings and reputation.

1.4.2. The Australian higher education sector context

The higher education sector has become one of the key foundations of a progressive knowledge-based economy in Australia (Bradley, 2016). As centres for developing human resources, universities have been credited with providing economic benefits to Australian state and federal governments and individuals (Abbott & Doucouliagos, 2004; Norton, 2014). In 2019, there were 1,087,850 domestic students in Australian universities (DESE, 2020), in addition to the 956,773 IS enrolments across the sector (DESE, 2019a). The key policy developments, identified by (Coates et al., 2013), that shape the current Australian higher education sector include:

- Moving from education for mostly the elite to mass access
- A diversification of research funding streams

- A diversification of funding sources, specifically with the introduction of the Higher Education Contribution Scheme (HECS), postgraduate course fees, and full fee-paying arrangements for overseas students
- A major expansion in research activity and research training in areas of national importance
- The development of new forms of national and international linkages between sectors, industries, and nations
- The internationalisation of higher education
- An emerging concern with the quality of education in the wake of massification and increasing demands for university accountability
- Further enhancement of the higher education market, including the introduction of the demand-driven system [which was essentially discontinued in December 2017] (p. 13).

Lakomski and Marshall (1998) argued that quality is the most important and pressing concern in Australian HE. The sector is regulated by the Tertiary Education Quality and Standards Agency (TEQSA).

According to Australia's *Higher Education Standards Framework* of 2015 (HESF), section B1, the following higher education provider types can be called universities:

- Australian University
- Australian University College
- Australian University of Specialisation
- Overseas University
- Overseas University of Specialisation (Australian Government, 2015, p. 17/22)

Currently, there are 43 universities located throughout the country, 40 of which are identified as public universities (Australian Government, 2020; TEQSA, 2020). According to section 2-1(b) of the Higher Education Support Act of 2003 ([HESOS] – https://www.legislation.gov.au/Details/C2020C00197), universities are "established under laws of the Commonwealth, the States and the Territories that empower them to

achieve their objectives as autonomous institutions through governing bodies that are responsible for both the university's overall performance and its ongoing independence…" Section 2-1(b) also identifies that the purposes of universities are:

(i) the education of persons, enabling them to take a leadership role in the intellectual, cultural, economic, and social development of their communities; and
(ii) the creation and advancement of knowledge; and
(iii) the application of knowledge and discoveries to the betterment of communities in Australia and internationally

The more recent definition of the term 'university' in the HESF, section B1.2 (2015) is more precise:

The higher education provider offers an Australian higher education qualification:

1) The higher education provider self-accredits and delivers undergraduate and postgraduate courses of study that meet the Higher Education Standards Framework across a range of broad fields of study (including Masters Degrees (Research) and Doctoral Degrees (Research) in at least three of the broad fields of study it offers).
2) The higher education provider has been authorised for at least the last five years to self-accredit at least 85% of its total courses of study, including Masters Degrees (Research) and Doctoral Degrees (Research) in at least three of the broad fields of study.
3) The higher education provider undertakes research that leads to the creation of new knowledge and original creative endeavour at least in those broad fields of study in which Masters Degrees (Research) and Doctoral Degrees (Research) are offered.
4) The higher education provider demonstrates the commitment of teachers, researchers, course designers, and assessors to the systematic advancement and dissemination of knowledge.

5) The higher education provider demonstrates sustained scholarship that informs teaching and learning in all fields in which courses of study are offered.
6) The higher education provider identifies and implements good practices in student teaching and learning, including those that have the potential for wider dissemination nationally.
7) The higher education provider offers an extensive range of student services, including student academic and learning support, and extensive resources for student learning in all disciplines offered.
8) The higher education provider demonstrates engagement with its local and regional communities and demonstrates a commitment to social responsibility in its activities.
9) The higher education provider has systematic, mature internal processes for quality assurance and the maintenance of academic standards and academic integrity.
10) The higher education provider's application for registration has the support of the relevant Commonwealth, State, or Territory government (pp. 17/22-18/22).

Research adds to the complexity of identifying what Australian universities represent because of the differentiation of roles of staff (academic and professional), focus and priority of learning and research activities, extent of available programs offered, diversity of organisational units and their administration, types of facilities required, and support programs offered (Coaldrake, 2018; Moodie, 2008).

At present, there is no formal classification of Australian university types, reflecting a low level of institutional diversity (Coates et al., 2013). Twenty-five universities self-aggregate into four clusters (Dobson, 2018):

- the Australian Technology Network (ATN), five 'research intensive' universities (https://www.atn.edu.au/), one of which is a dual-sector university, offering both vocational education and higher education programs (Moodie, 2008);

- the 'Group of Eight' research-intensive universities (Go8 – https://go8.edu.au/about/the-go8), "the eight 'leading' universities with the biggest research expenditure" (Moodie, 2008, p. 68);
- the Innovative Research Universities (IRU), 7 universities whose research focus is the translation and commercialisation of research on issues important to the communities they serve (https://www.iru.edu.au/); and
- the Regional University Network (RUN), 6 universities located outside the major metropolitan centres of over 250,000 inhabitants (Moodie, 2008) that are committed to having a role in the betterment of the regional areas of Australia (http://www.run.edu.au/). The remaining Australian universities remain 'ungrouped' (Dobson, 2018). Queensland University of Technology (QUT) affiliated itself with the ATN network, but ceased its membership in 2018 to pursue its own strategic plan (e.g. https://www.atn.edu.au/news-and-events/latest-news/atn-membership-change/).

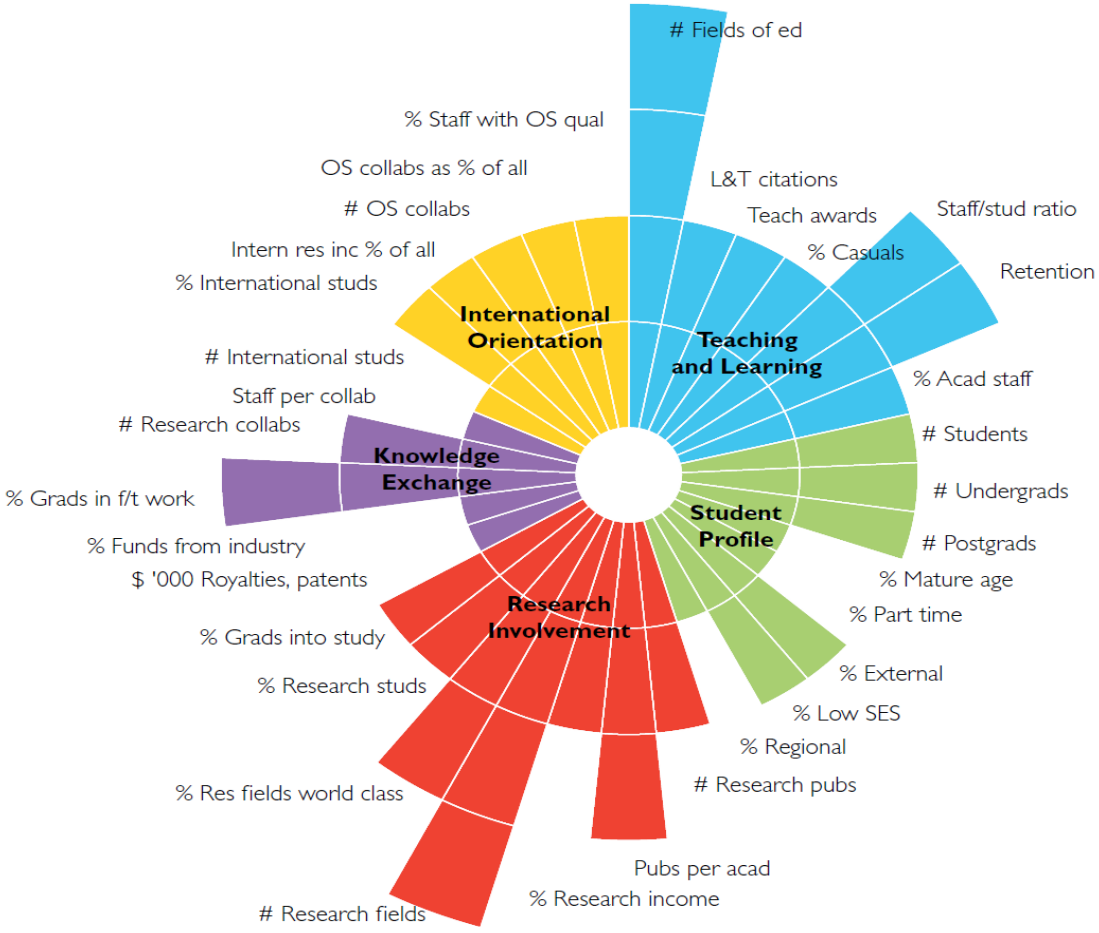
Coates et al. (2013) identified a profile of the Australian higher education sector based on 33 indicators within five dimensions:

Teaching and learning –	the range of fields with degrees offered national teaching and learning awards/citations, staff/student ratio, retention rate, full to casual staff proportion, teaching and research staff as a percent of total academic staff
Student profile –	overall student body size, percent part-time student and external students and students diversity indicators like student age mix, student SES status, regionality.
Research involvement –	several indicators drawn from Excellence in Research for Australia (ERA), like the number of research-active fields and percentage of active fields categorised as 'at world standard' or above, publications per academic and institution overall, proportion of research postgraduate students to all students, proportion of graduates

	continuing to full-time further study and relative university revenue from research.
Knowledge exchange –	the proportion of research funding derived from sources; revenue from royalties, trademarks, and licenses; the number of active research collaborations and partnerships as "detailed by institutions in their Compacts with the Australian Government" (pp. 10-11).
International orientation –	number and relative share of international students, percent of academic staff with highest qualification from outside Australia, absolute and relative number of collaborations with international partners, and research income from international sources.

In contrast to the self-aggregation into four clusters by a majority of universities, as described above, the analysis based on these dimensions revealed six institution groups in which all universities at the time could be allocated. These groupings do not always seem to fit the self-aggregation scheme that still provides the main identity for the sector subgroups. For example, Group 2 tends to contain universities in regional areas, but not all. Group 2 includes 16 universities "from metropolitan, regional and outer-suburban areas, and members of the ATN, the RUN and the IRU associations" (p. 14). The six universities in Group 3 are mainly 'unaligned' universities. Group 4 includes five research-intensive universities from large metropolitan areas, and all belonging to the Go8. Group 5 is made up of the remaining Go8 universities while Group 6 is made up of RMIT alone, because of its differences when compared to the other universities. Figure 1.2 below illustrates what an Australian median university's profile looks like.

Figure 1. 2: Australian 'median university' profile



Source: Coates et al., 2013, p. 11.

1.4.2.1. The education services for overseas students (ESOS) Act 2000

Expansion in the number of international students enrolled at Australian universities has been the result of the Federal Government's "policies which created and facilitated an international education market" (Megarrity, 2007, p. 39). The ESOS Act was passed as a means to provide confidence and guarantee the quality of Australia's educational experience and qualifications to international students by directly regulating the welfare of international students during their stay (Khan & Hancock, 2002; Ogawa, 2005; Ramia et al., 2013). According to the *National Code of Practice for Providers of Education and Training to Overseas Students* section 1 of the *National Code of Practice for Providers of Education and Training to Overseas Students 2018*

legislation. “The benefits of international education and training depend on the quality of the courses and services provided to overseas students, and on public confidence in the integrity and quality of the international education sector” (https://www.legislation.gov.au/Details/F2017L01182/Html/Text#_Toc487026932).

ESOS governs the registration process of international students at international education providers (including universities), enforcement and compliance arrangements, and the tuition protective service that assists international students when their education providers are unable to fully meet their obligations to students to fully deliver a complete educational program (https://internationaleducation.gov.au/regulatory-information/Education-Services-for-Overseas-Students-ESOS-Legislative-Framework/ESOS-Regulations/Pages/default.aspx).

TEQSA is the “ESOS agency for higher education, foundation programs and some ELICOS providers registered on the Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS)” as of 2015 due to the passage of the *Education Services for Overseas Students Amendment (Streamlining Regulation) Act 2015* (https://www.dese.gov.au/uncategorised/resources/registration-fact-sheet-higher-education-foundation-programs-and-elicos). The *National Code of Practice for Providers of Education and Training to Overseas Students 2018* sets out eleven standards establishing the requirements universities must adhere to in the recruitment, provision of services, student experiences and interactions with international students. These effectively provide a framework for university practices, policies, and procedures when it comes to international students:

- Standard 1: Marketing information and practices
- Standard 2: Recruitment of an overseas student
- Standard 3: Formalisation of enrolment and written agreements
- Standard 4: Education agents
- Standard 5: Younger overseas students (those under 18 years of age)
- Standard 6: Overseas student support services
- Standard 7: Overseas student transfers
- Standard 8: Overseas student visa requirements

- Standard 9: Deferring, suspending, or cancelling the overseas student's enrolment
- Standard 10: Complaints and appeals
- Standard 11: Additional registration requirements

Recent additions in ESOS Regulations 2019 maintain or update regulations with which education providers, including universities, must comply. Of interest to this study, are regulation updates on additional information required for English language tests for the academic program and student visa purposes, breaches by students of their visa requirements, and additional student information requirements, especially surrounding enrolment termination as these have visa implications (https://www.dese.gov.au/uncategorised/resources/education-services-overseas-student-esos-regulations-2019-overview).

1.4.2.2. Australian national strategy for international education 2025

In 2016, the Australian Trade and Investment Commission and Australia Future Unlimited (2016) made the case that there was potential for the Australian education sector to increase the number of ISs in onshore studies to a total of 720,000 to 990,000 by 2025, and they were establishing a roadmap to achieve this expansion (p. 3)—there were 738,907 in 2019, according to Study in Australia (n.d.). The Ministry for Toursim and International Education (2016), established by the Office of the Minister for Tourism and International Education, set a plan based on three pillars: [1] strengthening the fundamentals (building a world-class education, training, and research system, delivering the best possible student experience, and providing effective quality assurance and regulation), [2] making transformative partnerships (strengthening partnerships within Australia and abroad, enhancing mobility, building lasting connections with alumni), and [3] competing globally (promoting Australia's education sector excellence, embracing opportunities to grow international education – pp. 1-2). Actions within these pillars that directly impact current, and potential IS from the perspective of this study include:

- Setting nationally consistent approaches that support the Australian international education sector (Action 1.2). This is done through "ongoing, regular engagement between governments, peak bodies, education providers, business and industry, students and the broader community [to] encourage the sharing of ideas and intelligence to align … activities and ensure consistent policy settings across jurisdictions" (p. 13).

- Supporting students (Action 2.1). Ensuring a supportive and enabling environment that meets or exceeds IS needs to reach their full potential. This includes "that students have the assistance they need to perform academically and make meaningful social, professional and cultural connections" (p. 13). There will also be an interest in facilitating work opportunities for IS. "International students can work while studying and apply for a work visa following completion of their study. These arrangements support professional opportunities and contribute to the development of international networks" (p. 14).

- Informing student choice by providing accurate, relevant, and up-to-date information to students, parents, and sponsors collected through robust processes and instruments like graduate employment outcomes and student satisfaction surveys, accessed through the Quality Indicators of Learning and Teaching (QILT) website (Action 2.2).

- Preparing students for global engagement through work-integrated learning experiences in addition to foreign language learning and intercultural awareness to foster the acquisition of cultural competencies (Action 2.3).

- Ensuring student protection. "The National Code of Practice for Providers of Education and Training to Overseas Students sets out standards for Australian education providers in student recruitment, and in the delivery and quality of courses. Australia has also adopted the Statement of Principles for the Ethical Recruitment of International Students by Education Agents and Consultants (the London Statement – p. 16)" (Action 3.2).

- Supporting international mobility through practical visa settings and work arrangements (action 6.1). "Australia offers a range of visa options to facilitate

the entry of students, academics, and researchers. These visa policy settings also enable international students on a student visa to undertake part-time work while studying, which helps to maximise graduate outcomes" (p. 24).

- Expanding student, education, and training professional and researcher mobility (Action 6.2). "Australia's investment in scholarships—such as the Australia Awards, Endeavour Scholarships and Fellowships, Endeavour Mobility Grants, and the New Colombo Plan—to enable study, research, and professional development in Australia, and for Australians to do the same overseas…" (p. 24).

- Promoting Australia as a high-quality international education provider (Action 8.1).

- Building on innovative education and training services to meet student and employer needs onshore, in-market, and online (Action 9.1). "Australian education providers have embraced technology and innovation in learning, teaching, and student services, and have proven their ability to quickly adapt and respond to new technology, student choice, and emerging global demands. Learning management systems, adaptive learning technology and online continuous professional development are all delivering new ways of global learning" (p. 30).

At the time of writing this thesis, the Department of Education, Skills, and Employment has begun a consultation process to establish a new *Australian National Strategy for International Education 2021-2030* (https://www.dese.gov.au/australian-strategy-international-education-2021-2030). A different perspective is driving this effort. The principal difference is a concern regarding the lack of diversity of IS from different countries attending Australian universities, due to unregulated ISs enrolments (Larkins, 2018a). The Study in Australia website (https://www.studying-in-australia.org/international-student-in-australia-statistics/) shows that the highest percentage of students came from China, India, and Nepal for 2018-2019, with the proportional difference similar to that reported by Larkins in Table 1 (2018, p. 4/14).

Babones (2019) has stated the concern in a manner reflecting the view of those sharing this perspective: "Australia's universities do not seem to understand the high levels of

financial risk inherent in their over-reliance on the Chinese market" (p. 1). As Australia's Education Minister Alan Tudge was quoted as saying: "Having up to 60 per cent of a classroom with international students from just one or two other countries is not optimising the Australian student experience – or the international student experience" (Shoebridge, 30 March 2021) (Campus Morning Mail, 30 March 2021). As Professor Larkins pointed out:

> A narrow demographic does lead to a vulnerability for higher education institutions due to political and social disruptions. The 2010-12 negative developments involving Indian students and recent concerns by the Chinese government about the safety of its students are examples. (p. 8/14, 2021)

This difference in perspective strengthens the need for universities to establish strategies for the recruitment and retention of ISs that are able to assist in establishing and maintaining a diversity of IS student enrolments to ensure a better learning experience for all students while minimising the adverse effects originating from disruptions adversely impacting IS student access to Australian universities.

1.4.3. The Queensland higher education sector

Under the HESOS Act, section 13-1 identifies those who are subject to the accountability requirements. Section 16-1 stipulates that higher education providers are the body corporate. In the State of Queensland, the legislation provides the recognition for universities to operate as such. In all, there are nine universities in Queensland that have legislative recognition to operate in the state as universities (https://education.qld.gov.au/careers/pathways/higher-education):

- Australian Catholic University (ACU)
- Bond University (BU)
- Central Queensland University (CQU)
- Griffith University (GU)
- James Cook University (JCU)
- Queensland University of Technology (QUT)
- The University of Queensland (UQ)
- University of Southern Queensland (USQ)

- University of the Sunshine Coast (USC)

The Australian Education Network (https://www.australianuniversities.com.au/directory/queensland-universities/) adds the tenth university, Southern Cross University (SCU) to the Queensland universities list, even though it does not have Queensland legislative recognition. This is due to having one of its three campuses on the Gold Coast, south of Brisbane. More recently, an eleventh university has been recognised: Federation University which now has a campus in Brisbane (https://www.studyqueensland.qld.gov.au/study-in-queensland/university). All of these universities except Bond University, are categorised as Table A higher education providers under the HESOS act. Bond University is a private university and is recognised as a Table B higher education provider. These classifications identify providers that are able to receive grants under the Government Grant Scheme (Financial support, Chapter 2, Parts 2-2 through 2-4).

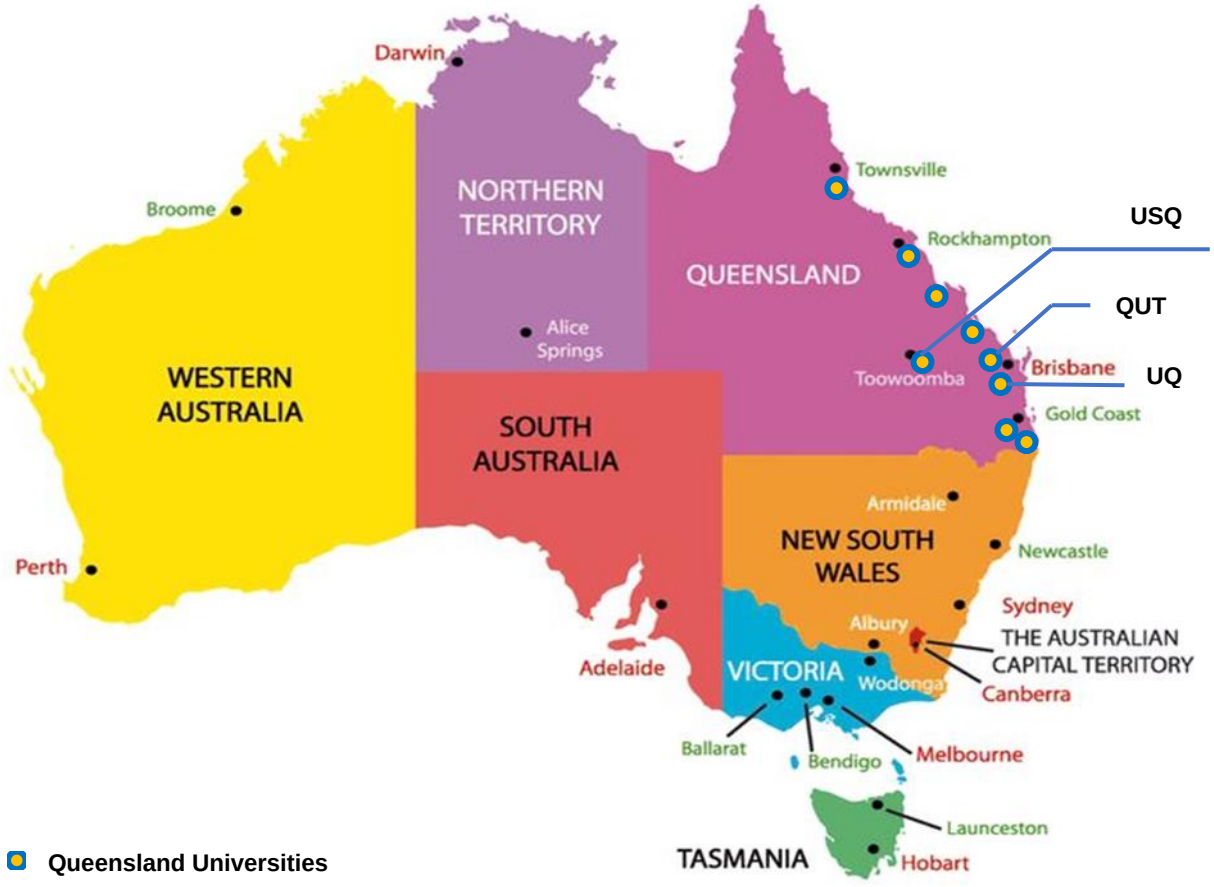
UQ is a Go8 university while CQU, USQ, and USC are part of the RUN network. Federation University and SCU also are RUN institutions. Griffith University is affiliated with the IRU. The remaining universities are what Dobson (2018) termed 'ungrouped' after QUT disassociated itself from the ATN. In addition to SCU, five other universities out of the ten universities in Queensland have their principal campuses located in the major metropolitan areas of Brisbane and the Gold Coast. Both of these metropolitan areas ranked in the top five most affordable cities for students in Australia (https://www.studyinaustralia.gov.au/Destinations/queensland). The remainder, CQU (Rockhampton), JCU (Townsville), USQ (Toowoomba), and USC (Sippy Downs) have their principal campuses located outside Brisbane and Gold Coast areas. Overall, these universities have 32 campuses state-wide (http://www.studyinaustralia.gov.au/Destinations/queensland).

1.4.4. The universities making up the three case studies

This study is based on three Queensland universities, two of whose principal campuses are located in Brisbane, while the main campus of the third is in Toowoomba. Each university represents a different type of affiliation, with The University of Queensland

belonging to the Go8, the University of Southern Queensland being affiliated with RUN, and QUT falling under the unaffiliated group. Two of the three universities have growing trends in overall EFTSL and international student numbers plus increasing revenues, while the third university has been demonstrating a negative trend in enrolment from 2016 onwards, and fluctuating revenues from 2014 through 2019. Budgets and student enrolment figures demonstrate major differences between the three universities, which is reflective of different operational scopes and strategies for research and learning and teaching.

Figure 1.3: Location of the three universities that make up this study



14.4.1. The University of Queensland (UQ)

The University of Queensland was established in 1909 through the *University of Queensland Act* and officially established on 16 April 1910, making it one of the oldest

universities in Australia (Thomis, 1985). UQ is recognised and governed as a body corporate by the *University of Queensland Act 1998* and is part of the Group of 8 universities, making it one of the older and most prestigious research-intensive universities in Australia.

Its creation was a reflection of the arguments from 1887 onwards centring on whether to pursue the Oxbridge university model or follow the American principles of "giving scientific and practical instruction… useful for developing the mineral and agricultural resources of the colony" (p. 9). Initially, three faculties were established: Arts, Science, and Engineering. Arts were included to make UQ degrees acceptable throughout the world, training leaders and "for the provision of general culture, that commodity which had previously been so unsaleable to governments and public alike" (p. 20). At present, UQ has six faculties: Business, Economics and Law; Engineering, Architecture and Information Technology; Health and Behavioural Sciences; Humanities and Social Sciences; Medicine; and Science.

Figure 1.4 highlights UQ's current profile as identified by Coates et al. (2013): an international orientation as reflected in international collaborations and revenue from international sources; a high enrolment number of undergraduate students; research involvement and knowledge exchange reflected in staff research and project collaborations, the proportion of research funding derived from industry sources, royalties, trademarks and licenses, and percentage of graduates in full-time employment; and a high number of fields with degrees offered and high retention rates. This profile has translated into its acquisition of a very high international reputation for many years. It has been and continues to consistently rank as one of the top 100 universities in the world by numerous ranking agencies. In 2020 and 2021, UQ was ranked #54 by *ARWU (Shanghai Times)* for 2020, #62 by *THE World University Ranking* in 2020, #46 by *QS World University Ranking* in 2021, #39 by NTU Performance Ranking of Scientific Papers for World Universities in 2020, #36 by US News Best Global Universities Rankings in 2021, and #31 by CWTS Leiden Ranking in 2020 (https://research.uq.edu.au/about/international-rankings). Furthermore, UQ has a strong record in research commercialisation, with over $32 billion AUD in gross product sales, and founded over 100 start-ups, more than any other Australian university (Universities Australia, 2020). The University also has a reputation for

teaching excellence, winning more national teaching awards than any other Australian university (Universities Australia, 2020).

Figure 1. 4: University of Queensland profile (Group 4 – Research intensive university)

Source: Coates et al. (2013, p. 18).

Tables 1.4 and 1.5 provide available UQ data from Australia's student satisfaction data, the Quality Indicators for Learning and Teaching (QILT) collected for all universities comprising the Australian higher education sector. According to its webpage (https://www.qilt.edu.au/), QILT is based on a series of surveys "covering the student life cycle from commencement to employment." The data is for all students currently at UQ (Table 1.4) while the Graduate Outcomes data refers only to domestic students who graduated from the University (Table 1.5). Table 1.5 is provided as an indication of employment capability within Australia. Table 1.6 provides data pertinent to Employer Satisfaction with the University's graduates entering or re-entering the workforce. Prior to 2020 and the outbreak of COVID-19-related restrictions, UQ's student experience survey results (Table 1.4) were at or above the national average in the areas of *skills development*, *learner engagement*, *teaching quality*, and the *quality of the entire educational experience* for the years 2017-2019. Results for *student support*, however, was under the national average for these years. Like most other universities (Social Research Centre, 2021b), UQ demonstrated a decline in all indicator areas, achieving or exceeding the national average only in

learner engagement (which still had a 19.1% decrease compared to 2019) and *learning resources* (showing a 6.4% increase from 2019). Likewise, UQ saw declines in the *full-time employmen*t rate, *overall employed* and *labour force participation rate* indicator categories in 2020 compared to 2019, as did the Australian higher education sector as a whole, as reported in the *2020 Graduate Outcome Survey* (Table 1.5), reflecting the major impact COVID-19 had on the Australian labour market (Social Research Centre, 2021a); however, the results for UQ remained at or above the national average. The median full-time salary did go up by $800 AUD between 2019 and 2020; yet, UQ data shows results for available years not achieving the national average for 2019 or 2020, possibly reflecting the diversity of employment fields pursued by graduates. Table 1.6 demonstrates that employers maintain a high level of satisfaction with the University's graduates.

Table 1. 4: QILT – UQ student satisfaction

Indicators	2017	2018	2019	2020
Skills development	**81.4%** (N.A. = 80.5%)	**81.6%** (N.A. = 81.2%)	**81.7%** (N.A. = 81.3%)	77.4% (N.A. = 77.9%)
Learner engagement	**63.2%** (N.A. = 62.8%)	**65%** (N.A. = 63.1%)	**63.2%** (N.A. = 59.9%)	**44.1%** (N.A. = 43.2%)
Teaching quality	**83.3%** (N.A. = 80.1%)	**83.5%** (N.A. =81.3%)	**83.6%** (N.A. = 80.9%)	76.5% (N.A. = 77.6%)
Student support	71.6% (N.A. = 72.4%)	72.6% (N.A. = 73%)	71.9% (N.A. = 73.7%)	67.1% (N.A. = 73.1%)
Learning resources	**87%** (N.A. = 84%)	**87.5%** (N.A. = 85.1%)	79.2% (N.A. = 84.8%)	**85.6%** (N.A. = 76.4%)
Quality of entire educational experience	**80.8%** (N.A. = 78.5%)	**81.1%** (N.A. = 79.2%)	**80%** (N.A. = 78.4%)	66.3% (N.A. = 68.4%)

N.A.: National average.

Bold: Percent equalling or exceeding national average.

Sources: QILT (https://www.qilt.edu.au/qilt-surveys/student-experience)

Table 1. 5: QILT – UQ graduate outcomes (Domestic only)

Indicators	2018	2019	2020
Full-time employment rate	**78.2%** (UG) (N.A. = 73.3%) 84.6% (P-G) (N.A. = 86.5%)	**72.8%** (N.A. = 72.5%)	**70.8%** (N.A. = 69.1%)
Median Full-time Salary	Not found	$61,800 (N.A. = $62,600)	$62,600 (N.A. = $64,700)
Overall employed (proportion of those available for any work)	**87.8% (UG) (N.A. =87.2%)** **92.3% (P-G) (N.A. = 92.8%)**	**87%** (N.A. = 87%)	**86%** (N.A. = 85.3%)
Labour Force Participation Rate	**92.5% (UG) (N.A. = 92%)** **96.9% (P-G) (N.A. = 96.1%)**	**93.1%** (N.A. = 92.4%)	**91.6%** (N.A. = 91.6%)

N.A. :National average.

Bold: Percent equalling or exceeding national average.

Source: QILT (https://www.qilt.edu.au/qilt-surveys/graduate-satisfaction)

Table 1. 6: QILT – UQ Employer satisfaction

Indicators	2017	2018	2019	2020
Foundation	**93.8%** (N.A. = 92.8)	**94%** (N.A. = 93.1%)	**95.4%** (N.A. = 93.3%)	**95%** (N.A. = 93.4%)
Adaptive	88.4% (N.A. = 89.5%)	89.6% (N.A. = 89.7%)	**90.2%** (N.A. = 89.9%)	**90.1%** (N.A. = 90%)
Collaborative	**85.6%** (N.A. = 85.6%)	**87%** (N.A. = 87%)	**88.4%** (N.A. = 87.9%)	**90.2%** (N.A. = 88.5%)
Technical	**94.8%** (N.A. = 93%)	**94.9%** (N.A. = 93.4%)	**94.8%** (N.A. = 85.8%)	**94.8%** (N.A. = 93.6%)
Employability	84.2% (N.A. = 84.6%)	84% (N.A. = 85.5%)	85.3% [&] (N.A. = 86.3%)	85.2% [&] (N.A. = 86.3%)
Overall	**87.6%** (N.A. = 84%)	**87.3%** (N.A. = 84.3%	**86.8%** [&] (N.A. = 84.6%)	**87.7%** [&] (N.A. = 84.6%)

N.A.: National average.

Bold: Percent equalling or exceeding National Average.

[&]: Data for UQ and National Average based on aggregated 2018-20 data reported in *2020 Employer Satisfaction Survey*. Other data compiled from annual reports.

Table 1.7 provides a trend analysis of data relating to UQ's total operating revenue, the operating margin for the university, and the extent to which international students contribute to revenue. From 2014 to 2019 UQ's operating revenue increased every year and the net operating margin increased from $42.6 million AUD to $131.8 million AUD. Revenue from international students during this period more than doubled, from $311.9 million AUD to $ 678.9 million AUD, reflecting an increase in the number of international students enrolled at the University (full- and part-time), to the point that in 2019 the headcount of international students accounted for 36.5% of the University's student population.

Table 1. 7: UQ operating revenue, international student enrolment and revenues

Indicators	2014	2015	2016	2017	2018	2019	2020
Total operating revenue (AUD)	$1,689 Billion	$1,713 Billion	$1,751 Billion	$1,828 Billion	$1,969 Billion	$2,194 Billion	$2,120 Billion
Net operating margin@	$42.6 Million (2.5%)	$35.6 Million (2.1%)	-$12.1 Million (-0.7%)	$51.3 Million (2.8%)	$74.5 Million (3.8%)	$131.8 Million (6.0%)	$108.7 Million%
International student fees revenue@	$311.9 Million	$341.1 Million	$385.5 Million	$471.3 Million	$572.7 Million	$678.9 Million	$648.9 Million%
International fee-paying international students (EFTSL)	9,802	10,196	10,912	12,384	14,510	16,460	15,983
Total students at university (EFTSL)	39,963	40,029	40,214	41,202	42,200	43,701	42,937
Number of international students (Headcount)	12,195	12,664	13,338	15,431	18,074	20,213	20,382
Total students at university (Headcount)	50,749	50,830	51,071	52,331	53,696	55,305	54,986
Percent international students (Headcount)	24%	24.9%	26.1%	29.5%	33.7%	36.5%	37.1%

Red font colour: Deficit amount
Source: Key Statistics, UQ Annual Report webpage (https://about.uq.edu.au/files/5150/2019UQAnnualReport_KeyStats.pdf).
@: Universities Australia, https://app.powerbi.com/view?r=eyJrIjoiZTIxOTVhYzAtZWUyYy00Y2Q1LWIzODUtNWZjOTJlMWM5YjM1IiwidCI6ImRkMGNmZDE1LTQ1NTgtNGIxMi04YmFkLWVhMjY5ODRmYzQxNyJ9.

COVID-19 restrictions (partial shutdown) in on-campus attendance for all students and international student support and entry into Australia (shutdown of international borders) required UQ, like all Australian universities, to change its organisational strategies pursuant to reduced budget and consequent changes to operations,

programming and staffing levels. The new Vice-Chancellor noted that the "disruption created by COVID-19 also means it's an opportunity to UQ to reassess our strategic priorities … to develop the next *UQ Strategic Plan 2022-2025*" (The University of Queensland, 2021, p. 5). According to the *2020 Annual Report*, student-focused changes instituted or sped up by UQ as a result of COVID-19, included:

- largely suspending on-campus teaching and moving all instruction online;
- negotiating access to more digital content to support online study with publishers;
- expanding support and provision of expertise in digital learning course design and learning technologies to the broader UQ academic community;
- diverting campus laptops to allow students to continue their studies;
- enabling remote placement "to ensure the many HDR candidates who undertook international or interstate placements were not disadvantaged" (p. 25);
- increasing the slate of online activities offered through the introduction of the Virtual Village platform to enable student engagement between students;
- provision of remote services and continued engagement with industry partners and schools;
- digitalisation of multiple activities "such as mass enrolment and grade changes, as well as bulk change updates to student system configuration, and an integration which allows for full automation of the majority of transcript requests from past and current students" (p. 35).

Table 1.4 shows that these measures were not fully successful in terms of student satisfaction, as reflected by QILT data. There was a drop in the *Learner engagement* indicator of 19.1 from 63.2% in 2019 to 44.1% in 2020; however, both percentages were at or above the national average, which fell by 16.7 (59.9% in 2019 to 43.2% in 2020). The drop in the *Quality of entire educational experience* indicator was 13.7, from 80% in 2019 (which was above the national average) to 66.3% (below the national average). The national average for this indicator dropped 10, from 78.4% in 2019 to 68.4% in 2020. The one UQ QILT indicator that went up was *Learning resources*, with an increase of 6.4, while the national average declined by 8.4. UQ's

85.6% result in 2020 placed it above the national average (84.4% in 2019, 76.4% in 2020). The results suggest student recognition of additional resources, but these resources have not translated to a change in preference regarding learning experiences, with both domestic and international students preferring an on-campus over an online experience.

Most university revenue decline was due to COVID-19, with reduced course fees from international students being a major factor. University savings of 1.3% were generated "due to savings in areas including travel, entertainment, repairs and maintenance, commission payments, consultants' and professional fees, consumables, motor vehicle costs, trading purchases, electricity, printing and stationery, and advertising and promotion" (p. 62). A voluntary separation scheme was implemented as part of cost-cutting measures that cost the University $67.4 million AUD (p. 72). As indicated in Table 1.7, there was a reduction of approximately $74 million AUD in total revenue in 2020, when compared to 2019, while maintaining a net operating revenue of $108.7 million AUD in 2020.

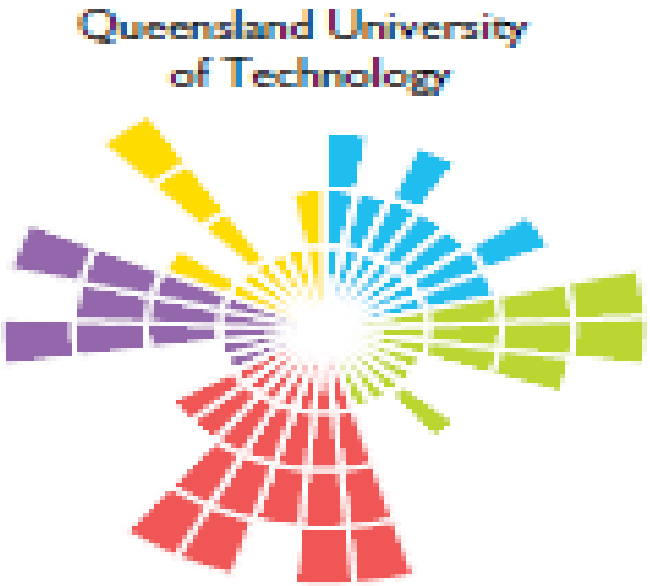
1.4.4.2. Queensland University of Technology (QUT)

The Queensland University of Technology Act was passed by the Queensland Parliament in 1988 and began operating as a university in January 1989 (https://www.qut.edu.au/about/our-university/history). This makes QUT an 'under 50' university, with positive ranking implications. However, as per its history webpage, the University traces its lineage back to colonial times in 1849 with the formation of the Brisbane School of Arts that later became Brisbane Technical College in 1882, and with the State Parliament passing the Technical Instruction Act in 1908, it became Central Technical College. In 1965 the Queensland Institute of Technology (QIT) was created, and the professional and technical courses taught at Central Technical College moved to QIT, which in turn became QUT. QUT also became the recipient of other programs initiated at earlier Brisbane area institutions such as the Brisbane Kindergarten Training College, which was established in 1911 and renamed Brisbane Kindergarten Teachers College in 1965. Similarly, another predecessor was the Queensland Teachers Training College, founded in 1914, and later renamed Senior

Teachers Training College in 1944, Queensland Teachers College in 1950, Kelvin Grove Teachers College in 1961, and Kelvin Grove College of Advanced Education in 1976. In 1982, the Kelvin Grove College of Advanced Education, the Brisbane Kindergarten Teachers College (formed in 1965), and the North Brisbane College of Advanced Education (as it became known in 1974) merged to become the Brisbane College of Advanced Education, based on a 1981 Commonwealth decision to set up a teacher training institution (Pechey, 1992). The Brisbane College of Advanced Education became part of QUT in 1990. Architecture and landscape architecture have also played a part of the development of QUT, with a Diploma of Architecture established in 1919 (https://www.qut.edu.au/about/our-university/history/centenary-of-architecture#tc-860992) and the first landscape architecture course in Australia and the first accredited course in the field in 1967 (Sim & Seto, 1996).

Coates et al. (2013) identified QUT's institutional profile as belonging to Group 2 universities, with specific attributes being a metropolitan university, and being a member of the ATN association at the time. These universities are not seen to be as intensively active in research as the Go8 institutions. Although it has a number of international students amongst its student body, QUT's international orientation is primarily in the number of research collaborations with other academics or industry partners outside Australia, with a number of academics teaching at the University holding credentials from other nations. QUT staff have a very high number of research publications and publications per academic in many research fields, with output in many of these research fields considered to be at the world-class or higher level. Research outputs generate a fair amount of revenue, but less so than that of the Go8 universities. The University has high student enrolments (more so at the undergraduate level), with a notable number of external students, and a strong student retention rate in its diverse program offerings, which is reflective of a good reputation in learning and teaching.

Figure 1. 5: Queensland University of Technology profile (Group 2–Metropolitan University, a former member of the ATN)



Source: Coates et al. (2013, p. 16).

As previously mentioned, QUT's formal founding was in 1989, qualifying it for inclusion in the *Times Higher Education* (THE) and *QS World Rankings* rankings for universities under 50 years of age. These ranking methods recognise that the categories used to rank universities tend to prefer established, traditional universities. In both instances, the methodology used is similar; however, the performance indicators are recalibrated to "reflect the profile of missions of young universities" (https://www.timeshighereducation.com/world-university-rankings/young-university-rankings-2020-methodology). QUT was ranked number14 in the world according to the Times Higher Education (THE) rankings in 2021 (https://www.timeshighereducation.com/world-university-rankings/queensland-university-technology) while ranked number 16 in the QS rankings in 2021 (https://www.topuniversities.com/university-rankings-articles/top-50-under-50-next-50-under-50/qs-top-50-under-50-2021). The University has also been ranked number 186 in the 2021 *THE World University Rankings*, number 217 in the *QS World Rankings* in 2021, is in the 201-400 top university band in the 2020 *ARWU* (Shanghai Times – http://www.shanghairanking.com/ARWU2020.html), and ranked number 401

in the Center for World University Rankings (CWUR) for 2021 (https://cwur.org/2021-22/country/australia.php).

Tables 1.8 and 1.9 provide available QUT QILT student satisfaction data. Table 1.8 is based on responses from current students while Table 9 is based on responses of domestic students who graduated from the University. Table 1.10 presents Employer satisfaction data relating to students employed from the University.

The impact of COVID-19 is noticeable in Table 1.8 in particular. Like many Australian universities, all QILT indicators showed a decrease; however, 2020 was the year when student responses did not place it at, or above, the national average in four out of the six indicators (*Skills development*, *Teaching quality*, *Student support*, *Quality of entire educational experience*). This contrasts with the 2017-2019 results when QUT's student satisfaction results were at, or higher than, the national average for all indicators, with results being relatively stable during this period for all the indicators. The strongest indicators, where the University scores have been above the national average were *Skills development*, *Teaching quality*, *Learning resources* and *Quality of entire educational experience*, each receiving a rating of over 80 percent. The *Learner engagement* indicator has also been higher than the national average; yet, it is reflective of how this indicator has been the sector's weakest over the period of available data and is indicative of how COVID-19 has impacted this University as well as the sector overall. Specifically, QUT's results demonstrated a 20.6 drop between 2019 and 2020, a drop higher than the 16.7 erosion of results for the sector as a whole. Another indicator where the University's loss was substantial was *Quality of entire educational experience*. While the sector as a whole lost 10, QUT's score reduction was 16, suggesting that the emergent, discontinuous, frame-breaking change (Mintzberg & Waters, 1995; Tushman et al., 1986) and management approach in response to COVID-19 has so far had mixed results.

Table 1. 8: QILT – QUT student satisfaction

Indicators	2017	2018	2019	2020
Skills development	**82.6%** (N.A. = 80.5%)	**83.3%** (N.A. = 81.2%)	**83.3%** (N.A. = 81.3%)	77.5% (N.A. = 77.9%)
Learner engagement	**65.1%** (N.A. = 62.8%)	**64.6%** (N.A. = 63.1%)	**65.4%** (N.A. = 59.9%)	**44.8%** (N.A. = 43.2%)
Teaching quality	**82.8%** (N.A. = 80.1%)	**83.3%** (N.A. =81.3%)	**83.1%** (N.A. = 80.9%)	74.8% (N.A. = 77.6%)
Student support	**75.5%** (N.A. = 72.4%)	**75.6%** (N.A. = 73%)	**75.1%** (N.A. = 73.7%)	70.5% (N.A. = 73.1%)
Learning resources	**87.3%** (N.A. = 84%)	**88.6%** (N.A. = 85.1%)	**89.0%** (N.A. = 84.8%)	**79.1%** (N.A. = 76.4%)
Quality of entire educational experience	**81.6%** (N.A. = 78.5%)	**82.7%** (N.A. = 79.2%)	**81.8%** (N.A. = 78.4%)	65.8% (N.A. = 68.4%)

N.A.: National average

Bold: Percent equalling or exceeding National Average.

Sources: QILT (https://www.qilt.edu.au/qilt-surveys/student-experience)

Table 1.9 data also displays the negative impact COVID-19 has had on the ability of QUT graduates to enter the workforce. The workflow (the movement of graduates into jobs) (Burgess et al., 2000) data indicates a small reduction in full- and part-time employment levels of graduates wanting to participate in the workforce. The one aspect of graduate employment where COVID-19 has not had an impact is on the median full-time salary of graduates, where there was an increase, although the amount was still less than the national average. COVID-19, however, did not seem to generate a negative perception on the part of employers. According to the employer satisfaction data found in Table 1.10, all scores except in the *Adaptive* and *Employability* indicators went up in 2020 when compared to 2019. All but one of the QUT indicator scores in Table 1.10 were at or above the national average, and all but two indicators (*Adaptive* and *Employability*) demonstrate a consistent positive trend in the data from 2017 to 2020 even though pre-2020 data for most indicators were not at or higher than the national average.

Table 1. 9: QILT – QUT graduate outcomes (Domestic only)

Indicators	2018	2019	2020
Full-time employment rate	68.0% (UG) (N.A. = 73.3%) **88.5% (P-G)** (N.A. = 86.5%)	70.3% (N.A. = 72.5%)	68.0% (N.A. = 69.1%)
Median full-time salary	Not found	$59,000 (N.A. = $62,600)	$62,600 (N.A. = $64,700)
Overall employed (proportion of those available for any work)	86.5% (UG) (N.A. =87.2%) **95.1%** (P-G) (N.A. = 92.8%)	**88%** (N.A. = 87%)	**86.6%** (N.A. = 85.3%)
Labour force participation rate	**95.1%** (UG) (N.A. = 92%) **97.3%** (P-G) (N.A. = 96.1%)	**95.9%** (N.A. = 92.4%)	**95.2%** (N.A. = 91.6%)

N.A. = National average.

Bold: Percent equalling or exceeding national average.

Source: QILT (https://www.qilt.edu.au/qilt-surveys/graduate-satisfaction)

Table 1. 10: QILT – QUT employer satisfaction

Indicators	2017	2018	2019	2020
Foundation	92.0% (N.A. = 92.8)	**93.3%** (N.A. = 93.1%)	**95.0%** (N.A. = 93.3%)	**96.0%** (N.A. = 93.4%)
Adaptive	88.6% (N.A. = 89.5%)	**89.8%** (N.A. = 89.7%)	**91.2%** (N.A. = 89.9%)	**90.5%** (N.A. = 90%)
Collaborative	84.7% (N.A. = 85.6%)	86.0% (N.A. = 87%)	87.3% (N.A. = 87.9%)	88.1% (N.A. = 88.5%)
Technical	88.4% (N.A. = 93%)	91.0% (N.A. = 93.4%)	**94.0%** (N.A. = 85.8%)	**95.5%** (N.A. = 93.6%)
Employability	84.4% (N.A. = 84.6%)	**85.6%** (N.A. = 85.5%)	**87.2%** [&] (N.A. = 86.3%)	**86.6%** [&] (N.A. = 86.3%)
Overall	81.6% (N.A. = 84%)	82.4% (N.A. = 84.3%	84.2% [&] (N.A. = 84.6%)	**86.9%** [&] (N.A. = 84.6%)

N.A. = National average.
Bold: Percent equalling or exceeding national average.

[&]: Data for UQ and national average based on aggregated 2018-20 data reported in *2020 Employer Satisfaction Survey*. Other data compiled from annual reports.

Table 1.11 reports the Institution's operating revenue, net operating margin, and international student enrolment and revenue data. Operating revenue increased from 2014 through 2019 from just over $900 million AUD to $1.16 billion AUD. Revenue from international students also grew in this period, from just under $160 million AUD in 2014 to $245.5 million AUD in 2019. The increase reflects the increase in the

number of international students attending the University, especially as a percentage of enrolled students. QUT's annual reports from 2014 through 2020 stated that the percentage of international students in its student population was lower than the sector average; however, the *2016 Annual Report* (QUT Marketing and Communication, 2017) stated that the percentage was "within QUT's target range of 15 to 20 per cent" (p. 15). The University's approach changed, pursuing a strategic increase in domestic and international student load intake "to mitigate the risks of both the Australian Government operating grant freeze at 2017 levels and the impact of the Queensland reduced school leaver cohort forecast for 2020" (QUT Marketing and Communication, 2021, p. 12).

Table 1. 11: QUT operating revenue, international student enrolment and revenues

Indicators	2014	2015	2016	2017	2018	2019	2020
Total operating revenue (AUD)	$907,008 Million	$955,854 Million	$992,519 Million	$1,064 Billion	$1,059 Billion	$1,161 Billion	$1,054 Billion
Net operating margin[@]	$33.9 Million (3.7%)	$33.7 Million (3.5%)	$51.6 Million (5.2%)	$100.4 Million (9.4%)	$32.6 Million (3.1%)	$88.4 Million (7.6%)	$25.2 Million (2.4%) *
International student fees revenue[@]	$159.8 Million	$171.7 Million	$174.2 Million	$193.5 Million	$218.1 Million	$245.4 Million	$221.2 Million (-$24.2 Million due to COVID-19 travel restrictions) **
International fee-paying international students (EFTSL)	6,110	6,370	6,153	6,491	7,078	7,656	
Total students at University (EFTSL)	34,740	35,683	36,168	36,887[α]	37,677	38,857[α]	
Number of international students (Headcount)	7,982	8,218	7,847	8,358	8,944	9,769	8,442
Total students at University (Headcount)	47,229	48,503	48,333	49,847	50,804	52,510	52,672
Percentage international students (Headcount)	16.9%	16.9%	16.1%	16.8%	17.6%	18.6%	16.0%

Sources: 2014 Section 7 Overseas students (2015), https://www.dese.gov.au/higher-education-statistics/resources/2014-overseas-students

2015 Section 7 Overseas students (2016), https://www.dese.gov.au/uncategorised/resources/2015-overseas-students

2016 Section 7 Overseas students (2017), https://www.dese.gov.au/higher-education-statistics/resources/2016-overseas-students

2017 Section 7 Overseas students (2018), https://www.dese.gov.au/higher-education-statistics/resources/2017-section-7-overseas-students

2018 Section 7 Overseas students (2019), https://www.dese.gov.au/higher-education-statistics/resources/2018-section-7-overseas-students

2019 Section 7 Overseas students (2020), https://www.dese.gov.au/higher-education-statistics/resources/2019-section-7-overseas-students

@ Source: Universities Australia, https://app.powerbi.com/view?r=eyJrIjoiZTIxOTVhYzAtZWUyYy00Y2Q1LWIzODUtNWZjOTJlMWM5YjM1IiwidCI6ImRkMGNmZDE1LTQ1NTgtNGIxMi04YmFkLWVhMjY5ODRmYzQxNyJ9

^ Sources: QUT Annual Reports, 2014-2020.

Source: CAUDIT University Student & Staff Numbers (e.g. https://www.caudit.edu.au/2018-university-student-staff-numbers)

α Calculation based on EFTSL being about 74% as reported in *QUT Response to Higher Education Standards Panel Discussion Paper: Improving retention, completion and success in higher education(June2017), https://docs.education.gov.au/system/files/doc/other/36._queensland_university_of_technology_checked.pdf*

* Source: QUT Annual Report 2020, p. 30.

** Calculation based on data reported in QUT Annual Report 2020, p. 31.

It is not surprising that there was an overall decrease in total operational revenues for 2020 due to COVID-19 restrictions and the 'frame-breaking' institutional response to these restrictions. Nonetheless, QUT achieved a $25.2 million AUD surplus in 2020, but this was due to operational changes made to curtail expenditures ($43.4 million AUD), which forecast a revenue surplus of $9.6 million AUD (*2020 Annual Report*, 2021). According to the University's most recent annual report (*2020 Annual Report*, 2021), the surplus was also helped by an increase in domestic fee-paying students that brought in $10 million AUD more than before, potentially reflecting these students taking up opportunities to retrain and/or upgrade skills because a large number of the 1488 additional students were "in graduate certificate, graduate diploma and coursework master programs" (p. 17). This countered the reduction in commencing international student enrolments of about 33% in 2020 compared to 2019 due to COVID-19 travel restrictions that translated to a $22 million AUD reduction from 2019 in international student revenue.

Table 1.4 illustrates that decisions made to navigate through the challenges placed by COVID-19 and government-imposed requirements may have been necessary, but they did have a negative impact on student satisfaction, at least in the short term. Decisions made to trim expenses and respond to Federal and State government policies regarding the delivery of teaching activities include:

- redesigning course delivery ("transferring campus-based teaching and learning activities to fully online delivery in the second half of Semester 1 and mixed delivery in Semester 2" – p. 16; "transition to virtual mobility options during Semester 1 to enable completion of semester exchange programs, and short-term virtual partner programs were held in the mid-year break" (p. 19) for outbound international students) and assessment (facilitation of and "academic and student support, scaling-up the use of collaboration technologies and providing flexibility in student academic concessions to accommodate the exceptional circumstances" – p. 16);

- implementing on-campus social distancing measures in order to maintain services such as libraries even when a partial shutdown of the campuses was required;

- making arrangements when possible to ensure alternate (e.g. remote or virtual work-integrated learning [WIL] experiences) or deferred placements in areas such as health and education could be pursued.

Decisions made regarding assistance to students were:

- establishing an "Emergency Student Fund in March 2020, which aided more than 340 students experiencing COVID-19 financial hardship" (p. 5); and
- establishing "an International Student COVID-19 Hardship Fund to provide immediate support to students experiencing financial hardship as a direct result of the pandemic" (p. 16), which distributed more than $2.899 million AUD to over 1600 international students and facilitated "the distribution of 22,500 frozen meals to QUT's international student community" (p. 16) through a partnership with Fare Share and FoodBank.

Decisions focusing on staffing issues included:

- adjusting working arrangements of staff while ensuring continuity in teaching, research, and student services;
- "academic staff were provided with extensive training and resources to support the rapid move to fully online teaching faculty and divisional realignment" (p. 16); and

- achieving approval of variances to the Enterprise Agreements to "provide for immediate and longer-term cost-saving measures, in the interests of minimising the impact of the pandemic on job security", which included "related leave, work flexibility for those staff identified to be at higher risk and a commitment to consideration of the impact of the pandemic on staff performance and probation (where appropriate)" (p. 26), which led to $4.2 million AUD in redundancy payments, freezing of recruitment, "senior staff reduced to a nine-day fortnight" (p. 32), foregoing leave loading for 18 months, deferring a 2% pay increase for 12 months, staff taking four days to leave at the end of the year.

Other management and operational decisions made to reduce expenses were:

- policy and process reform, ongoing and with a focus on recovery and growth post-COVID-19, the pausing large-scale corporate reviews, and an independent review of "a sample of COVID-19 specific business continuity plans, system recovery plans, and Business Continuity Management Framework" (p. 14);
- centralisation of shared functions from the faculties and divisions and "streamlining of activities and processes" (p. 25); and
- the cessation or deferment of capital projects.

1.4.4.3. University of Southern Queensland (USQ)

After ten years of discussions and gathering local and regional support, what is now the University of Southern Queensland was founded in 1967 as the Queensland Institute of Technology (Darling Downs) or QIT (DD) in Toowoomba, offering 29 two-, three- or four-year courses and offering correspondence courses in collaboration with the Technical Correspondence School in Brisbane (Clarke & McDonald, 2007). QIT (DD) became the Darling Downs Institute of Advanced Education (DDIAE) in June 1971 due to the passage of The Education Act (1964) Amendment Act of 1970. (Clarke & McDonald, 2007). "Distance education emerged as a major mode of delivery during the mid-1970s and by 1980 external enrolments exceeded internal

enrolments" (p. 3). Approximately 90% of the students came from Queensland, with the remainder coming from countries like "Papua New Guinea, India, South Africa, Saudi Arabia, Fiji, Hong Kong, Malaysia, Britain, and the USA" (p. 15). At the time, according to Clarke and McDonald (2007), the institution accounted for around two-thirds of international enrolments in Australia.

The University College of Southern Queensland Act was passed in 1988 and in 1990 the DDIAE became the University College of Southern Queensland (UCSQ) "under the sponsorship of the University of Queensland with the aim of achieving full university status in 1993" (p. 21). UCSQ became the University of Southern Queensland (USQ) on 1 January 1992, ahead of schedule. The University is presently recognised as a corporate body under the University of Southern Queensland Act 1998.

In 1996, USQ began providing online education, becoming the first distance education facility in the world in 1997 to receive ISO Standard 9001 accreditation and winning awards for its online activities in 1999 (Clarke & McDonald, 2007). Throughout the 1990s, USQ expanded its international programs through partnerships with other institutions and tutorial support, using USQ study packages throughout the world. As noted by Lovegrove and Clarke (2008), "with its strong background in open and distance learning, USQ has found itself well placed to maintain a leadership position in technology-enhanced learning and in employing "Fleximode" – that is, providing blended learning experiences to all students through cutting-edge educational technologies and resources that can be accessed from anywhere, coupled with an emphasis on building meaningful relationships with students" (p. 140).

In 1997 USQ formed a second campus, the USQ Widebay Campus, later called USQ Fraser Coast. The expansion was based on a collaboration with the Hervey Bay Council (https://www.usq.edu.au/about-usq/values-culture/history/timeline). In 2006 the University established a third campus in Springfield, southwest of Brisbane and in 2007 it established the Queensland College of Wine Tourism in Stanthorpe, which was a partnership with Southern Queensland Institute of TAFE, Stanthorpe State High School and the State Government (Clarke & McDonald, 2007). In 2015, USQ sold its Fraser Coast Campus to the University of the Sunshine Coast and bought The University of Queensland's Ipswich campus as part of a "Western Corridor" strategy

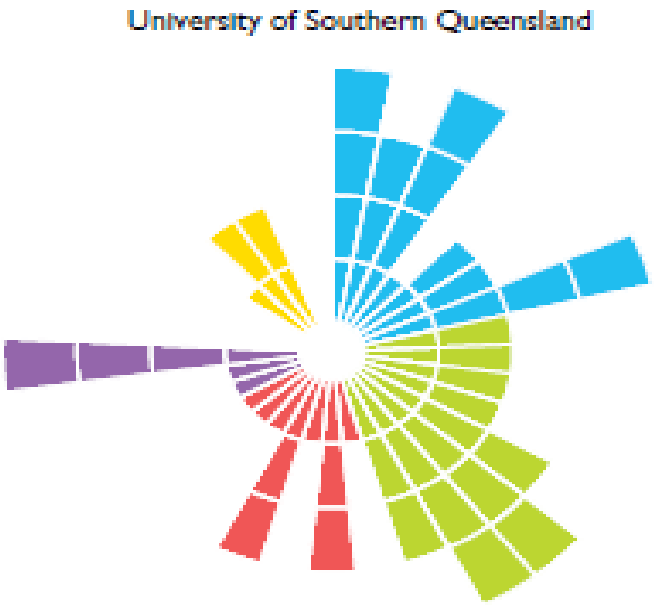
aimed at making USQ the "ideal higher education provider for Brisbane's western corridor" (University of Southern Queensland, 2020a, p. 14)

USQ was classified by Coates et al. (2013) ACER study as a Group 1 university. Australian universities in this group tend to include many of the regional universities. According to information provided on the RUN website, many regional universities are major providers of distance education and thus represent the only choice for many regional students due to mobility challenges (https://www.run.edu.au/resources/Regional%20Students.pdf; (Richardson, 2011). This makes regional universities a major source "of knowledge, research and innovation, and help to build strong regional economies" (https://www.run.edu.au/) by being a key source of highly skilled employees (https://www.run.edu.au/RegionalStudents) in addition to sustaining regional areas and communities (Richardson, 2011). RUN institutions thus have "demand-side" and "supply-side" effects on regional economies, based on their impact on local expenditures and "through their teaching and research activities, raising the productivity of graduates who gain a tertiary qualification … and improving the productivity of industrial activities overall by producing research" (Waschik et al., 2018, p. 5). International students are sought because they add to the diversity of students in courses, provide fee-based revenue to assist in research benefitting the regions and represent individuals with high skill sets that could remain in the regions (RUN 31 March 2021 Media Release).

USQ's profile generated by Coates et al. (2013) reflects the comments in the previous paragraph. Figure 1.6 shows that the University's strengths are in teaching and learning and meeting regional workforce needs, as demonstrated in their student profile. In terms of learning and teaching, USQ has programs in numerous fields of education, employs a high number of academic staff, with many staff recognised through awards and citations. Due to the high number of teaching areas, staff are actively pursuing research in a high number of fields, which has translated into a raised number of publications per academic. The University's international reputation, as illustrated by rankings has been increasing. It ranks in the 101-150 band in 2020 *THE Young Universities* world ranking, in the 500-600 band in 2021 *THE World University Rankings*, the 701-750 band in the *2021 QS World Rankings*, number 736 in the *U.S.*

News & World Report Best Global Universities ranking, in the 801-900 band in the *ARWU (Shanghai Times)* rankings for 2020, and number 1245 in the *CWUR* rankings for 2020 (*Annual Report, 2020*, 2021, p. 47; https://collegedunia.com/australia/college/623-university-ofsouthernqueenslandtoowoomba/ranking;http://www.shanghairanking.com/ARWU2020.html; https://cwur.org/2021-22/country/australia.php). USQ's annual report also noted improvements from 2020 *THE Young Universities* and *2021 QS World Rankings* were assisted by citation impact that "improved from 760 (in the world rankings 2019) to 505 (in 2021, released September 2020)" (*Annual Report, 2020*, 2021, p. 47).

Figure 1.6: University of Southern Queensland (USQ) profile (Group 1 – regional area university)



Source: Coates et al. (2013, p. 15).

Many USQ students are from the regions, study part-time, and are classified as external students who are designated as coming from low SES backgrounds. According to the 2021 Good Universities Guide, 31% of USQ students were from low-SES or disadvantaged backgrounds and 49% of enrollees are first-generation/first-in-family, coming from families whose parents did not exceed Year 12 education (https://www.gooduniversitiesguide.com.au/course-provider/university-of-southern-queensland-usq/ratings-rankings/undergraduate). The percentage of USQ graduates

who are in full-time work is very high (Table 1.13). USQ's international student numbers are low and have been diminishing from 2014 through 2019, following the trend of decreasing domestic student enrolments (Table 1.15).

Table 1.12 presents QILT student satisfaction data for the years 2017 through 2020. Noteworthy in the table are two points. First, *Student support* results were at the same level or higher during this time period, making it the only indicator to achieve at or above the national averages for the years 2017 through 2019. This indicator is based on asking respondents to consider issues relating to:

- support provided by the institution to settle into the study;
- experiencing efficient enrolment and admissions processes;
- helpfulness and relevancy of induction/orientation activities;
- availability and helpfulness of enrolment systems and administrative staff and services;
- availability and helpfulness of career advisors.
- availability and helpfulness of academic or learning advisors;
- availability and helpfulness of support services such as counsellors, financial/legal advisors, and health services;
- the extent of support relevant to the student's circumstances; and
- the extent of support provided in achieving appropriate English language skills (Social Research Centre, 2021b).

The second point is that USQ had higher scores in 2020 for all but one indicator compared to the previous recorded years, and in each of these instances the indicators achieved at or above the national average. The one indicator where USQ showed a continued decrease in satisfaction was learner engagement, although the drop of 3.4 percent from 2019 to 2020 under the COVID-19 restrictions was less than the sector average of 16.7. The *Learner engagement* indicator looks at the:

- extent to which the student felt prepared for study;
- extent to which the student had a sense of belonging regarding the institution;
- frequency of participation in online or face-to-face discussions;

- frequency with which the student worked with other students as part of their studies;
- frequency with which the student interacted with other students outside study requirements;
- frequency of student's interaction with other students who are "very different" from them; and
- extent opportunities to interact with local students (Social Research Centre, 2021b).

Table 1. 12: QILT – USQ student satisfaction

Indicators	2017	2018	2019	2020
Skills development	75.2% (N.A. = 80.5%)	78.5% (N.A. = 81.2%)	77.4% (N.A. = 81.3%)	**79.8%** (N.A. = 77.9%)
Learner engagement	49.8% (N.A. = 62.8%)	54.3% (N.A. = 63.1%)	34.6% (N.A. = 59.9%)	31.2% (N.A. = 43.2%)
Teaching quality	72.2% (N.A. = 80.1%)	77.5% (N.A. =81.3%)	76.6% (N.A. = 80.9%)	**80.6%** (N.A. = 77.6%)
Student support	**74.5%** (N.A. = 72.4%)	**76.4%** (N.A. = 73%)	**76.1%** (N.A. = 73.7%)	**79.7%** (N.A. = 73.1%)
Learning resources	80.6% (N.A. = 84%)	85.0% (N.A. = 85.1%)	83.8% (N.A. = 84.8%)	**82.0%** (N.A. = 76.4%)
Quality of entire educational experience	73.6% (N.A. = 78.5%)	76.7% (N.A. = 79.2%)	75.7% (N.A. = 78.4%)	**74.6%** (N.A. = 68.4%)

N.A.: national average

Bold: Percent equalling or exceeding National Average.

Sources: QILT (https://www.qilt.edu.au/qilt-surveys/student-experience)

A low score on the *Learner engagement* indicator for a university whose delivery is primarily online and external can suggest that "online students may not be receiving the flexible and accessible learning that online education is purported to provide" (Moore & Greenland, 2017, p. 52). Yet, Stahl et al. (2006) observed that learner engagement (involvement) in online programs is enhanced by student support beyond learning resources (Chen et al., 2010; Laux et al., 2016). The higher than average scores achieved for *Student support* suggest the presence of ancillary programs and

services geared to enhancing retention, progression, and completion. The items making up the QILT *Student support* indicator align with Muljana and Luo (2019) view that institutional support activities (as identified in the indicator items) aim to positively impact student retention and with the additional TEQSA (2019) risk indicators of progression and completions. USQ's continued decline in *Learner engagement* in 2020 does contrast with its relatively stable results for the *Quality of the entire educational experience indicator*. One way to interpret the University's scores is Larkin et al.'s (2013) contention that continued student enrolment and participation is based on a multiplicity of factors, with two factors being commitment and embeddedness. The components of commitment are:

- affective commitment: a positive emotional attachment to the institution and wants to remain in it for the duration of their educational experience
- continuance commitment: willingness to remain because the costs of leaving is too high; and
- normative commitment: feelings of obligation based on loyalty.

Embeddedness components are:

- links: formal and informal student-student, student-teacher, student-institution, student-broader community connections;
- fit: "refers to perceived compatibility between the organisation and other aspects of one's life" (p. 83); and
- sacrifice: costs ensued from leaving.

Taking these two considerations into account provides a perspective that USQ's support provides a series of links to maintain continued participation beyond that of "sacrifice"/normative commitment because the interactions students are able to achieve provide overall positive regard to their learning experience. One potential advantage that students may see in completing their studies is the fact that graduates have a very high probability of entering the workforce, as noted in Table 1.13, with the percentages being higher than the national average for 2018 through 2020. Most

graduates are able to procure full-time employment at a higher than national average full-time salary (based on the median salary for 2019 and 2020). While employer satisfaction has been lower than the national average for the period 2017 through 2020 for most indicators, in all but two instances the results are in the 80.5% to 94.4% range, indicating a positive outlook toward the University and its graduates, especially in the *Technical skills* indicator that has consistently been near or above the national average (Table 1.14).

Table 1. 13: QILT – USQ graduate outcomes (Domestic only)

Indicators	2018	2019	2020
Full-time employment rate	72.8% (UG) (N.A. = 73.3%) 83.8% (P-G) (N.A. = 86.5%)	**76.1%** (N.A. = 72.5%)	**78.9%** (N.A. = 69.1%)
Median full-time salary	Not found	**$69,400** (N.A. = $62,600)	**$70,700** (N.A. = $64,700)
Overall employed (proportion of those available for any work)	85.4% (UG) (N.A. =87.2%) 92.1% (P-G) (N.A. = 92.8%)	**88.9%** (N.A. = 87%)	**89.7%** (N.A. = 85.3%)
Labour force participation rate	**95.9%** (UG) (N.A. = 92%) **97.3%** (P-G) (N.A. = 96.1%)	**94.6%** (N.A. = 92.4%)	**94.5%** (N.A. = 91.6%)

N.A = National average.

Bold: Percent equalling or exceeding national average.

Source: QILT (https://www.qilt.edu.au/qilt-surveys/graduate-satisfaction)

Table 1. 14: QILT – QUT employer satisfaction

Indicators	2017	2018	2019	2020
Foundation	91.3% (N.A. = 92.8)	92.0% (N.A. = 93.1%)	91.1% (N.A. = 93.3%)	92.5% (N.A. = 93.4%)
Adaptive	85.4% (N.A. = 89.5%)	83.3% (N.A. = 89.7%)	85.3% (N.A. = 89.9%)	87.3% (N.A. = 90%)
Collaborative	82.0% (N.A. = 85.6%)	80.9% (N.A. = 87%)	80.5% (N.A. = 87.9%)	82.9% (N.A. = 88.5%)
Technical	**94.4%** (N.A. = 93%)	**94.4%** (N.A. = 93.4%)	**92.2%** (N.A. = 85.8%)	92.0% (N.A. = 93.6%)
Employability	84.1% (N.A. = 84.6%)	84.1% (N.A. = 85.5%)	82.5%[&] (N.A. = 86.3%)	84.0%[&] (N.A. = 86.3%)
Overall	77.4% (N.A. = 84%)	78.8% (N.A. = 84.3%	81.0%[&] (N.A. = 84.6%)	**85.0%**[&] (N.A. = 84.6%)

N.A = National average.

Bold: Percent equalling or exceeding national average.

[&]: Data for UQ and National Average based on aggregated 2018-20 data reported in *2020 Employer Satisfaction Survey*. Other data compiled from annual reports.

Table 1.15 shows that USQ's revenue has fluctuated between 2014 and 2020, and they particularly did well in 2020 based on the institutional strategies pursued under the COVID-19 disruptions. Revenue fluctuation has occurred due to a slight reduction in domestic and a more notable lower number of international student enrolments during this period, although international student revenues increased from $38.6 million AUD in 2016 to $46.7 million AUD in 2019. This difference possibly reflects a higher proportion of international post-graduate students enrolling at the University.

Table 1. 15: USQ operating revenue, international student enrolment, and revenues

Indicators	2014	2015	2016	2017	2018	2019	2020
Total operating revenue (AUD)	$307.6 Million	$369.7 Million	$320.9 Million	$320.6 Million	$328.5 Million	$327.4 Million	$345.0 Million
Net operating margin@	$47.5 Million (15.4%)	$81.6 Million (22.1%)	$23.4 Million (7.3%)	-$594.0 Thousand (-0.2%)	$10.3 Million (3.2%)	$5.6 Million (1.7%)	$12.58 Million (3.6%) *
International student fees revenue@	$34.9 Million	$39.8 Million	$38.6 Million	$41.4 Million	$45.2 Million	$46.7 Million	Not available
International fee-paying international students (EFTSL)	2,821	2,636	2,217	2,058	1,933	1,863	1,807
Total students at university (EFTSL)	14,385	14,726	14,557	14,241	14,016	13,655	13,969
Number of International students (Headcount)	4,845	4,405	3,813	3,259	2,846	2,797	Not available
Total students at university (Headcount)	28,095	28,286	27,566	26,458	25,905	25,670	25,648
Percentage of international students (Headcount)	17.3%	15.6%	13.9%	12.3%	11.0%	10.9%	Not available

Source: USQ Annual Reports 2015-2020

* Calculation based on data reported in *USQ Annual Report 2020*, p. 75.

^^ Calculated based on total student enrolment numbers reported in *USQ Annual Report 2019* (University of Southern Queensland, 2020b).

@ Source: Universities Australia, https://app.powerbi.com/view?r=eyJrIjoiZTIxOTVhYzAtZWUyYy00Y2Q1LWIzODUtNWZjOTJlMWM5YjM1IiwidCI6ImRkMGNmZDE1LTQ1NTgtNGIxMi04YmFkLWVhMjY5ODRmYzQxNyJ9

* Sources:

- 2014 Section 7 Overseas students (2015), https://www.dese.gov.au/higher-education-statistics/resources/2014-overseas-students
- 2015 Section 7 Overseas students (2016), https://www.dese.gov.au/uncategorised/resources/2015-overseas-students
- 2016 Section 7 Overseas students (2017), https://www.dese.gov.au/higher-education-statistics/resources/2016-overseas-students
- 2017 Section 7 Overseas students (2018), https://www.dese.gov.au/higher-education-statistics/resources/2017-section-7-overseas-students
- 2018 Section 7 Overseas students (2019), https://www.dese.gov.au/higher-education-statistics/resources/2018-section-7-overseas-students
- 2019 Section 7 Overseas students (2020), https://www.dese.gov.au/higher-education-statistics/resources/2019-section-7-overseas-students

USQ was the Australian university least impacted by COVID in student experiences as measured by the QILT indicators, as illustrated in Figure 1.7 below (Social Research Centre, 2021b). The Social Research Centre did point out that it was universities with larger student enrolments experiencing the larger declines in student ratings, such as was noted for QUT (p. 11). "With significantly fewer international students than many other universities and a well-established online offering of … programs, the impact for USQ was minimised" (University of Southern Queensland, 2020b, p. 5).

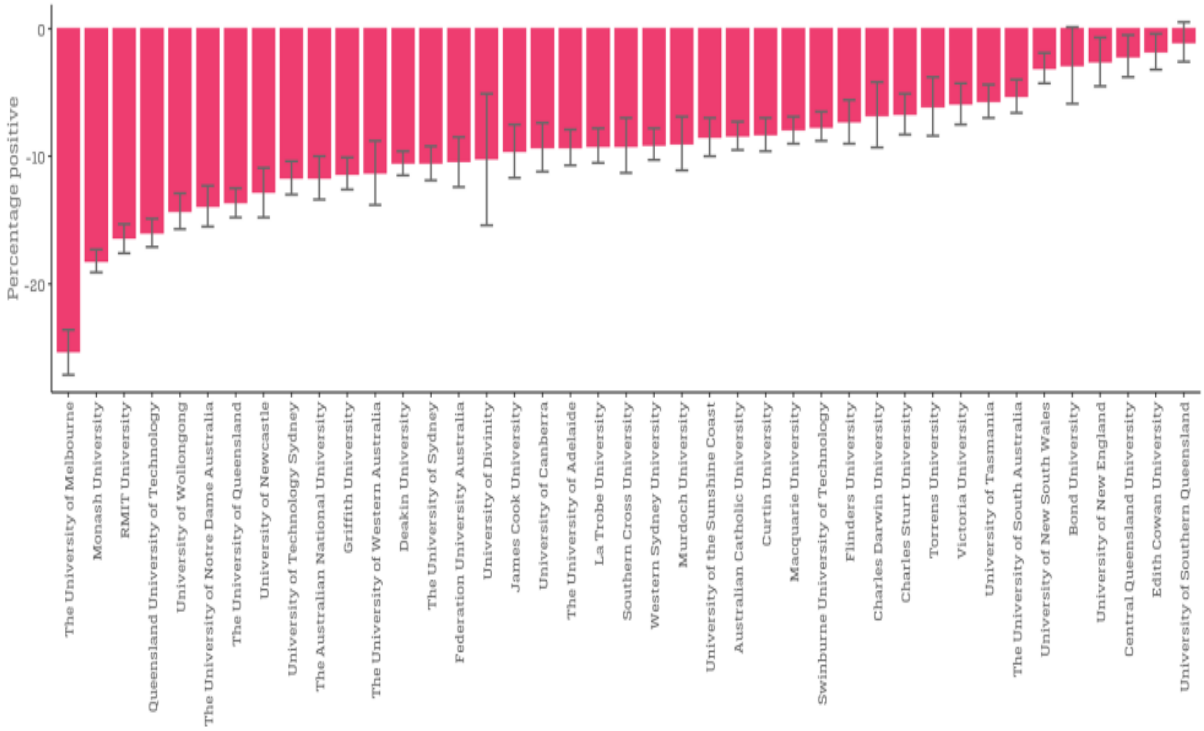
All course materials, assessments, and examinations were moved online in response to government-mandated shutdowns of the three campuses. Students living in the USQ Residential Colleges were encouraged to vacate the Colleges, if possible, being provided a $500 relocation grant with the possibility of an additional $500 if expenses exceeded the initial $500 limit. "Residents who remained on-campus were relocated to [rooms with] ensuite bathrooms and were provided three meals a day at no additional cost, to reduce the use of shared common spaces" (p. 33). USQ also introduced academic concessions to reflect the potential negative impact that learning under COVID-19 could generate. "The University also established a COVID-19 Student Support Package with more than $2.35 million AUD in funding and approximately 200 laptops provided to support 1480 of our students impacted by the pandemic" (p. 5). Three financial support packages were made available to students: a living expenses package of up to $3,000 AUD, a technology support package of up to $1,000 AUD, and up to $500 AUD in learning resources (p. 32). Also, "a Student Emergency Support Fund was created with approximately $50,000 AUD collected from over 100 donations from staff and the wider USQ community to assist in supporting students impacted by the COVID-19 pandemic" (p. 23). The Graduate Research School provided:

> … a referral service for HDR students experiencing financial hardship to access the USQ COVID-19 Financial Assistance Scheme, and welfare and wellness support services; promotion of opportunities to participate in remote internships offered by the APR Intern program; employment opportunities throughout the Research and Innovation Division; and the establishment of a fund to support on-campus international students experiencing demonstrable

acute financial hardship, distributed in the form of equity bursaries up to the value of $1,000. (p. 51)

Staff, as with other universities, were required to work from home, with most interactions and activities occurring online. Like other universities, USQ undertook a voluntary severance program for staff as part of its fiscal management plan. Unlike other universities, however, the University continued with a number of its campus development programs, with more than 35 capital projects progressing during 2020 as noted in the *USQ Annual Report 2020* (2021).

Figure 1. 7: The undergraduate student experience by the university, 2019-2020



Source: Social Research Centre, SES/QILT, 2020, p. 12.

1.5. Purpose of the research

This study is one of the few that focuses on using the integrated Kano-QFD-SWOT approach to identify and provide an understanding of Arab students in Australia. In this regard, it aims to contribute to the literature about Arabic international students,

adding to what is known about them when studying outside the Middle East. As this study demonstrates, using a Kano-QFD-SWOT analysis provides information that will enable language programs, colleges, and universities in the recruitment of Arab students and enhance the possibility of satisfaction with their learning experience and academic success. In addition, this study can be of use to the Arab Cultural Mission and Ministries of Higher Education in Arab countries as they select students to study abroad, orient students before they travel to Australia, and advise students while they are here. More importantly, however, this study also demonstrates that the use of a Kano-QFD-SWOT analysis in identifying student needs and alignment with institutional requirements of success also works when applied to the recruitment, retention, and success of international students from other cultures and nationalities.

There are two reasons for a focus on Arab international students. The first reason is the relatively low number of Arabic students currently studying in Australia in contrast to students from other countries such as China and India. The second reason is the researcher being an Arabic international student himself, allowing for an emic understanding of the culture and issues that would be and were raised by respondents. The integration of a Kano Analysis with QFD allowed for a more in-depth capture of the "student voice", which is one of the two key sources of information when conducting a QFD analysis. The HOQ matrix tool of the QFD, integrated with the Kano model, which is used for identifying the voice of the student, was utilized for identifying and understanding stakeholders' needs and wants (Gündüz, 2016). The stakeholder term was used in this study to signify internal and external customers of university−academic and administrative staff, students, and students' families. Specifically, this study investigated the social and academic experiences of AIS and analysing these experiences through the level of help offered by Australian universities to IS in general and AIS in particular, which impacts on their ability to settle into their studies and to progress academically. The results of the analysis have led to information that can be the basis of individual university strategies to address the needs of this specific group of IS. Findings can also be used to advise AIS about how to better engage with the Australian learning system and to better understand its context regarding institutional expectations for student success.

1.5.1. Research objectives

This study is based on meeting four specific research objectives:

(i) Identification and understanding of the AIS experiences of studying at Australian universities and establishing a proactive capacity of Australian HEIs to improve their experiences and satisfaction.
(ii) Determination of the parameters of institutional requirements.
(iii) Investigation of the Kano-QFD analysis effectiveness in capturing student needs, and university requirements to identify and potentially predict how AIS-HEI interactions improve or maintain a positive campus environment (experience).
(iv) Use of the study of AIS as the basis for determining the applicability of QFD by HEIs in their planning for, and support of, IS from different target cultures.
(v) Determination of the internal and external factors of the university from the Kano-QFD matrix through using the SWOT analysis.

1.5.2. Research questions

The major research question, which is the basis for this study is: Is a QFD-Kano analysis an appropriate approach for the university to better serve the needs of international students? To answer the major research question the following subsidiary questions were addressed:

Question 1	Which institutional requirements are the most important and which are the least important as per the requirements of the Australian HE sector in regard to the recruitment and retention of AIS at the three universities?
Question 2	What are the needs of AISs at the three Australian universities? Which student needs require more attention and/or resources to improve the recruitment and retention of AIS at these universities?
Question 3	What are the strengths, weaknesses, opportunities, and threats identified by the Kano-QFD analysis regarding each of the three

	universities' students and institutional requirements relating to the recruitment and retention of AIS?
Question 4	What potential strategies emerge for the three universities as a result of the Kano-QFD analysis of AIS?

1.6. Significance of the study

The emphasis of Australia's higher education sector on recruiting and retaining IS demonstrates the importance of studies such as this because of their ability to inform university recruitment and retention deliberate strategy formation or, as in the case of a COVID-19 disruption to university operations, provide a means of verifying emergent strategies designed to manage the disruption and translating that which is emergent to deliberate (Mintzberg & Waters, 1995). Australia has a significant percentage of the world's "international students" (Shepherd, 2010), and as the third highest enroller of ISs makes any empirical research into their experiences of value (Harmon, 2015), particularly when the outcomes are directed towards improved results for the students and the institutions or universities. The focus on identifying IS' experiences (in this case AIS) a university via a Kano-QFD analysis allows for that institution to use these experiences as a means of changing or improving strategies related to IS. All ten Queensland universities were approached to participate in this study. Of the nine universities that responded, four had minimal or no Arabic student enrolments. Three universities with large numbers of AIS were then selected that represented the different types of Queensland universities. This study makes a number of contributions to the literature on AIS, international education, and practice:

- It fills a gap in research regarding AIS studying in Australia (Al-Mansouri, 2014; Shepherd, 2010; Shepherd & Rane, 2012). As mentioned previously, Shepherd (2010) argued that the increase in the intake of Arabic students makes it imperative to "develop a portrait of Arab students that contrasts with sensational media reporting in Australia" (Shepherd & Rane, 2012, p. 2). This absence of informed research raises the concern that Australian universities may lack the expertise, knowledge, and resources to compete sustainably in the global education market (Padlee & Reimers, 2015).

- ISs who desire to migrate to Australia can be categorised as either international or domestic students depending on where they are in the residency process. While the factors that influence student happiness for domestic students have received a lot of attention (Elliott & Shin, 2002), the same cannot be said for IS (Bianchi, 2013). This study focused on international students, in particular Arabic students. Concerning the research on international students, there appears to be a limited number of studies that has looked at the perceptions of the whole-person experience of international students studying in a foreign host country in a language that is not their mother tongue. In particular and relevant to this study is that, to date, there are very few studies that have explored the perceptions of Arab students' experience of studying internationally (e.g. Al-Mansouri (2014) and Abukhattala (2013). Furthermore, the bulk of studies have been conducted in the U.S., U.K., and the New Zealand (e.g. Heyn (2013), Mahmoud (2017), Mansour (2019), Safhi (2009), Shaw (2009), and Alkharusi (2013). This study was based on how AIS described their intercultural communication experiences in Australia, contributing to an understanding of how these experiences affect, and are affected by, their cultural values and religious identity.

    - Data collected and analysed through an integrated Kano-QFD analysis can also assist Arab governments and agencies who grant scholarships to their students to become aware of challenges and opportunities that AIS encounter while studying in Australia.

Contributions to university and higher education sector practice and theory include:

- Demonstrating linkages between university reputation via rankings to IS enrolment preferences and how these can align with institutional recruitment strategies.

- Identifying ways to increase IS retention and satisfaction through the use of an integrated Kano-QFD analysis. This approach provides a practical and useful means to analyse the needs of different groups of IS by focusing on the instruments to identify individual national, cultural, and/or ethnic factors as the basis of analysis and strategy formation.

Providing an example of how a Kano-QFD-SWOT analysis can be utilised within universities to assist in deliberate strategic planning activities and making decisions about strategic dimensions of the problem after performing internal and external assessments of the university.

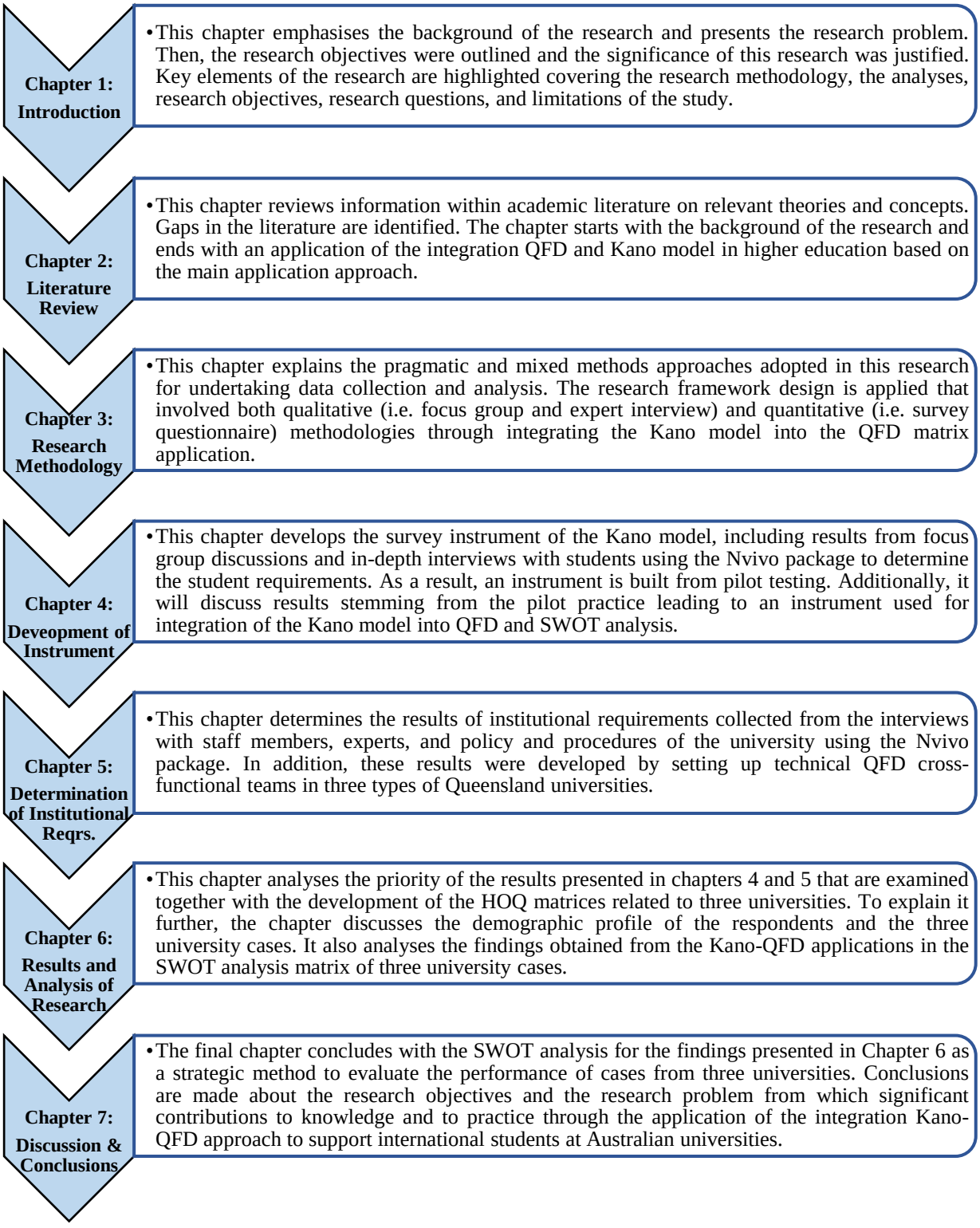
1.7. Limitations of study

A limitation of this study is its focus on onshore education of international students. There is no attempt to look at and analyse other aspects of transnational education practices (please see Chapter 2). Another limitation is that it was based on three Queensland public universities, even though the profiles of these three universities are very different. Other higher education providers that also have IS, such as technical and further education (TAFE) institutions and Registered Training Organisations (RTOs), were not investigated. All AIS respondents were enrolled at one of these three universities. Respondents were identified through the auspices of International Student Offices or International Student Organisations that had access to the identities of AIS at the three universities. These offices or organisations sent out a call for participants who would be interested in filling out the Kano analysis survey and to participate in follow-up interviews with the researcher. The above practice is aimed at addressing the constraints of accessing individual students in mass numbers. Finally, this research encompasses both a pre-COVID period as well as the duration of the period of the pandemic since 2020.

1.8. Outline of the thesis

This thesis is comprised of seven chapters as outlined below. The structure of the thesis follows recommendations by (Perry, 1998), the electronic referencing style of Endnote in APA 7th (American Psychological Association, Seventh Edition), and the guidelines for the preparation of a research thesis (University of Southern Queensland, 2019) (Figure 1.8).

Figure 1. 8: Outline the chapters in the thesis summary of the content of each chapter



Source: Developed for this research.

1.9. Summary

This chapter has provided an outline of the research, a background to the study's research problem, the objectives of the study, and the research questions. The general outline has been constructed to provide the reader a fuller understanding of the experiences of AIS during their study in Australian universities. The study's main interest was the application of the QFD analysis with the Kano model approach to capture the student voice and to identify key satisfaction criteria for IS-AIS, in this instance studying at Australian universities. The study's significance was also discussed, indicating contributions to universities, practice, and theory.

In the subsequent chapter, a detailed literature review is provided. This includes literature on relevant information about the key concepts reviewed from extant literature, followed by a discussion on relevant theories. Gaps in the literature are then identified and the theoretical framework is presented that anchors the experiences of these students within the current studies and demonstrates how the integration Kano-QFD approach analysis can be applied to the situation of AIS in Australia.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

In addition to describing key elements of this study, Chapter 1 provided background about the onshore international student recruitment and retention perspectives of Australian universities. At the same time, it provided information relating to the use of integrated Kano-QFD analysis as a tool to assist strategy development for recruiting and retaining international students, specifically AISs. This study was implemented prior to the onset of the COVID-19 disruption of the Australian higher education sector. However, it provides universities with an effective tool to perform a rigorous environmental scan based on current and potential students' views on issues influencing their decisions to enrol at a university and/or remain enrolled until graduation. The emphasis on student perceptions and institutional requirements allows for the avoidance of simply thinking in terms of cost, but instead focuses on what students need and want (Martin, 2014).

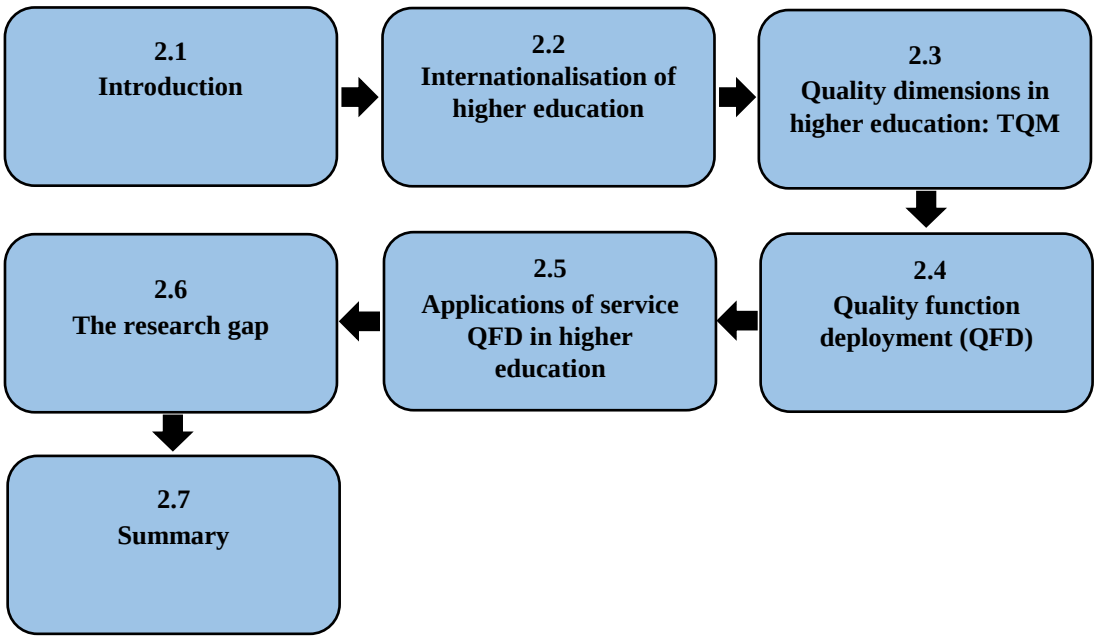
QFD is a communication, planning and quality tool (Gangurde & Patil, 2018; Han et al., 2001). In universities, it can be used for planning new or redesigning existing programs where student requirements are translated into programs or service characteristics (Mohsin et al., 2018). A Focus on the student voice and how this perspective interacts with university requirements is essential. This is especially the case when it is based on demonstrating disciplinary/professional academic quality and institutional and sectoral regulatory requirements. In this way it improves the understanding of student needs, enhances improves quality and increases student satisfaction (Ezzell et al., 2017). This chapter aims to review the literature regarding QFD and how it fits within traditional university strategic planning models.

In Chapter 1, the key elements of the research were highlighted. This chapter aims to review the literature and to develop a conceptual framework upon which the study is based. The literature review will present the salient aspects of interest to this study in seven interdependent sections. The outline of this chapter is shown in Figure 2.1. After the introduction (Section 2.1), the chapter begins with a detailed discussion of the

globalisation and internationalization of higher education. The second section of this chapter is concerned with the Australian context.

This chapter has seven sections, as shown in Figure 2.1. Firstly, Section 2.1 outlines an overview of this chapter. Next, internationalisation and globalisation of education is elaborated upon in Section 2.2. Then, Section 2.3, explains the key issues of quality dimensions in the context of higher education. Sections 2.4 and 2.5 discuss the concepts that underpin the research and next is a review of applied studies that examine the integration of the Kano-QFD in the higher education sector. Section 2.6 addresses the research gap based on the review of literature relevant to the Kano-QFD-SWOT approach. Finally, Section 2.7 summarises the chapter.

Figure 2.1: Outline of Chapter 2 on the main topics of the research



Source: Developed for this research.

2.2. Internationalisation and globalisation of higher education

Altbach and Knight (2007) distinguish between the terms "globalisation" and "internationalisation". "Globalisation" and its role in the development of the "knowledge society" provides a context for the trends found in HEIs and related sectors regarding their involvement with international education, while "internationalisation" refers to choices made to navigate the paradigm shift "globalisation" entails, as seen in choices, policies and practices undertaken by sectors, institutions and individuals to manage this environment. According to these authors, some "internationalisation" motives behind university strategies include, among others, commercial advantage, enhancing the curriculum with international content, and the advancement of knowledge through broader collaborations, and language acquisition. Overall, 'internationalisation" has become "a complex, all-encompassing and policy-driven process, integral to and permeating the life, culture, curriculum and instruction as well as research activities of the university and its members" (Bartell, 2003, p. 46). Monitoring these initiatives to ensure quality therefore has become an integral component of the international higher education environment (Altbach & Knight, 2007).

A discussion about "internationalisation" varies according to country and regions based on the importance placed on it and the practices pursued, which indicates a lack of a truly international definition of the concept and a need to classify the different types of practices (Knight & McNamara, 2017; Teichler, 2017). Nonetheless, Knight's (2008) definition is the most widely used: "the process of integrating an international, intercultural, and global dimension into the purpose, functions (teaching, research, and service), and delivery of higher education at the institutional and higher levels" (p. xi). In Australia, the onshore paradigm has been the predominant element in the university sector's international education strategy for some time (Walters & Adams, 2001), although the sector has engaged in activities falling under the "transnational education" umbrella. These are shaped through national commitments to the General Agreement on Trade in Services (GATS – (Croucher et al., 2020; Knight & McNamara, 2017; Meek, 2005). The transactional basis for the interest in international education is based on developed countries wanting to reduce trade barriers and

developing countries struggling with the provision of educational opportunities (Collins, 2007). Walters and Adams' (2001) observations describe the basis of the interaction:

> [Onshore international education] has … been the basis for the development of a view of internationalization that includes internationalization of the curriculum, offshore programs, staff and student mobility, and the formation of cooperative links between institutions. These various facets of internationalization have been largely treated as separate functions within institutions (p. 269).

Because of the predominance of the onshore paradigm and the $37.6 billion AUD this paradigm brought to Australia in 2018, as noted in Chapter 1, this study only focused on this aspect of international education. Australia is heavily involved in most of the strategies normally associated with "transnational education" (e.g. Knight, 2012).

2.2.1. Australia's onshore international education strategy: A triple-helix perspective

Because international organisations have become more prevalent in shaping state and organisation-level behaviours (March & Olsen, 2005), one major influence behind the expansion of transnational education has been the World Trade Organisation (WTO) which was formed in 1995. Here, education is defined and included as a service covered by GATS. "In the current globalized environment, international actors and educational (and extra-educational) factors originating at supra-national scales are affecting national education policies, priorities and outcomes" (Verger, 2009, p. 7). GATS represents a neoliberal approach toward education, treating it as a commodity, and is based on concepts such as liberalisation, deregulation, privatisation, competition, and trade (Vlk, 2006).

Legitimacy, resource competition, reputation and status are underlying rationales behind universities' international education strategies (Seeber et al., 2016). Nonetheless, as Luijten-Lub et al. (2005) noted, institutional action is also guided by national regulatory and funding frameworks. All of these elements have been notable

in Australia. Meek's (2005) analysis of the development of Australia's international student strategy provides a description and breakdown of how federal government policy shaped the nation's (and universities') onshore approach toward the recruitment and retention of international students. His view reflects much of the current literature in this area; namely, that financial (economic) considerations to offset diminishing government funding per student place has been one of the main drivers shaping institutional behaviour (e.g. Alam et al., 2013; Fischer & Green, 2018). Vlk (2006), writing some years earlier, also noted "that the recruitment of foreigners will have to be more substantial in coming years for some institutions to continue their viability" (p. 31). This prediction was proven accurate with the advent of COVID-19, when an international student enrolment downturn, due to lack of access and governmental support to students already in Australia and to universities, has led to a major decrease in revenues (Marshman & Larkins, 2020), as noted in Chapter 1, section 1.1.

Globalisation has sparked the rise of the *Global Education Industry* (GEI). This industry can be said to be Western culture-oriented, neoliberal and market-based in scope (e.g. Fischer & Green, 2018; Silova et al., 2020). Globalisation has been driven in part to spark innovation to improve the quality, equity, and efficiency and effectiveness of educational services, with the individual being a consumer (Bell, 2020; OECD, 2016). Private organisations (private firms like publishers and other educational resource companies, IT and software developing companies, large and small firm consultants; for- and non-profit private education providers) are playing an increasingly important role in this industry, but in most developed nations, state actors are prominent in terms of provision, regulation and spending (OECD, 2016; Verger et al., 2016). According to Robertson and Komljenovic (2016), the making of higher education markets includes the following events:

> when policymakers, politicians, investment advisors, education firms, and universities begin to imagine higher education as a 'new', 'emerging', or 'mature' market to be opened up and exploited; the governance frameworks which shape a sector (including the role universities play as market actors and profit-making centers), are challenged, repurposed, and transformed; and when the nuts and bolts of making diverse higher education products and services that are exchanged in a range of marketplaces – from identifying suppliers to developing a sustainable 'customer' base, creating niche opportunities, pricing

> of products and services, providing a means for accessing credit, developing a means for settling disputes over contracts, use of legal tools and advice, and so on – are bought together, and put to work (p. 211).

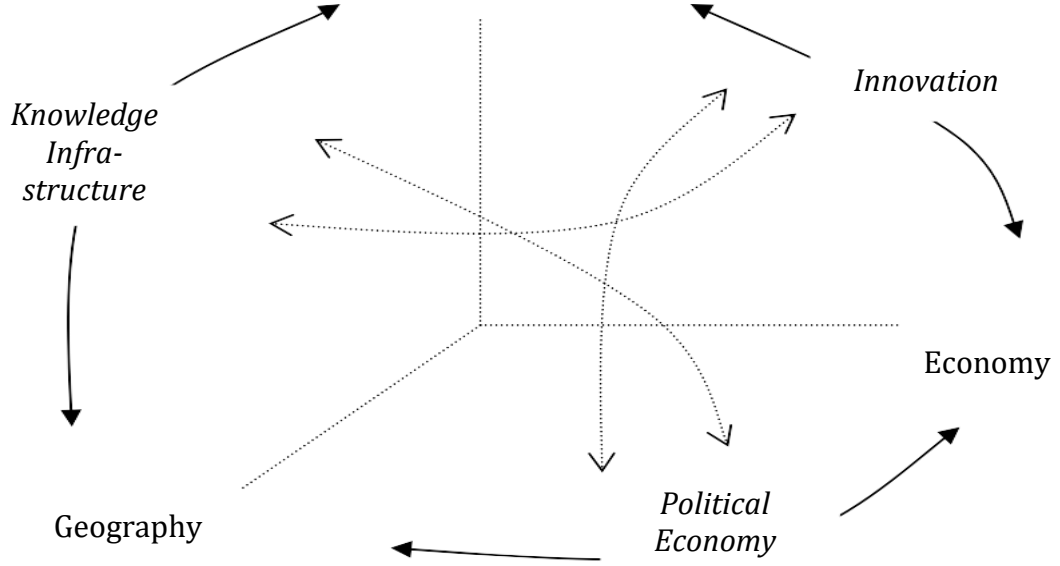
The interactions between governments, universities and the GEI can be described as a 'triple helix'. The origin of the triple helix as a metaphor to explain the "overlay of communications between different and independent spheres of activity" dates back to 1996 (Smith & Leydesdorff, 2014, p. 2). These three different partners engage in both collaboration and competition "as they calibrate their strategic direction and niche positions" (Etzkowitz & Leydesdorff, 1995, p. 113). In the original document that began the process of shaping this model, Etzkowitz and Leydesdorff (1995) pointed out that universities and industry were beginning to assume tasks that previously were the domain of one or the other while the role of government was "changing in apparently contradicting directions" (p. 14).

Governments were incentivising universities while encouraging them to think outside their traditional roles and reducing funding to the sector. Conversely, governments were becoming more interested and involved in supporting innovation in the private sector. Multi-national institutions were also embracing a more liberalised approach to knowledge creation and pursuing a broader socio-cultural expansive agenda that would "bring the knowledge, productive and regulatory spheres of society into new configurations" (p. 14). Because of the interactions under these conditions, the relationships are based on one sector maintaining a degree of autonomy even when influenced by one or both of the other sectors (Etzkowitz & Leydesdorff, 1995).

The triple helix metaphor is usually used when discussing relationships between governments, universities, and industry in the pursuit of innovation through research and wealth creation in the knowledge economy; however, the metaphor is also useful when researching international education policies and practices because of its role in increasing the stocks of knowledge at national and international levels. A rationale for making the linkage was provided by Machlup (1962) who noted that activities of knowledge-recipients (learners) can be considered to be part of the production of knowledge and an increase in the stock of knowledge, which are embedded expectations in the pursuit of innovation and innovative practice. Leydesdorff's (2010)

illustration of a three-dimensional interaction approach based on knowledge, economy and geography (Figure 2.2) supports this proposition.

Figure 2. 2: Three dimensions of the social system



Source: Leydesdorff, 2010, p. 11.

Globalisation and internationalisation have gone a long way to creating what Marginson and Rhoades (2002) termed *glonacal*, a combination of the global, national and local dimensions shaping institutional responses. They based their model on Clark's (1983) "triangle of coordination", which attempted to illustrate how order and policy formation emanates from complex higher education systems encompassing different goals, beliefs and forms of authority (Maggio, 2011; Padró & Green, 2018). Clark's triangle, while a crude model by his own admission (Clark, 2004), arguably foreshadowed the triple-helix model, although from a broader perspective. Clark saw different forms of markets influenced and shaped by state-sanctioned authority; however, his observation that universities controlled key aspects of the markets, and thus could impose a greater influence, has probably been mediated by how globalisation and these markets have changed due to the shifting paradigm from public

good to that of a neoliberal, economised approach to information, its acquisition, creation and dissemination (Marginson, 2004). The effects of the paradigm shift have been noted from relatively early on in the Australian higher education sector, when it comes to international education. As Foccio (2005) noted, commercialisation, globalisation, internationalisation and neoliberalism helped shape and steer policy formation and key players' thinking in the pursuit of the international education market at the local, national and international levels.

In their discussion about the limitations imposed by Slaughter and Leslie's (1997) book, Academic Capitalism, Marginson and Rhoades (2002) pointed out the importance of looking at "global agencies and agency" (p. 287) as well as national policies and funding patterns. A glonacal perspective is useful when using the triple-helix model to understand the relationships and policy drivers and shapers behind university strategies. Leydesdorff's illustration above (Fig. 2.2) is a useful way to look at the dynamics that have shaped international education policy and practices by the Australian government and the university sector as a whole. Knowledge and knowledge infrastructure are what universities are able to offer domestic and international students. The political economy has steered policy formation for government at the national and state level, particularly as a promoter of quality thinking (Padró, 2009). Geography represents student mobility and access for students throughout the world who are interested in pursuing educational experiences deemed to increase their personal intellectual/knowledge capital and capability to attain success personally, professionally and socially. Innovative (as a form of increasing intellectual/knowledge capital) attainment represents the rationale governments and business and industry sectors define as one of the aims behind policies and one that supports the different types of international study approaches.

2.2.2. (Strategic) Planning in higher education

Although written from the perspective of American universities, yet applicable to the Australian higher education sector, Mwangi and Yao (2021) have noted that higher education internationalisation in its various forms cannot be defined and managed by isolated offices within universities. "Instead, growing pressures and priorities to

develop students as global citizens, attract international students to improve diversity and financial goals, and engage in global partnerships, research, and teaching to achieve a world-class reputation have triggered a major expansion in the international engagement… [and] has developed into a major component of strategic planning, generating billions of dollars in revenue each year across institutions" (p. 550). An institution-wide approach toward international education in its various forms allows for decisions that are not limited by the dissimilar views held by different parts of the university due to the relevance to their function and roles (Schoorman, 1999). Pursuing a formalised planning process to develop an internationalisation plan creates [1] a roadmap, [2] a means to achieve buy-in, [3] a mechanism for describing what is meant by internationalisation and explaining the goals set for pursuing it, [4] a vehicle for interdisciplinary collaboration, and [5] a revenue raising tool (Childress, 2009).

Planning is performed to set a path forward and for universities this should be done for the purposes of setting themselves apart (separation) and anchoring their identities (Clark, 1978). It is intentional because there is a direct intent to what is being planned (Dooris et al., 2002). Planning, or at least a form of it, occurs at both the unit and the institutional levels and occurs as standard practice. When universities combine these, they come together to form a strategy to position a university to better compete for resources in the future (Cope, 1987); thus, planning should be integrated and connected to different dimensions of academic and organisational thinking and resource management to align and augment institutional agility (Dooris & Rackoff, 2012; Kahn, 2011).

Peterson (1980) defined planning as "a conscious process by which an institution assesses its current state and the likely future condition of its environment, identifies possible future states for itself, and then develops organizational strategies, policies, and procedures for selecting and getting to one or more of them" (p. 114). Mintzberg (1994) looked at the existing planning literature and provided formal definitions of planning in a similar vein. To begin with, for some, "planning is future thinking" while for others planning is "controlling the future" (p. 7). Planning represents a decision-making process based on goal setting, identifying alternatives, analysing each alternative, and selecting the "best one(s)" (p. 9). As a process, "[p]lanning is integrated decision making… [consciously attempting] to integrate different [decisions]… drawn periodically into a single, tightly coupled process so they can all

be made (or at least approved) at a single point in time" (p. 11). Integration of these decisions makes planning an approach to strategy formation; however, for Mintzberg integration is not as critical as formalisation. For him, from an operational perspective, planning ultimately represents and is defined as "a formalized procedure to produce an articulated result, in the form of an integrated system of decisions" (p. 12). However, this means that planning is not a means for creating strategy but a means of operationalising strategies already developed, i.e. articulating and enacting institutional goals and priorities (Mintzberg, 1989; Taylor et al., 2008).

Sandmeyer et al. (2004) suggested that there are two ways of looking at planning at universities: integrated and strategic. Stack and Leitch's (2011) definition is aligned with the Society for College and University Planning from the USA that has been advocating for this approach since the early 2000s. According to them, "[i]ntegrated planning is the process whereby all planning and budgeting activities throughout every level of the organization are effectively linked, coordinated, and driven by the institution's vision, mission, and academic priorities" (p. 18). Formal integration allows for the top-down and bottom-up aspects of unit level discussions to become part of the communication flow leading to decisions and institutional actions.

The importance of integrated planning is that it draws together activities within universities that could otherwise be – and sometimes are – disconnected in order to generate integrated, conceptual thinking at the institutional level, which brings together specialist thinking from different perspectives for the university's benefit (Hinton, 2012; Sandmeyer et al., 2004). Integrated planning is a way to overcome the loosely coupled organisational environment typically found in many universities because of its aim to coordinate horizontal and vertical organisational processes. Weick (1976) and Orton and Weick (1990) noted that events preserve their own identity (location), perceptions, intentions and a sense of separateness, and normally represent a spectrum of responsiveness and distinctiveness in the interactions between the "technical core" (specialised functional areas) and the administrative (authority) elements of an institution. The managerialisation of the university may have tightened the coupling between its organisational units by reforming the administrative support units, but according to Maassen and Stensaker (2019), these efforts have not been successful. Much depends on the university's capacity to bring together the disparate perceptions and intentions and the ability to bring together the academic culture and

the institution's rational-based business processes (Smerek, 2010; Swenk, 1999). As Maassen and Stensaker (2019) concluded:

> While, as indicated, the impact of the university reforms on the administrative support functions imply a shift towards specialisation, standardisation and formalisation of organisational rules, regulations and procedures, the productivity and quality of academic activities are still grounded in professional norms that require more flexibility and adaptively, instead of rationality, in organisational procedures. Of relevance is that these professional norms are more determined in disciplinary arenas and networks than within university organisations. (p. 465)

In reviewing the literature on strategic planning, its definition is a challenging proposition. The one aspect where there has been agreement from early on from a higher education perspective is that it is proactive and provides "direction finding for the whole enterprise in relation to the ecosystem" (Cope, 1987, p. 3). Mintzberg (1994) provided a critique regarding strategic planning because of its emphasis on intentionality, rather than adapting from emerging responses to environmental changes (Mintzberg & Waters, 1985), while Birnbaum (2000) has noted how the lack of empirical evidence in support of, and difficulties in achieving the aims of strategic planning have not deferred its adoption and use in universities. Higher education institutions of all types nonetheless perform strategic planning as a means of developing strategy because there is a benefit from achieving a strategic vision (Temple, 2018). Strategy identifies the institution's position (and subsequent shifts) regarding how its various individual positions are configured and integrated from a macrolevel perspective, defining the trade-offs it is willing to pursue to generate an advantage and meet its goals (Porter, 1996). Planning is a tangible action and is often used as a means to develop strategy. As Wildavksy (1973) indicated, it "conditions the way [actors and their societies] perceive social problems and … guides their choice of solutions" (p. 127). Planning provides precision, but on the other hand does not question assumptions and, as previously noted, can focus on cost-based thinking (Martin, 2014).

Kotler and Murphy (1981) defined university strategic planning "as the process of developing and maintaining a strategic fit between the organisation and its changing

marketing opportunity" (p. 471). Strategic planning became identified from the time Keller's (1983) seminal book on strategic planning in American higher education (*Academic strategy: The management revolution in American higher education*) was published as one where prescribed steps within a planning framework provided a rational approach to achieve desired goals (Dooris et al., 2002). Cope's (1987) definition provides a more detailed description of what for many remains the basis of university strategic planning, the bottom-line:

> *Strategic planning is an open systems approach to steering an enterprise over time through uncertain environmental waters. It is a proactive problem-solving behavior directed externally at conditions in the environment and a means to find a favorable competitive position in the continual competition for resources. Its primary purpose is to achieve success with mission while linking the institution's future to anticipated changes in the environment in such a way that the acquisition of resources (money, personnel, staff, students, good will) is faster than the depletion of resources.* (p. 3, italics indicate the original)

As Albon et al. (2016) and also Temple (2018) noted, the move toward strategic planning was, among other things during the 1990s, a response to increasing globalisation in a number of countries and not just the UK and USA. However, it is important to remember that strategic planning may be a precursor to strategic management in organisations, but it is not strategic management (Wells, 1998). Strategic planning is an analytical thought process while strategic thinking often relates to creative and divergent thought processes and comes into play at different stages of strategic management (Heracleous, 1998). Strategy is not the same as operational effectiveness, which is a reason why strategic planning success can be effective or ineffective as a result of its process-related activities, and when done well, it can help a university thrive (Albon et al., 2016; Porter, 1996).

Strategic planning effectiveness has been questioned, as mentioned, because its formal process can be seen as stifling institutional agility to meet the conditions set forth under either uncertainty or changing circumstances. As Martin (2014) wrote, there is a subtle slide from strategy to planning because planning is "a thoroughly doable and comfortable exercise" (p. 80). A major issue is the rationale(s) behind the desire or need to perform planning, usually as a means of advantage creation. According to the

literature, agility (flexibility) is one reason behind successful or unsuccessful planning (Abdelilah et al., 2018; Walter, 2021). For the most part, agility refers to the strategic while flexibility is considered operational (Abdelilah et al., 2018), although they are often treated as synonymous terms. While there is no one definition of agility in the literature (Petermann & Zacher, 2020; Walter, 2021), agility is conceptually similar to strategic planning, representing an institution's "higher-order dynamic capability to detect opportunities and threats, assemble the needed assets and capabilities to launch an appropriate response, judge the benefits and risks of initiating an action, and execute actions with competitive speed and success" (Lee et al., 2015, p. 400). Agility characterises the capacity to create a competitive advantage, which is particularly important in environments where sustainable competitive advantage is becoming rarer and of shorter duration (D'Aveni et al., 2010). An agile organisation can be defined as a system composed of a "network of self-organized teams in which employees are able to autonomously make decisions and change the course of action" (Petermann & Zacher, 2020, p. 600). An agile organisation thus demonstrates these four main components:

1. a timely response to change in internal or external business environments;
2. proactive action to change or anticipated change, taking advantage of and exploiting change from the perspective of an opportunity;
3. constantly renewing learning and building up skills, knowledge and experience as a means of adapting "existing competencies to fit an ever-changing environment and to design and develop new capabilities"; and
4. a network structure that is people-centred with a purpose-driven culture with iterative processes to refine their product(s) (Petermann & Zacher, 2020, p. 600).

Operationally, Bryson et al. (2018) provide an explanation for the importance of flexibility (agility) from the perspective of public-sector organisations like the three Australian universities that make up this study: "public-sector planning is strategic when given the context participants can clearly recognise, and a desire to stabilize, what should be stabilized, while maintaining appropriate flexibility in terms of goals, policies, strategies, and processes to manage complexity, take advantage of important

opportunities, and advance resilience and sustainability in the face of an uncertain future" (p. 321).

Another complicating variable in strategic planning and strategy formation is the increasing complexity of the environment in which organisations operate (Camillus, 2008). "[P]lanning techniques don't generate fresh ideas, and implementing the solutions those processes come up with is fraught with political peril. That's because … many strategy issues aren't just tough or persistent – they're "wicked" (p. 100). According to Rittel and Webber (1973), planning problems, particularly those related to external environment issues of a social nature or policy formation or response, are inherently wicked because they are ill-defined and rely on intangible political judgements to achieve some form of resolution. By definition, wicked problems "defy efforts to delineate their boundaries and to identify their causes, and thus to expose their problematic nature" (p. 167). These often develop because most wicked problems occur in a social context (Camillus, 2008) and technical approaches normally used in strategic planning and strategy formation either complicate matters or are rendered of little use because they are unable to overcome the inherent limitations within the planning process (Burke & Wolf, 2021; March, 2006). Table 2.1 provides Ritter and Webber's (1973) ten characteristics and Camillus' five characteristics of wicked problems to illustrate how environmental turbulence affecting stability challenges formal strategic planning (Grant, 2003).

Organisations seek to demonstrate that they are stable elements, but stability does not mean remaining static because that means institutional death. Instead, to remain adaptable and agile, stability represents the balancing of the competing interests by actors within the organisation, leading to integration and maintenance control as organisations adapt to the changing environment (Padró & Hawke, 2003; Pascale, 1999; Stacey, 1995). This view is similar to that of Ansoff (2007) that there is a continuum of different levels of turbulence, with one side representing a stable, quiescent environment and the other side being a "creative environment, characterized by major technological breakthroughs, or socio-political upheavals" (p. 68). The scale he formed (p. 69) attempts to describe the characteristics of change (strategic budget intensity, predictability, frequency, response time, novelty, state of knowledge of turbulence level, applicability of forecasting technology) as these occur at the different levels of turbulence (stable, reactive, anticipatory, exploring, creative).

Table 2. 1: Characteristics of wicked problems impacting strategy formation

Ritter and Webber's (1973) ten characteristics of wicked problems	Camillus' (2008) five characteristics of wicked problems
• *There is no definitive formulation of a wicked problem* – formulating the problem *is* the problem. "[I]n order to describe a wicked-problem in sufficient detail, one has to develop an exhaustive inventory of all conceivable solutions ahead of time" (p. 161).	• *Many stakeholders with different values and priorities* (p. 100)
• *Wicked problems have no stopping rule* – "The planner terminates work on a wicked problem, not for reasons inherent in the "logic" of the problem. He stops for considerations that are external to the problem: he runs out of time, or money, or patience" (p. 162).	• *Issue roots are complex and tangled* (pp. 100-101)
• *Solutions to wicked problems are not true-or-false, but good-or-bad* – "[T]here are no true or false answers. Normally, many parties are equally equipped, interested, and/or entitled to judge the solutions, although none has the power to set formal decision rules to determine correctness" (p. 163).	• *Problem is difficult to come to grips with and changes with every attempt to address it* (p. 101)
• *There is no immediate and no ultimate test of a solution to a wicked problem* – There are intended and unintended consequences to enacted "solutions". "The full consequences cannot be appraised until the waves of repercussions have completely run out, and we have no way of tracing all the waves through all the affected lives ahead of time or within a limited time span" (p. 163).	• *The challenge has no precedent* (p. 101)
• *Every solution to a wicked problem is a 'one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts significantly* – "With wicked planning problems, however, every implemented solution is consequential. It leaves "traces" that cannot be undone… Whenever actions are effectively irreversible and whenever the half-lives of the consequences are long, every trial counts. And every attempt to reverse a decision or to correct for the undesired consequences poses another set of wicked problems, which are in turn subject to the same dilemmas" (p. 163).	• *There is nothing to indicate the right answer to the problem* (pp. 101-102)
Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan	
Every wicked problem is essentially unique – "[B]y "essentially unique" we mean that, despite long lists of similarities between a current problem and a previous one, there always might be an additional distinguishing property that is of overriding importance. Part of the art of dealing with wicked problems is the art of not knowing too early which type of solution to apply" (p. 164).	
Every wicked problem can be considered to be a symptom of another problem – "The level at which a problem is settled depends upon the self-confidence of the analyst and cannot be decided on logical grounds. There is nothing like a natural level of a wicked problem" (p. 165).	
The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution – "In dealing with wicked problems, the modes of reasoning used in the argument are much richer than those permissible in the scientific discourse" (p. 166).	
The planner has no right to be wrong – In wicked problems "the aim is not to find the truth, but to improve some characteristics of the world where people live. Planners are liable for the consequences of the actions they generate; the effects can matter a great deal to those people that are touched by those actions" (p. 167).	

Source: Adapted from Camillus, 2008; Ritter and Webber, 1973.

Ramírez and Selsky (2016) see turbulent environments as a distinct type of organisational environment. They define them as "unpredictable uncertainty for strategic planning purposes" (p. 94). A university's business model and its strategies can become obsolete quickly as a result of environmental turbulence because they challenges an institution's ability to adapt to changing situations, especially when these occur very quickly (Reeves & Deimler, 2011). Ansoff and McDonnell (1990), cited in Kriemadis and Trifti (2015) indicated that environmental turbulence is a measure based on combining changeability (complexity of the environment and the relative novelty of challenges encountered) and predictability (rapidity of change and visibility of the future) of an institution's environment. In an environment that has encouraged universities to pursue entrepreneurial strategies for some time (e.g. Slaughter & Leslie, 1997), turbulence impacts the ability to be entrepreneurial in terms of branding, innovation, proactiveness and risk-taking (Schwaiger & Sarstedt, 2011; Wong, 2014).

COVID-19 has been a disruptive force for the Australian higher education sector's onshore international student programs across the board. Chapter 1 documented the concerns regarding revenue losses and the potential for a negative impact on research conducted within universities because revenues raised from international students subverts most of these activities. This is due to the sector's structural deficit when it comes to funding for universities which was set early by the Dawkins white paper reforms from 1988, combined with a desire to become more competitive in the international arena (Bessant, 2002; Department of Education and Training, 2015a; Larkins, 2018a; Marshman & Larkins, 2020), not to mention the decreasing funding provided by the federal government over time. Universities face no restrictions for setting tuition fees for international students, with subsidised places abolished in 1990 (Department of Education and Training, 2015a). This ability allows universities to make up the shortfall as well as to have the flexibility to decide on how to support the research they perform within the guidelines set forth in the Dawkins report (1988):

Institutions will be free to establish their own priorities and develop their strengths, to accredit their own courses, to develop a broader base of funding support and to introduce more flexible staffing arrangements… Institutions will enjoy:

- more flexibility to determine the particular courses to be offered and areas of research to be undertaken;

- greater control over their own resources, enhanced revenue-raising options and decreased intervention by governments in internal funding and management decisions; and
- guaranteed triennial funding based on agreed priorities for institutional activity and performance against those priorities, rather than on an arbitrary system of institutional classification. (pp. 10, 27)

The presence of COVID-19 has created a wicked problem for universities. Within the university environment, there are the challenges related to learning and teaching in general that are linked to how (dis)satisfied domestic and international students are with the new instructional environment while still paying high fees (Hurria, 2021; O'Connor, 2021). In addition, there is the health concern of contacting the virus from physical learning spaces, which universities have to address (Crawford et al., 2020). Then there has been the reality that international students cannot physically come to Australia (Fallon, 2020). As The Migration (n.d.) webpage states:

> Australia has restricted its flights due to the Covid-19 pandemic and closed its borders. International students can't travel to Australia to continue their studies. Moreover, there's no certain announcement from the Government that says when the borders will open again. This situation is mainly affecting international students who are stuck outside the border and can't complete their studies.

There are also the mental health challenges faced by domestic and international students (as well as university staff) and institutional support capabilities to respond to needs in this turbulent environment (Cook, 2021; Jojoa et al., 2021). Moreover, international students face additional issues regarding personal safety and legal status concerns (Schleicher, 2020) along with financial hardship (e.g. Council for International Students Australia (CISA), 2020). These issues represent very complex challenges and have exhibited novel institutional responses (ad hoc at times, and more predictable and thus systemic in some situations) to students already enrolled, typifying the extent of turbulence faced as described above.

Political and policy responses to COVID-19 in regard to international students also add complexity to how universities can address and reverse the challenges. One additional challenge not addressed in the previous paragraph is access, i.e. the capacity

of international students to physically come to Australia to pursue or continue their studies. A further challenge related to safety concerns has been federal policy toward international students already in Australia, with safety having to be considered from economic as well as personal safety perspectives. Hurria (2021) has documented some of the actions taken by the federal government, but most of the support has been specific to domestic students and the universities themselves (to support research). Hurria (2021) has further noted the provision of emergency financial assistance, but this has been deemed insufficient and was done alongside universities creating their own financial assistance programs to help the still onshore international students. More recently, the government has provided relaxed rules for international student visa holders allowing them to work beyond the 40 hours per fortnight if employed (https://immi.homeaffairs.gov.au/visas/getting-a-visa/visa-listing/student-500/temporary-relaxation-of-working-hours-for-student-visa-holders). Earlier policy meant that international students were not eligible for emergency income maintenance – the continuation of income that allows an individual to live with at least a minimal, acceptable quality of life (Padró, 2004). However, the government provided income support either through Job Keeper (for those employed, with support provided through the employer) or other forms of assistance like Jobseeker (unemployment support – (Fallon, 2020)). A further challenge has been the conflicting, confusing and occasionally negative messaging surrounding international students' status on various fronts, which has generated further uncertainty and has added to the turbulence. The clearest example of the negative messaging that universities have to overcome in getting international students to return, and which has led to negative perceptions from international students who are considering not returning or enrolling at Australian universities (Castagnone, 2020, 6 December; Dodd, 2021; Quinn, 2020) was the Prime Minister's comments at a press conference given on 3 April 2020. He was quoted as saying:

> "If they're not in a position to support themselves, then there is the alternative for them to return to their home countries".
>
> "All students who come to Australia…have to give a warranty that they are able to support themselves for the first 12 months of their study. That is not an unreasonable expectation of the government that students would be able to fulfil the commitment that they gave."

> Mr Morrison said it was "lovely to have visitors to Australia in good times". But now [you] should "make your way home" and "ensure that you can receive the supports that are available…in your home countries".
>
> "At this time, Australia must focus on its citizens. Our focus and our priority is on supporting Australians and Australian residents with the economic supports that are available." (Ross, 2020)

Moreover, the Federal government is looking to change the approach to onshore international students. Comments by Australia's Minister for Education and Youth available through a media release from 19 April 2021 (https://ministers.dese.gov.au/tudge/dont-forget-australian-students-chase-internationals), point to a changing view regarding onshore international students. While previously, the presence of onshore international students was deemed beneficial to the learning experience of domestic students, the emphasis now seems to be shifting to a focus on the domestic student learning experience as the primary consideration. The language still reflects the benefits international students bring to the Australian higher education sector learning environment (by allowing for a more diversified classroom), but there is now a more direct focus on how their presence benefits domestic students. According to Minister Alan Tudge:

> Here we have a great opportunity: to strengthen our approach to international education, to grow new markets abroad, but also to ensure our universities are delivering for Australian students. After all, the primary role of our publicly funded institutions is to educate Australians…
>
> Unfortunately, it looks to many like some institutions think there is just one purpose [for enrolling international students] - to bring in dollars. This is important, as international students now account for a quarter of university revenues. But this financial objective must be balanced against at least three others.
>
> First is to enhance the classroom and learning experience of Australian students.

> International students create more diverse classrooms and bring valuable experiences and insights from around the world.

The other major change in scope is to diversify the countries from which international students come to Australia to enrol in courses. There is now a concern that there is too much concentration in one or two countries, which can create potential risks to universities if and when the relationship between Australia and the nation in question become problematic. Part of the concern is placed on universities not applying "transparent and rigorous English language requirements", which has led to an imbalance in the diversity of countries sending students to Australia. For Minister Tudge:

> … having over 60 percent of a classroom with international students from just one or two countries, is not optimising the student experience for Australians - nor for international students.

The Minister is also considering getting more international students who are interested in studying in the STEM fields as part of increasing Australia's supply of workforce skills needed to grow the economy. For the Minister:

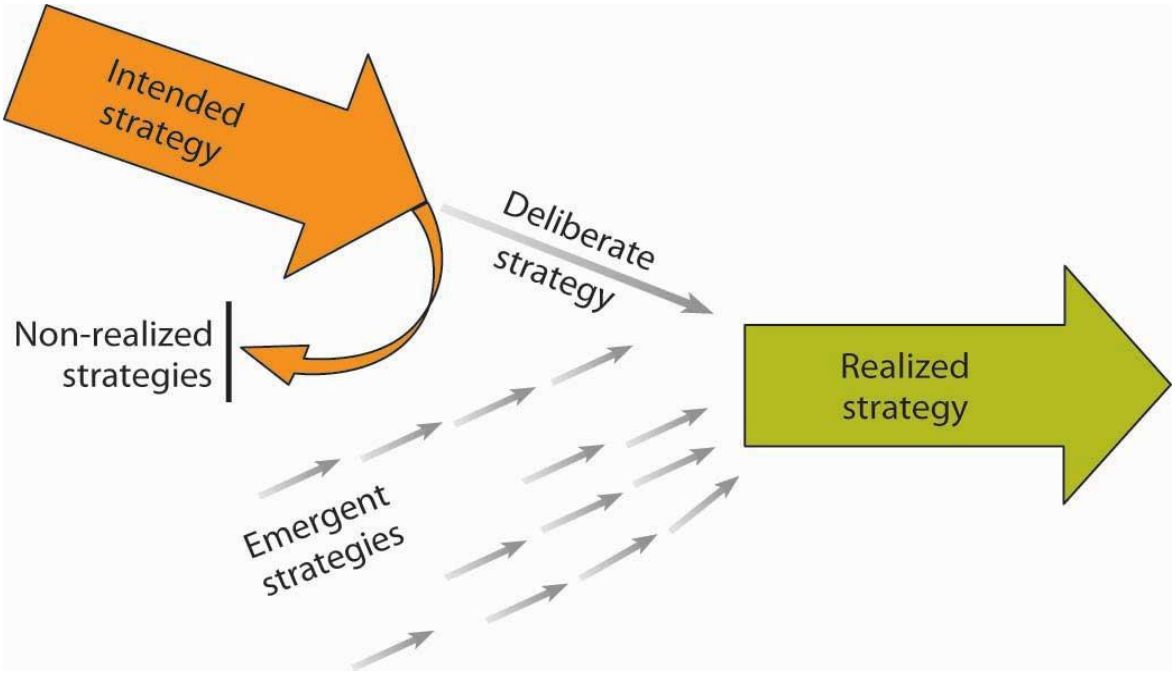
> The next objective is to ensure that Australia has the supply of workforce skills that we need to grow our economy.
>
> According to the National Skills Commission, our greatest skills needs in the future will be in data and digital, the health profession and engineering - especially in the energy field.
>
> However, currently almost half of international enrolments at universities are concentrated in commerce, while fields like engineering, maths, technology and health attract significantly lower enrolment shares than the OECD average.

Universities will have to navigate these difficulties in order to be able to recapture the interest and goodwill of international students to return to their campuses and overcome the negative effects of COVID-19. This provides a contrast to the strategies defined and pursued under the *Australian National Strategy for International Education 2025,* discussed in Chapter 1. While there are similarities, as noted, the new approach being considered and developed under the *Australian National Strategy for*

International Education 2021-2030 (https://www.dese.gov.au/australian-strategy-international-education-2021-2030), particularly in the use of migration levers, has slightly different priorities. Universities will now have to navigate the need to consciously identify diversification of international student recruitment from different nations and regions, consider how to recruit to meet the policy preference for workforce skill enhancement in preferred fields and do so with a view to regain international students that could not access the on-campus learning experience; those who were dissatisfied with online learning and glonacal (university-community-national) acceptance and support; those who felt that fees paid were not commensurate with the learning experience actually received; and international students who became tired of waiting for things to change and decided that going elsewhere was a preferable proposition. The question is how universities can achieve these disparate and potentially conflicting propositions. What strategies can be identified, planned and enacted to succeed in overcoming these wicked problems?

Agility, flexibility and the presence of wicked problems due to turbulent environments as critical variables in strategic planning can be deduced from Mintzberg and Waters (1985) and Mintzberg's (1994) argument that strategies often come about from emerging contexts as well as intended, deliberate, i.e. planned strategies created prior to the implementation or realisation of a strategy (Figure 2.3). Enactment, or what Mintzberg (1994) termed realised strategy, is the goal. Three conditions are needed for a fully deliberate strategy to become realised: [1] precise, concretely detailed intentions have to be clearly articulated within the organisation; [2] these intentions must have been common to virtually all actors that need to be involved; and [3] "these collective intentions must have been realized exactly as intended, which means that no external force (market, technological, political, etc.) could have interfered with them" (Mintzberg & Waters, 1985, p. 258). A fully emergent strategy represents consistent action that occurred or is occurring without any intention driving it (Mintzberg & Waters, 1985). Emergence represents the properties of the whole of the system, the organisation, its external environment and the salient issues shaping the organisational response (Zhichang, 2007). Emergent strategy flows from the interactions between all key internal and external actors, is sometimes not connected to prior patterns of perception or practice, but often as a means of coping with unpredictability and the resulting uncertainty (Stacey, 1995; Zhichang, 2007).

Figure 2. 3: Mintzberg and Waters (1985) realised strategy formation



Mintzberg and Waters (1985) indicate that a pure form of deliberate or emergent strategy is a rare event, but there are instances when organisations demonstrate almost deliberate or emergent strategies. The presence of both types does occur under what is termed an umbrella strategy and it reflects the reality that strategies "have to *form* as well as be *formulated*" (Mintzberg et al., 1998, p. 11). Deliberate strategising is typical of entrepreneurial organisations (Mintzberg, 1990), reflecting a degree of formalised, centralised control and artificial separation of the process to the different elements within the organisation (Mintzberg, 1994). The challenge for an organisation is to determine when previous perceptions and practices are appropriate points to generate the new strategy or if a new, novel approach is required that may be a radical departure from the past. Regulatory compliance that is part of the triple-helix environment for onshore international education does place limits on university action as already noted; yet, there is latitude for innovative action for university responses beyond those already identified in this chapter.

In the only study found by the author about strategic planning by universities regarding international education, Soliman et al. (2019) performed an analysis

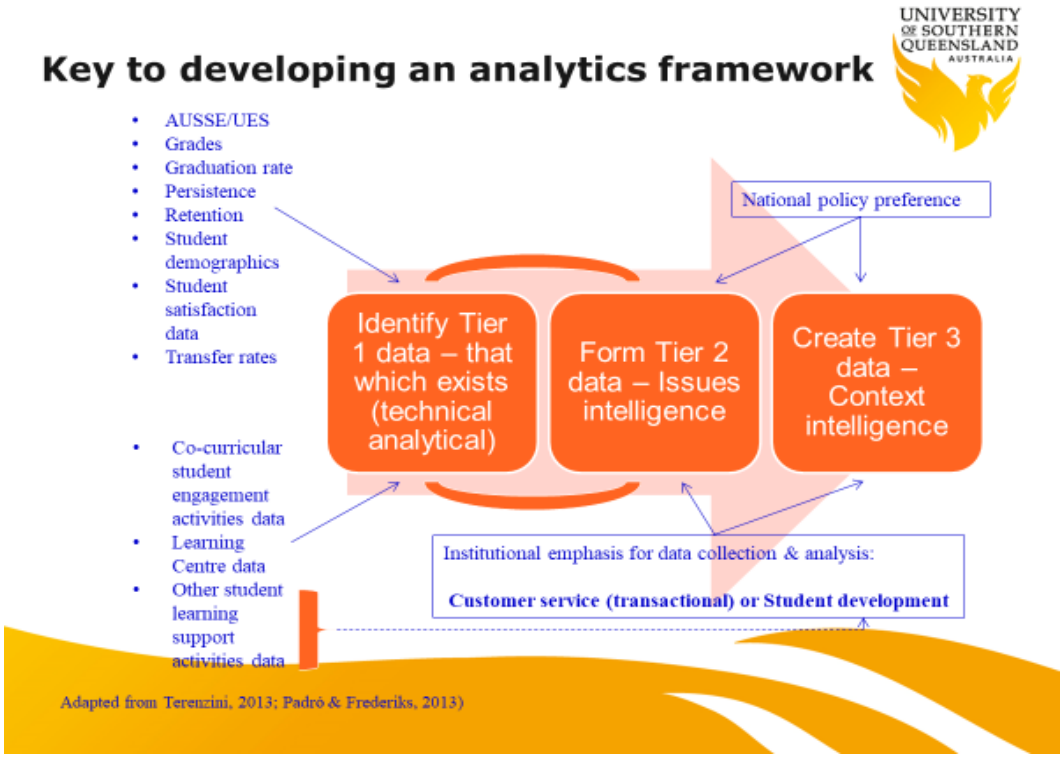
> of four universities in the UK to investigate whether international strategies developed by these institutions were deliberate or emergent. They used Yemini's (2015) definition of internationalisation because they felt it encapsulated a broader view than onshore international education only, and better reflected the global socio-cultural aspirations supported by international organisations like UNESCO (2009): "the process of encouraging integration of multicultural, multilingual, and global dimensions within the education system, with the aim of instilling in learners a sense of global citizenship (p. 21).

All of the four universities in Soliman et al.'s (2019) study indicated that their international strategies were deliberately planned to ensure effectiveness over the course of years that internationalisation featured as part of the broader university strategy. "They identify their strategic aims and enabling actions critically and stick firmly to this in order to avoid any major unplanned events that may require making changes to any element of their strategies" (p. 1418). Internationalisation had undergone different phases, progressing from the operational to the strategic. Soliman et al. (2019) specifically looked at specified strategic time periods, noting how the different universities became involved with internationalisation. Yet, that there was an emergent strategy was apparent as well. In this regard, time frame is an important strategic lens. "The international strategy was seen as a deliberate strategy when considering each strategic period separately, while it was seen as an emergent strategy when considered over several strategic periods" (p. 1420). The first stage saw internationalisation at these four UK universities begin as a group of initiatives that did not feature in prior university strategies and was overseen by operation level managers. Stage 2 internationalisation practices increased and were mentioned in the overall university strategy. Middle managers became involved at this level. In Stage 3, "internationalisation is widened to include more international elements and became a core strategic priority which is managed by senior managers (e.g. Pro-Vice-Chancellor, International)" (p. 1421).

An additional complicating variable impacting the effectiveness of strategic planning is the quality of the information itself that is accessed and analysed. Source, type, how sense is made from accessed information, and how intelligence is formed through processes used, make a difference in strategy formation, its enactment and probability of success. Weick's (1995) sensemaking model referred to the importance of enacting

cues from the external environment and how sensemaking looks at the available information based on grounded identity (who the organisation is), as well as how an institution is able to formulate a decision or, in this instance, a strategy based on plausibility. This information, scanned from the external environment can be categorised into three tiers: technical and analytical intelligence (Tier 1), issues intelligence (Tier 2), and contextual intelligence (Tier 3 – (Terenzini, 1993; Terenzini, 2013). Technical and analytical intelligence or T1 is comprised of factual knowledge and analytical and methodological skills and competencies that provide the foundations and fundamentals of analysis. This type of intelligence lacks context and therefore provides low to no utility or value (Terenzini, 1993). Figure 2.4 provides an example of data elements typically collected by universities from learning and teaching endeavours as part of T1.

Figure 2. 4: Terenzini's (1993, 2013) three tiers of institutional intelligence and how these shape institutional operational and strategic responses



Source: Padró and Kek, 2013, slide 13.

With the ability of universities to collect and analyse information through analytics and "big data", there can be downsides to T1 institutional intelligence because of the

descriptive or inferential statistical purpose of what is collected (McLaughlin et al., 2012). For instance, those responsible for collecting and analysing the data may become increasingly marginal to decision-making (Terenzini, 1993); in this instance, the strategic planning and/or strategy formation process. Terenzini (2013) is also concerned about the potential paradox of achieving less reliable and valid information "in an era of vastly expanded and rapid data-collection capabilities and analytical power" (p. 141), due to difficulties emanating from lower response rates to surveys.

Issues intelligence (T2) is the knowledge a university has regarding the major issues or decision areas requiring institutional action framed against its decision-making process, functions and institutional purpose (Terenzini, 1993). The institutional knowledge held by those playing a part in the decision-making and planning processes need to have more than surface level knowledge. Terenzini's (2013) warning is that:

> … faced with too many things to do and not enough time to do them, and absent any easily available and informed source of understanding and guidance, well-meaning but time-short administrators and faculty members will fall back on common sense, anecdote, hearsay, and personal beliefs… [I]t is essential [for those involved to know *something* about the subject matter involved] if our institutions are to avoid jumping on a practice and policy bandwagons headed for nowhere… The "empathy" [needed] is a keen understanding of the people in college and university settings; what faculty, administrators, staff, students, and others value, what is important to them. It is the ability to anticipate how others will respond to a proposal, an idea or opportunity (or threat,) and whether the reactions will be positive, neutral, or negative. It is knowing what it will take to secure others' support for a proposal or process. It is knowing how to appeal to the values and self-interests of others, knowing what the''deal-breakers'' are likely to be (and for oneself as well as others), and to find the common ground and ''win–win'' situations. (pp. 142-143, italics in the original)

Figure 2.3 above shows the interplay between the substantive and procedural elements found within both types of intelligences that tie T1 and T2 together, to generate the mechanisms for institutional sensemaking. It also shows how contextual intelligence (T3) takes into account the external environmental exigencies that shape institutional

decisions and strategies, reflecting in many instances the effects the triple-helix has on what universities do. T3 "involves understanding the culture both of higher education in general and of the particular campus" (Terenzini, 1993, p. 5). This is where information is tailored to specific institutional settings where decisions and strategies are made, planned and enacted. Terenzini (2013) later expanded his view of T3, giving it:

> … a much broader focus and a much heavier emphasis on the importance of awareness and analysis of an institution's state, national, and international environments…Understanding ''how to play the game'' locally is still important, but it is more important now than previously to understand both what the game is beyond our campus and what's needed for our institution to play it effectively. (pp. 144, 147)

T3 brings all of the different types of institutional intelligences to generate institutional action. Specifically, when it comes to strategies for pursuing international education, "[t]he application of the concept of a deliberate strategy to HEIs suggests that senior managers will adopt international strategies which define all the key international issues, analyse where they are positioned now and where they want to be in the future and then articulate action plans to achieve their goals" (Soliman et al., 2019, p. 1415).

Shah (2012) believed that strategic planning in Australian universities tended to concentrate on "important issues such as student growth strategy, student experience, social inclusion, workforce development, financial sustainability and alignment of growth with resources, facilities and infrastructure" (p. 26). However, he also said that focusing on these points meant not paying as much attention to issues that became of interest to the government. The impact on recruitment, access and retention, from the onset of COVID-19, has meant a rethinking of institutional planning to an issue that has been both, a key institutional issue as part of the student growth and a revenue generation/expenditure strategy, as well as key government economic policy.

2.3. Quality dimensions in higher education: Total quality management

Quality refers to the features and characteristics of a product or service that have a bearing on its ability to satisfy stated and implied requirements of the customer (Singal, 2012). This study is underpinned by the application of tools used in the business sector to improve quality of performance. Universities in Australia are regulated by TEQSA under the provisions set forth in the *Tertiary Education Quality and Standards Agency Act 2011* and its subsequent amendments. Its approach is based on a risk management framework. Its webpage (https://www.teqsa.gov.au/teqsa-act) states that the objects of the Act are to:

- provide for national consistency in the regulation of higher education
- regulate higher education using a standards-based quality framework and principles relating to regulatory necessity, risk and proportionality
- protect and enhance Australia's reputation for, and international competiveness in higher education, as well as excellence, diversity and innovation in Australian higher education
- protect and enhance academic integrity by prohibiting academic cheating services
- encourage and promote a higher education system that is appropriate to meet Australia's social and economic needs for a highly educated and skilled population
- protect students undertaking, or proposing to undertake higher education by requiring the provision of quality higher education
- ensure that students have access to information relating to higher education in Australia.

Risk-based frameworks are becoming part of higher education quality assurance schemes throughout the world (Padró, 2015; Padró et al., 2015) and are therefore linked with the major prevailing quality frameworks from the field of quality, mainly total quality management (TQM). Birnbaum's (2000) dismissive list of reasons for regulatory interest nonetheless encapsulates the rationale behind governmental interest in adopting TQM-type thinking well: getting universities to do more while receiving less funding support, emulating the success of the private sector, avoiding criticism

that they are not being accountable enough – the rationale for the creation of TEQSA, as noted in the *Bradley Review* (Bradley et al. (2008); it is what top government officials want, and it is a means of demonstrating action is being taken to address problems. In addition, the rise of the new public management model in public administration strengthened the adoption of TQM practices in government, which have become entrenched in law and manifest in regulatory schemes (De Vries, 2010; Dunleavy et al., 2006; Padró et al., 2020; Pollitt & Bouckaert, 2011). Accountability, attaining best practice, effectiveness and efficiency, improvement, innovation, quality performance and products, and stakeholder satisfaction are the key drivers behind regulation.

Nowadays, the higher education sector is being driven towards commercial competition imposed by economic forces resulting from the development of global education markets and the reduction of government funds, forcing colleges and universities to seek other sources of financing. Universities have to be concerned with not only what the society values in the skills and abilities of their graduates but also end-user demands and expectations (Hemsley-Brown et al., 2010; Taghizadeh & Mohamadi, 2013). In effect, university internationalisation strategies are framed in a stable environment without unexpected disruptions by a triple helix environment setting expectations, regulations and a rationale, as well as access to potential students. In turbulent environment circumstances, such as those encountered by universities due to COVID-19, and the socio-political and health disruptions to a normal environment, the strategies and approaches within the triple helix have been complicated. Quality tools are one means of assisting data collection and analysis to make sense of the issues at hand and to assist in strategy formation and planning.

TQM entails a holistic view of organisation including the three aspects of management philosophy, improvement processes, and quality control tools (Tague, 2005). Swiss (1992) was concerned that, as a systems-based framework, TQM had to adapt to the university environment, which has generally become the case in universities and the public sector (Karyotakis & Moustakis, 2014; Padró et al., 2020). TQM is a management approach that encourages staff to make targeted efforts throughout the organisation for accomplishing better quality and to motivate the staff to strive for constant development. The main focus of TQM is to develop a managerial environment that ensures satisfaction for internal as well as external customers along

with constant system improvement (Hongen & Xianwei, 1996), skills development, teamwork, improved processes, and better quality of product and service and CS (Singal, 2012).

However, TQM itself has different definitions, and not taking the differences into account creates potential problems for studies related to the framework and the utilisation of quality tools under this conceptualisation of quality; i.e. the definition changes according to the user's perspective (Boyne & Walker, 2002; Kalayci et al., 2012; Kontoghiorghes, 2018). The American Society of Quality (ASQ – http://asq.org/learn-about-quality/total-quality management/overview/overview.html) defines TQM, using its other name, quality management system (QMS), as follows:

> … a management system for a customer-focused organisation that involves all employees in continual improvement. It uses strategy, data, and effective communications to integrate the quality discipline into the culture and activities of the organization.

The concept of quality itself, when applied to HE, is a complex concept that makes it difficult to define and identify (Marshall, 1998; Sahney et al., 2006). Defining TQM within the university sector is not a simple issue based on the inputs, processes, and outputs that make up an HEI (Qureshi et al., 2012; Sahney et al., 2004b). However, Vlăsceanu et al. (2007) provided a definition for the higher education sector similar to the one advocated by ASQ, which proposed that the sector consider:

> … [a] comprehensive approach to quality management that places emphasis on factors such as continuous improvement, customer focus, strategic management, need for explicit systems to assure quality of higher education, and a view of leadership and supervision that stresses employee empowerment and delegation. Such an approach to quality management emphasizes assessment that is undertaken of: (i) defined objectives or standards (set internally or by external funding bodies); (ii) measures of customer satisfaction; (iii) expert and professional judgment; and (iv) comparator organizations (p. 76).

Both of these definitions are anchored to organisational culture because successful TQM is deeply embedded in every aspect of organisational life and calls for the satisfaction of customers. To achieve this, organisations must (Singal, 2012):

- be customer-oriented and meet customer requirements;
- pursue continuous improvement through their management processes; and
- involve all of their employees and get their buy-in.

One of the most powerful techniques to appear under the TQM umbrella is QFD (Jiang et al., 2007; Murgatroyd & Morgan, 1993; Shekhar & Arora, 2012). QFD highlights TQM's continuous customer-centred employee driven improvement approach. "Delighting the customer" is the rule for survival in the long run and is its core message (Akao, 1990a; Sahney et al., 2004b). A major benefit for the use of QFD as a quality tool by universities is that it brings together marketing strategies, recruitment practices and actual services and support provided to international students (Mohsin et al., 2018).

In view of the above, that the concentration of this thesis is on the service aspect of quality in higher education.

2.4. Quality function deployment (QFD)

Quality function deployment (QFD) has been derived from three Japanese phrases Hin Shitsu (meaning quality), Ki Nou (meaning function), and Ten Kai (meaning deployment) (Singh et al., 2008; Gangurde & Patil, 2018); Ishak et al., 2020). The term QFD was first coined in Japan at the end of the 1960s (Akao & Mazur, 2003; Foster, 2010; Vinayak & Kodali, 2013; Karanjekar et al., 2019). Later, in 1983, the term was introduced in the USA and later to other parts of the western world, receiving positive reviews (Goetsch & Davis, 2010; Prabhushankar et al., 2015; Singh et al., 2008; Geng & Geng 2018). QFD has been widely applied in aerospace, software, engineering, construction and marketing. In the United Kingdom (UK) the uptake of QFD techniques has been more recent. As a result, there are only a few scattered cases of companies trying to experiment with it from the UK (Zairi & Youssef, 1995). Service sectors such as government, education, e-banking, accounting, healthcare, hospitality,

public sector, retail, technical libraries and information services have used and effectively applied this technique (Andronikidis et al., 2009; Sahney et al., 2004a; Schillo et al., 2017).

QFD is not new in Australia as it was introduced in 1989. The construction industry (Chan & Wu, 2002b; Smith et al., 2006), real estate services sector Hamilton & Selen, 2004) and furniture manufacturing industry (Smith et al., 2006) have been successfully using it for a number of years. Australia's higher education sector has occasionally used QFD from the early 1990s onward. QFD has been used as an analytical tool regarding education quality, service quality, educational research, software development, teaching effectiveness, curriculum design, training, instructional resources, and marketing planning (Chien & Su, 2003; Eftekhar et al., 2012; Karanjekar et al., 2013b; Mukaddes et al., 2012; Prabhushankar et al., 2015). What the literature review has shown, however, is that there has not been much attention given to how TQM and QFD are deployed and utilised in Australian universities from an institutional perspective (Cruickshank, 2003).

2.4.1. QFD as a quality tool

QFD is an important a technique used in TQM, which can be applied for process and design improvement in manufacturing or services sectors (Karanjekar et al., 2013a; Qureshi et al., 2012; Raharjo et al., 2007; Shen et al., 2000b; Singh et al., 2008; Tsinidou et al., 2010). It works within quality systems that aim to satisfy the customer (Mazur, 1996). QFD is a technique that translates the voice of the customer (VOC), or customer requirements (CR), into the quality assurance processes of the final product and/or service quality offered (Akao, 1990a). QFD has many facets to it as a technique and in the way it can be deployed, leading to different approaches and definitions. Below are some of the definitions found in the literature:

- "QFD is a method for developing a design quality aimed at satisfying the consumer and then translating the consumer's demand into design targets and major quality assurance points to be used throughout the production phase" (Gupta et al., 2012, p. 896).

- QFD is "A set of planning and communication routines, quality function deployment focuses and coordinates skills within an organisation, first to design, then to manufacture and market goods that customers want to purchase and will continue to purchase" (Hauser & Clausing, 1988, p. 63).
- Akao defined QFD as: "A method for developing a design quality aimed at satisfying the consumer and then translating the consumer's demand into design targets and major quality assurance points to be used throughout the production phase" (Akao, 1990b, p. 3).
- QFD is a "development tool designed to ensure that a multi-disciplinary team works toward maximum CS" (Özgener, 2003, p. 969).
- QFD is "an overall concept that provides a means of translating CR into the appropriate TR for each stage of product development and production (i.e., marketing strategies, planning, product design and engineering, prototype evaluation, production process development, production, sales)" (Sullivan, 1986, p. 39).
- Eureka and Ryan (1994) defined QFD as a systematic way of ensuring that the development of product features, characteristics, and specifications, as well as the selection and development of process equipment, methods, and controls, are driven by the demands of the customer or marketplace.
- QFD is a system for designing a product or a service based on customer wants, involving all members of the supplying organisation (Lynch & Cross, 1991). It is a conceptual map for interactional planning and communication.
- Cohen mentions the use of QFD as a tool for communication as: "QFD is a structured approach for translating customer requirements into design specifications. It is a powerful tool that ensures proper communication between the client and [the] design team. " (Cohen, 1995).
- According to the American Supplier Institute (ASI) (1989), QFD is "A system for translating customer or user requirements into appropriate company requirements at every stage, from research through production design and development, to

manufacture, distribution, installation and marketing, and sales and services" (Vinayak & Kodali, 2013, p. 825).

The main goals of QFD are enhanced customer satisfaction (CS), organisational integration of expressed customer wants and needs, and improved profitability (Griffin, 1992). In this sense, QFD is a productivity improvement tool that helps organisations to achieve and maintain competitive advantages by striving for world-class performance (Vinayak & Kodali, 2013). As a tool, it is developed by involvement of a cross-functional team and provides an interdepartmental approach to communication that creates a common quality focus across all functions/operations in an organisation (Andronikidis et al., 2009). Teams work to define who the customer is, what the customer's wants (the "whats"), the "hows" (the mechanisms to satisfy the customer's wants) and the relationships between these "whats" and "hows", assigning value weights to each by using a matrix known as a 'House of Quality' (Pitman et al., 1996). QFD can be referred to as designed-in quality rather than traditional inspected-in quality (Chan & Wu, 2002). It is a tool that concentrates on maximising CS and delivering "value" by discovering spoken and unspoken CR, translating CR into actionable service or product features and communicating them throughout an organisation (Mazur 1993). There are main goals for implementing QFD, according to Gupta et al. (2012), (p. 896) are to:

- "Prioritize spoken and unspoken customer wants and needs.
- Translate these needs into technical characteristics and specifications.
- Build and deliver a quality product or service by focusing everybody toward customer satisfaction" (p. 896).

To achieve all these goals, Motwani et al. (1996) stressed that the QFD process requires the involvement of a cross-functional team, the QFD process itself, and a visual matrix to guide the process.

2.4.2. ISO 16355 standards QFD

The approach taken in this study is similar to the elements described in the ISO 16355 standard. It explains techniques and tools that can be employed in the application of QFD within organisations. For example, the standard takes into account the time,

people, and money constraints faced by modern businesses (providing smaller, more efficient tools for smaller businesses that could find making an HOQ a difficult proposition). In addition, inclusion of ISO 16355 serves as a user guide that illustrates the dynamic nature of a customer-driven approach to determining organisational strategy. As the standard indicates, QFD is (ISO, 2015):

> [...] a method to assure customer or stakeholder satisfaction and value with new and existing products by designing in, from different levels and different perspectives, the requirements that are most important to the customer or stakeholder (ISO, 2015, p. 2015).

The principal rationale behind the standard is to break down its critical elements, identify stakeholder considerations and provide a user guide that covers and discusses current best practices in QFD. Rather than being prescriptive in the application of QFD, the standard allows users to pick and select the tools and approaches that best suit their requirements (ISO 16355-1:2015, 2015). The standard is in eight parts:

Part 1: General principles and perspectives of the QFD method (ISO 16355-1:2015, 2015). This Overview describes the general framework of QFD and suggests various methods and tools with relevant references and examples.

Part 2: Acquisition of voice of customer/voice of stakeholder-non-quantitative approaches (ISO 16355-2:2017, 2017). This part details how to identify and acquire the voice of customers and stakeholders through visits, interviews, and inference.

Part 3: Acquisition of voice of customer/voice of stakeholder-quantitative approaches (ISO/WD 16355-3). This part details how to identify and acquire the voice of customers and stakeholders through structured surveys and interpretation of statistical information.

Part 4: Analysis of non-quantitative and quantitative voice of customer/voice of stakeholder (ISO 16355-4:2017, 2017). This part takes the acquired voices and translates them into customer needs which are then prioritised and competitively benchmarked to determine satisfaction targets.

Part 5: Strategy and translation of VOC into engineering solutions and cost planning (ISO 16355-5:2017, 2017). These parts translate the customer needs into

engineering requirements in order to develop a solution strategy that accounts for quality, new technology, reliability, and cost concerns.

Part 6: Optimisation – parameter design for robust products (ISO/WD 16355-6). This part, first independently published as ISO 16355, addresses design phase optimisation of nominal value parameters based on robustness of function.

Part 7: Optimisation – tolerance design and output to manufacturing (ISO/WD 16355-7). This part addresses when to tighten tolerances to improve overall product quality and performance.

Part 8: Guidelines for commercialisation and life cycle (ISO/TR 16355-8:2017, 2017. This technical report addresses quality issues related to post-design test, build, package, commercialisation, support, service, and retirement from market phases.

The eight-part QFD standard ISO 16355 was released in stages, with Part 1 appearing in 2015, Parts 2, 4, 5, and 8 appearing in 2017, and the other parts being developed in 2015. (ISO, 2017a; ISO, 2017b; ISO, 2017c; ISO, 2017d). Key QFD ideas are described in ISO 16355, which also offers a selection of implementation techniques and tools. The objective, users, and tools of the QFD process are all described in Part 1. Among the several QFD project categories outlined in Part 1 are generational upgrades to current goods. However, the standard's title, "Application of statistical and related methods to new technology and product development process," unmistakably carries over the traditional QFD model that prioritises only brand-new products and designs. The whole standard is not further evaluated in this study because it has not been completely published and has not been aligned to any study integrating QFD with the Kano model and SWOT analysis.

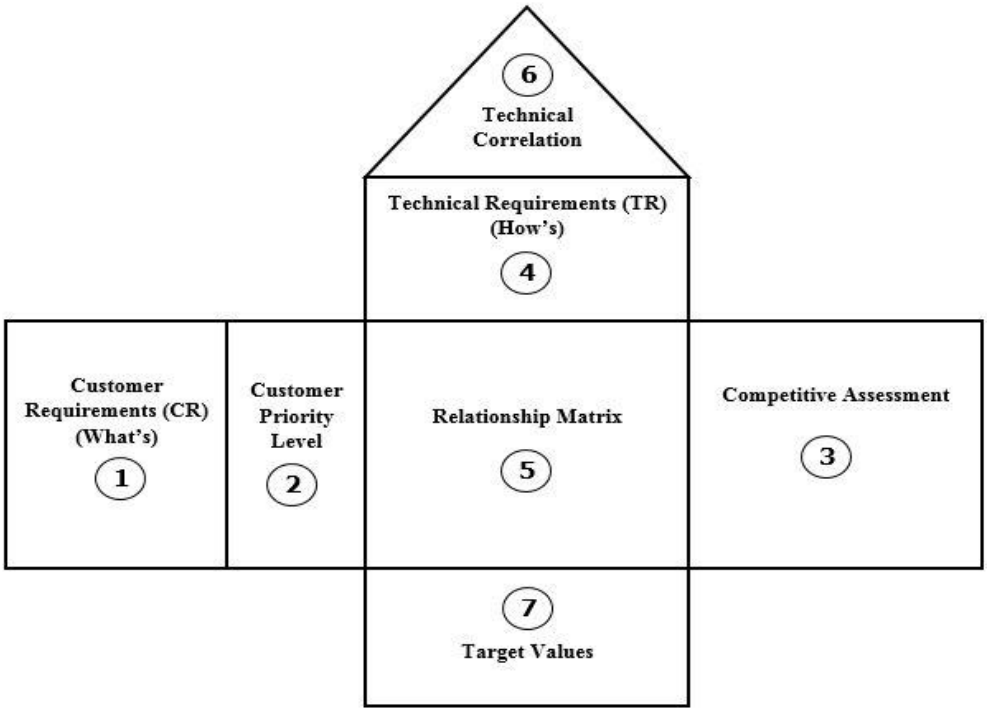
2.4.3. The QFD process

2.4.3.1. The House of quality

QFD involves the construction of one or more matrices, called “quality tables” that guide the decisions that must be made throughout the development process (Cohen, 1995). The first of these “quality tables”, called “The House of Quality (HOQ)”, is the

most commonly used matrix in QFD (Andronikidis et al., 2009). Figure 2.5 illustrates what a basic HOQ looks like. Essentially, HOQ is the essential component in constructing QFD (An, 2011, August). The HOQ matrix-style diagram correlates the identified customer attributes ("whats") with the TR ("hows"). A multidisciplinary team draws upon market research and benchmarking data to translate CR into an appropriate number of prioritised technical targets (Prabhushankar et al., 2015). The main components of a QFD matrix are:

Figure 2. 5: Basic representation of the House of Quality



Source: Adapted from Tague, 2005, p. 306.

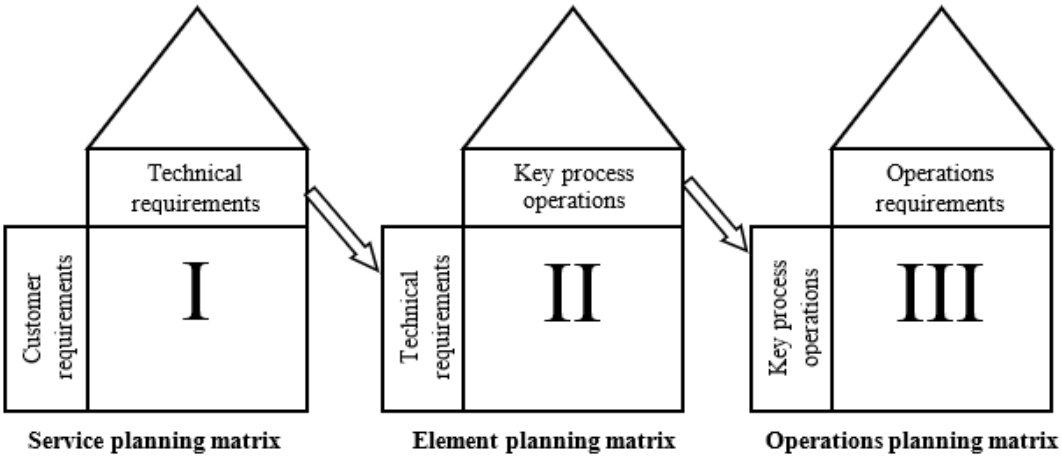
1) **Identify a list of customer requirements (CR) matrix:** Customer requirements are also known as the "Voice of the Customer" (VOC) are the primary inputs used in the QFD process (Evans & Lindsay, 2013). CRs get to the heart of what customers need and want from the manufacturer or service provider. Their importance lies in using the customer's own words to understand the customer's point-of-view "in preventing misinterpretation by designers and engineers" (p. 316).

2) **Develop a listing of technical requirements (TR) matrix:** TR are a design characteristic that describes the CR as expressed in the language or voice of the organisation (VOO) or voice of engineer (VOE), located in the ceiling of the quality house. Essentially, they are how the organisation will respond to the CR. They must be measurable because the output is controlled and compared to objective targets.
3) **Develop a relationship matrix between the CR and the TR:** The purpose of the relationship matrix is to show whether the final TR adequately address CR. This assessment is usually based on expert experience, customer responses, or controlled experiments. The symbols are used and scores are assigned relating to these symbols (i.e., 1, 3, and 9, where 9 means strongly associated, 3 is somewhat associated, and 1 is weakly associated).
4) **Develop a planning matrix:** This matrix identifies importance ratings for each CR. Customer importance ratings represent the areas of greatest interest and highest expectations as expressed by the customer. Competitive evaluation highlights the absolute strengths and weaknesses in competing products. Designers and developers can use this matrix to find areas where they can improve. It also connects QFD to a company's strategic vision and indicates priorities for the design process.
5) **Develop a technical correlation matrix:** This matrix shows the positive or negative relationship between each of the TRs. These relationships help determine the effects of changing technical characteristics and enable planners to assess the trade-offs between technical requirements. Thus, design decisions cannot be viewed in isolation.
6) **Establish the priorities of the technical requirements (TR) matrix:** The technical team establishes the values for each TR, from which the overall priorities for the product or strategy TR and additional goals are determined (Chen, 2007, p. 41). This matrix contains the information that links the TRs to CRs, providing the initial rank ordering of technical measures' relative importance, based on the information in the previous matrices. The TR matrix can be regarded as a tool to decide on the introduction of techniques and the allocation of resources (Yeh, 2010, p. 2536). The target value for the TR is defined in the same way as the target values for the assigned CR (Foster, 2010).

2.4.3.2. Approaches of QFD

The House of Quality offers a method for universities to understand CR and provide strategic direction to senior management. There are two different QFD approaches. One of them is used in manufacturing (four phases) settings and the other (three phases) in services. In manufacturing, the four phases (see Appendix I) include product planning, product design, process planning and process control planning (Evans & Lindsay, 2008). However, only the first phase is typically used (Evans & Lindsay, 2008, p. 600; Han et al., 2001). Reasons for this include: [1] the HOQ phase is covered by the first phase (Chan & Wu, 2002a; Evans & Lindsay, 2008; Hwarng & Teo, 2001), and [2] applying the four phases is a time-consuming process (Chan & Wu, 2005; Evans & Lindsay, 2008; Hwarng & Teo, 2001). In services contexts, Hwarng and Teo (2001) suggest a three-phase scheme to perform QFD (Chien & Su, 2003; González et al., 2004; Paryani et al., 2010; Pun et al., 2000; Quinn et al., 2009; Stuart & Tax, 1996). Figure 2.6 depicts the modified three-phase methodology that will be used in this study.

Figure 2. 6: The Three-Phase model of QFD (deploying the VsOC)



Source: Adopted from (González et al., 2004; Paryani et al., 2010).

Phase I (service planning matrix): This phase is known as the "House of Quality". Activities in this phase centre on understanding the customers in the service area

("product planning" of the manufacturing based QFD). CR first identifies then relates to, service elements corresponding to "design requirements" used in product planning.

Phase II (element planning matrix): This phase corresponds to "parts planning" of the manufacturing based QFD and links the service elements identified in Phase I to process service operations.

Phase III (operations planning matrix): This phase corresponds to "production planning" of the manufacturing based QFD and connects key process operations to service operation requirements, based on the information obtained in the previous two phases.

2.4.4. Methodological issues: Integrating QFD with other Quality tools

Quality starts with customers and is defined by customers (Jamali et al., 2010). Generally, in a service sector, a customer is anyone being served. There are many instruments and methods designed to help organisations understand CRs. The selection of instruments to use is important because the intangibility and lack of physical evidence of service make perceptions of service quality a complex proposition and pose difficulties for measurement and analysis (Mahapatra & Khan, 2007; Parasuraman et al., 1985). Identifying customers is therefore essential in order to determine specific needs and maintain customer-oriented service.

Customers may be both internal and external, depending on whether they are located within or outside the organisation, meaning that they can be seen as different constituencies (Kanji et al., 2010; Quinn et al., 2009). Scrabec (2000) belived the "the inability to classify customers is at the heart of failed TQM efforts in education" (p. 298). As the student is also part of the input, among others (e.g. the employer), the best method of resolving different interests is to recognise their existence and to look for issues that unite the different parties (Sahney et al., 2004b). Thus, despite HE having a number of complementary and contradictory issues about defining an HE customer (e.g., due to demands for increasing student enrolments, pressure to satisfy the students' desires for higher grades, and student evaluations becoming the primary indicator for teaching effectiveness (Bailey & Dangerfiled, 2000; Eagle & Brennan, 2007; Svensson & Wood, 2007), there are distinct transactions occurring alongside

learning and research activities within a university, suggesting the appropriateness of identifying students as one of the principal customers served by universities.

Institutional and personal outcomes within the higher education environment are linked to transformation of knowledge in individuals and a change in their behaviour (Pascarella & Terenzini, 2005a). The personal nature of the transformation and the environments generating the transformation, are unique to each individual studying at a university, which means that many different issues are at play. Thus there is no mutually accepted definition of quality that can be applied to the sector (Qureshi et al., 2012). Regardless, numerous universities strive to improve the quality of their education systems and make themselves distinctive from the rest by applying TQM tools and techniques (Aly & Akpovi, 2001).

QFD's capacity to transform CR into technical characteristics of organisational performance can be augmented through the use of SERVQUAL and/or the Kano model (Baki et al., 2009). A limitation arising from SERVQUAL has been the assumption of linearity between service quality and customer satisfaction (Baki et al., 2009). Bin Saadon (2012) and Tan and Pawitra (2001) discussed how this limitation could be reduced by introducing the Kano model alongside SERVQUAL within a QFD analysis. Because of QFD's emphasis, a typical methodological approach used within QFD is the application of the Kano model (Tague, 2005) because it seeks to capture a multi-dimensional view of CRs using the VOC, but from the perspective of quality attraction. Specifically, the Kano model captures the relationship between an organisation's product or service and the user, focusing on the product's or service's attributes, classifying and prioritising user perceptions into "must have" (baseline) and "attractive" (desirable, preferred). Hence, the Kano model can help in the classification and ranking of the requirements of different customers/respondents to determine the requirement(s) with the highest priority (Azizi & Aikhuele, 2015). This is because all the requirements identified through a paired question survey and interviews may not have equal importance to all the customers Kamno et al. (1984) cited in Lee et al. (2011). Below is a review of both approaches.

2.4.4.1. SERVQUAL

Customer satisfaction is seen as either a function of perceived quality (Anderson & Sullivan, 1993) or the reverse (Parasuraman et al., 1988). Service quality (SQ) is a customer-centred model (Galloway & Wearn, 1998) based on "an attitude toward the service offered by a firm resulting from a comparison of expectations with performance" (Carrillat et al., 2007, p. 475). According to the literature, SERVQUAL is one of the most popular instruments used to measure service quality (Brochado, 2009). SERVQUAL is a 22 item diagnostic instrument comparing the gap between consumer expectations and their perception/judgement about the oraganisation's excellence or superiority, based on consumer experiences in five areas: reliability, assurance, tangibles, empathy and responsiveness (Parasuraman et al., 1991). Another use of SERVQUAL is the categorisation of perceived quality segments for analysis purposes based on:

1) demographic, psychographic and/or other profiles;
2) the relative importance of the five dimensions in influencing service quality perceptions; and
3) the reasons behind the perceptions reported (Parasuraman et al., 1988, p. 35).

The SERVQUAL questionnaire structure is a matched set of 22 questions looking at expectations and perceptions. "Each item was recast into two statements—one to measure expectations about firms in general within the service category being investigated and the other to measure perceptions about the particular firm whose service quality was being assessed" (Parasuraman et al., 1988, p. 17). Roughly half of the items within the questionnaire are asked in negative terms, and the scale also used a reflection on positive and negative responses in order to understand the difference between a positive and a negative statement (Parasuraman et al., 1991). There are similarities between SERVQUAL-type questionnaires and other survey instruments. In this case, respondents do not have to worry about having to select the response. This approach has been successfully used to explain significant amounts of variances in student-related outcome variables such as satisfaction and learning (Stodnick & Rogers, 2008). The questionnaire can also be interpreted through other analytical

methods such as importance-performance analysis (IPA), which is "primarily used to evaluate an organisation's competitive advantage to identify the product or service generating the greatest benefits to a firm and increase CS" Chen et al. (2015, p. 3).

Criticism of SERVQUAL has come from theoretical and practical perspectives. Attempts to define evaluation standards independent of a service sector context have resulted in the creation of different performance-based methodologies to measure SQ (Abdullah, 2005, 2006). One of the major theoretical objections identified by (Buttle, 1996) is particularly relevant to this study: namely that it is inappropriately based on an expectations-disconfirmation model rather than an attitudinal model of SQ. Another critique Buttle (1996) identified and one referred to in the literature with some frequency, is the lack of evidence of customers assessing SQ in terms of the performance-expectation gap. The literature further suggests that an analysis based on an expectation scale may generate biased results for different reasons (e.g. Carrillat et al., 2007; Özcan, 2016), especially in universities (Brochado, 2009; Teeroovengadum et al., 2016). Within the higher education environment, developing performance indicators is problematic because these measure activity instead of "true measures of the quality of students' educational service" (Soutar & McNeill, 1996, p. 72).

2.4.4.2. SWOT analysis

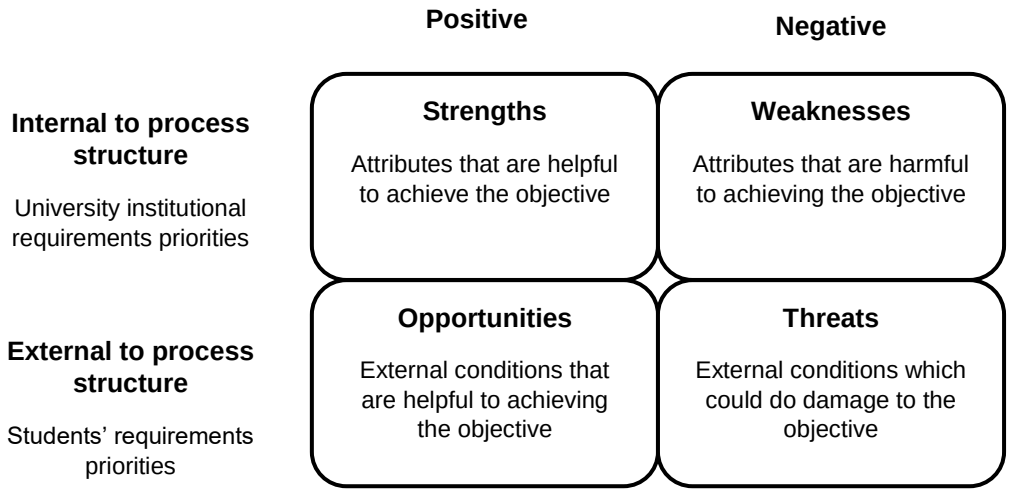
A SWOT (strengths, weaknesses, opportunities, and threats) analysis is an environmental assessment based on identifying the internal and external factors affecting the investigated process or structure (Das, 2019). It was used in this study to provide an impact evaluation of quality management in relation to three Queensland universities (cf. Leiber et al., 2018). SWOT is a tool largely used in management and administration to find out the strengths and weaknesses as well as to estimate the probable opportunities and threats of any particular institute or program or any business plan. Leiber et al. (2018) made the case that SWOT analysis can be effectively applied in Quality Assurance of a university since due to the many intricacies found within universities, even if TQM needs to be adapted to better represent performance excellence in higher education (Padró et al., 2020; Swiss, 1992). For example, they have been used in the Australian higher education sector to analyse its growth

(Mohezar et al., 2017) Utilising findings from a SWOT in this instance helped in reducing the complexity of the findings emanating from constructing the HOQ for the universities and provided a more simplified picture involving AIS and university dilemmas and choices made. This section presents a SWOT analysis of the impact evaluation of Kano-QFD at the three Queensland universities that make up this study.

SWOT analysis involves the identification of four fields categorised into two groups: the first group entails strengths and weaknesses while the second group entails opportunities and threats. The first group explores the internal factors while the second group explores the external factors of the university. “Strengths and weaknesses are internal factors and thus they can be influenced, however, threats and opportunities mean external conditions that can be controlled only in rare cases, but there is no real chance to manage them” (Gebei & Vincze, 2019, p. 56). Performing a SWOT analysis allows for a systematic evaluation of issues from a strategic dimension and the assessment of issues based on relevant theory and selection of appropriate methodology like the Kano-QFD model in HEIs (Leiber et al., 2018). Like Lieber (2017, as cited in Leiber et al., 2018) noted, performing a SWOT analysis can bring to the fore aspects of the issue under review that may not be otherwise noted through other types of analysis. One reason why is due SWOT providing an integrative approach by bringing “together components inside and outside the firm into a whole” (Bell & Rochford, 2016, p. 312). Figure 2.7 presents a representation of what a SWOT analysis can represent within an HEI. Strengths and weaknesses are internal factors and thus they can be influenced, however, threats and opportunities mean external conditions that can be controlled only in rare cases, but there is no real chance to manage those (Gebei & Vincze, 2019). Figure 2.7 presents a possible display of SWOT analysis.

SWOT analysis intends to systematically evaluate the issue by discussing and making decisions about strategic dimensions of the problem. The process involves identifying the strengths, weaknesses, opportunities and threats and consequently assessing relevant theory, selecting the methodology and evaluating the application of the Kano-QFD model in HEIs (Leiber et al., 2018). Then, the SWOT analysis presents the findings by using post-matrix SWOT analysis to perform internal and external assessments of the three Queensland universities.

Figure 2. 7: SWOT analysis, schematic representation



Source: Adapted from Gebei and Vincze (2019, p. 56); Shahijan et al. (2016, p. 156); Leiber et al. (2018, p. 353)

SWOT analysis has both, benefits and drawbacks. Benefits include lower cost and focus on the factors that have the most significant influence on the concerned process. However, a SWOT analysis cannot replace more in-depth research and analysis. Its execution becomes complicated if factors are uncertain, tilted toward two of the four categories or the boundaries between classes are ambiguous or fluid in the identification of the categories. Additional drawbacks to be concerned with are:

- the possibility of not considering issues in order of their priority;
- the possibility of lacking practical validity;
- the possibility of involving ambiguous phrases;
- the possibility of no proposal of solutions or alternatives;
- chances of indicating a number of ideas with no clue regarding the selection of the best one; and/or
- the chances of production of both useful or useless information and possibility of not being associated with implementation phase (Bell & Rochford, 2016).

To generate a useful strategic perspective utilising SWOT, the first step is to look at the university's mission and the identified goals to ensure that the mission is being achieved (Sharifi, 2012). This allows for an analysis of external and internal

environments affecting institutional actions and performance in relation to demands and expectations framing institutional decisions (Qiu & Wei, 2017; Rucitra, 2020; Sharifi, 2012). External factors, particularly in a regulated environment like universities in Australia, often act as a 'standard of how well an organization is meeting the demands of the various groups and organizations that are concerned with its activities" (Pfeffer & Salancik, 1977, p. 11). Internal factors are those organisations can control because they principally procedural in scope and influence institutional agenda formation (Glennie & Lodhia, 2013). As Pfeffer and Salancik (1978) observed, internal factors are those where "problems can be solved by changing elements within the organization, without regard to their contextual basis" (p. 8).

Sperlich et al. (2017) provide an example of how external factors are typically identified and used in the analysis from the viewpoint of opportunities and threats while internal factors are the strengths and weaknesses in a SWOT. *Opportunities* (as an external factor) are those activities that a university can exploit because "are factors or features which can favour or facilitate the business establishments with links outside organizations" (Namugenyi et al., 2019, p. 1146). One area where the identification of opportunities is the potential to identify emerging and potential future trends in the sector (in this case the IS recruitment and retention). *Threats*, as the term implies, is the identification of external contexts and trends that can impede universities from attaining institutional goals and meet performance indicators (e.g., competition, changes in demands and expectation, technological developments).

Strength is one of the two internal factors within SWOT. It represents the distinctive competence an organisation has that provides that organisation a competitive advantage in the sector (Luo & Qin, 2012; Sharifi, 2012). An identified *strength* is a differentiator that makes the institution stand out. In this regard, strengths can be said to identify a valuable institutional resource (Barney, 1991). The other internal factor within SWOT is *weakness*. "Weaknesses are internal factors or constraints which might impede or hinder the performance of an organisation" (Namugenyi et al., 2019, p. 1146). The focus of weakness identification is to minimise the negative impact have on performance along with identifying areas of improvement, thus minimising resource waste (Sharifi, 2012).

2.4.4.3. The Kano model

The Kano model, developed by Kano, (Kano et al., 1984), was based on Herzberg's (1959) two-factor theory of satisfaction or the motivation-hygiene theory (McDowall, 2016; Mohsin et al., 2018; Witell et al., 2013b). One difference between the Kano model and Herzberg's theory is that the Kano model allows participants to categorise satisfiers and dissatisfiers themselves (McDowall, 2016), which was considered an important determinant for its inclusion within this QFD study. Specifically, the Kano model is based on the notion of attractive quality in relation to CRs, based on five dimensions of perceived quality: [1] attractive, [2] one-dimensional, [3] must be, [4] indifferent and [5] reverse quality (Chaudha et al., 2011). It is a technique to identify the various types of customer requirements and expectations. In general, the function of Kano's model is the belief that the product/service criteria, which have a great impact on the customer's satisfaction can be distinguished. Its strength is its capacity to guide organisations in identifying and understanding market segmentation and, in the case of universities, differentiation of its program offerings and services to students according to the utility expectations of current and potential students (Matzler & Hinterhuber, 1998; Witell & Löfgren, 2007).

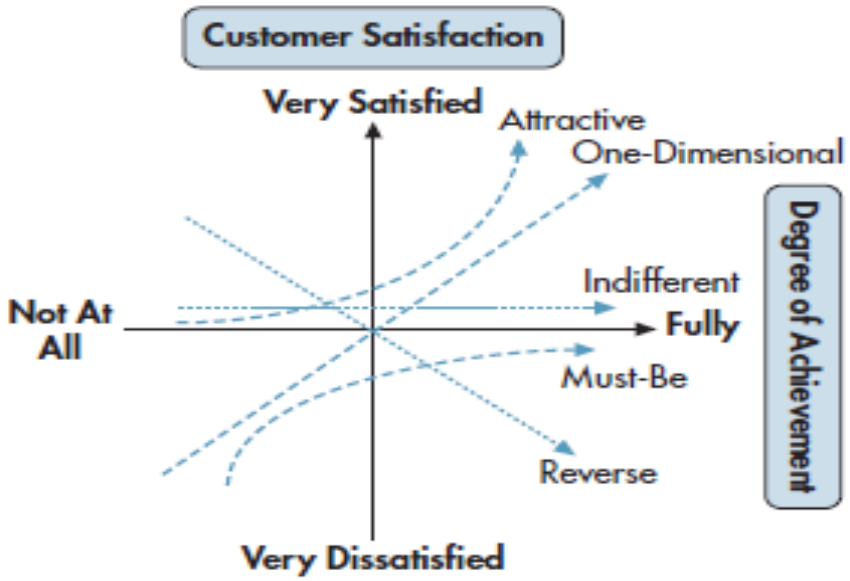
Witell et al. (2013b) performed a systematic review of 147 research papers published between 1984 and 2012 and found that the literature on Kano has undergone three stages: emergence (1984-1999), exploration (2000-2008) and explosion (2009-2012). 45 papers were published during the second stage of exploration, which was the period when many of the studies changed from investigating products to investigating services, including education (Witell et al., 2013b). Three themes dominated during this period: [1] the classification of quality attributes, [2] alternative approaches to classifying quality attributes, and [3] the relationship between Kano methodology and methods like QFD and SERVQUAL (Witell et al., 2013b). Several studies were notable in suggesting changes or modifications to the Kano questionnaire or other types of possible analyses as a means of improving results, inclusive of the scale response. One study performed by Nilsson-Witell and Fundin (2005), and cited by Witell and Löfgren (2007), Löfgren and Witell (2008) and Witell et al. (2013b), found that changing the response wording (scale response) decreased the number of questionable items, making respondent classification clearer, and supporting the

approach taken in this study regarding the scale of responses to the items asked AIS, as well as the manner in which item questions themselves were constructed. In an earlier analysis of the literature, Löfgren and Witell (2008) also noted how the Kano model has been used in different contexts, using different formats and linked to other quality approaches like SERVQUAL, its variants (SERVPERF, HedPERF, etc.), and QFD in studies performed over a twenty-year period.

2.4.4.3.1 The Kano model as a means of determining attractive quality

Kano (2001) proposed his model to be a means of providing an Attractive Quality Theory. Attractive quality attributes satisfy a customer when fully met, yet do not cause dissatisfaction if not met (Kano et al., 1984, cited in Löfgren and Witell (2008)). Because they are not normally expected, these quality attributes are often unspoken by the customer and are sometimes referred to as delight or surprise attributes (Löfgren & Witell, 2008). These quality attributes can change over time into a different category (Kano, 2001). Figure 2.8 presents an overview of Attractive Quality Theory. The model, as can be seen, categorises customer requirements into three categories: must-be (basic) requirements, one-dimensional (normal performance) requirements and attractive (excitement) requirements (Mohsin et al., 2018). In addition, there are three additional categories that may be visible: reverse (satisfaction when the current quality requirement is absent), indifferent (lack of concern about the presence of the quality requirement) and questionable (potential misinterpretation or misunderstanding of the question (Mohsin et al., 2018; Witell & Löfgren, 2007).

Figure 2. 8: Overview of attractive quality theory



Source: Adapted from Löfgren & Witell, 2008, p. 62.

2.4.4.3.2 The Kano questionnaire

Performing a Kano analysis usually takes four steps: [1] product requirement(s) identification, [2] constructing the questionnaire, [3] administering follow-up learner and/or student interviews; and [4] evaluation and interpretation (Matzler et al., 1996). Generally, the steps followed to develop and use a Kano questionnaire are to:

- develop the questionnaire,
- test the questionnaire and revise if required,
- administer the questionnaire to the desired audience,
- process the results, and
- analyse the results (Berger et al., 1993).

A more detailed description of how the questionnaire was developed for this study is provided in Chapter 4.

A key feature of the Kano model is the creation of a survey which consists of paired questions (one statement presenting a functional form, with a second one as a

dysfunctional form) about customer requirements (Kano et al., 1984, cited in Lee et al. (2011). The questions must be precise and comprehensible to ensure consistent interpretations from respondents (Materla & Cudney, 2018). The first question refers to circumstances when the requirement is met, while the second question refers to when the requirement is not met (Berger et al., 1993). Responses are effectively performed using what is similar to a five-point rating scale based on the alternatives provided (e.g., Cudney and Elrod (2011). Menold and Bogner (2016) recommended that the verbalisation of rating scales should meet the following requirements:

1. verbal labels should be precise;
2. the rating scales should be balanced (same number of positive and negative categories);
3. verbal labels should be generally comprehensible or universal; and
4. the rating scale categories should suggest equidistant ranges between the categories (p. 5/15)

There are several ways of designing a Kano questionnaire; however, the survey is typically set up with five sets of paired questions based on a scale similar to that of a Likert 5-point scale (Tontini, 2007). Five- to seven-point scales are often recommended as these provide sufficient differentiation. Too many categories reduce the clarity of meaning to the respondent while too few do not provide sufficient differentiation (Menold & Bogner, 2016). Krosnick and Fabrigar (1997) noted that:

> There are various reasons to believe that more scale points will generally be more effective than fewer. This is because people's perceptions of their attitudes presumably range along a continuum of extremely positive to extremely negative. In order to translate a point on that continuum onto a categorical response scale, the set of points must presumably represent the entire continuum. (p. 144)

Using questionnaires with paired items like the one used in the Kano methodology requires an excellent command of the language in which these are administered, as those surveyed need to fully understand the functional (positive) statement and its opposite, the dysfunctional (negative) statement. Minimising task difficulty and respondent motivation is an important consideration in designing the survey

instrument (Krosnick & Presser, 2010), which is why wording of the alternatives is most critical when using the Kano methodology (Berger et al., 1993; Löfgren et al., 2011).

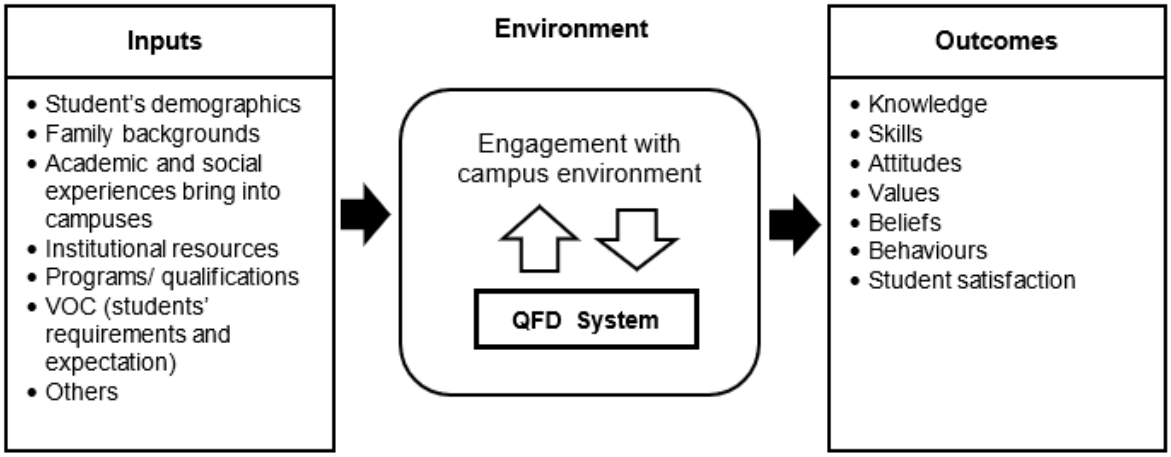
2.4.4.3.3 Astin's I-E-O model as the basis for the Kano questionnaire

"When students are viewed as the primary beneficiaries of HE services, it is essential to identify causes and consequences of their satisfaction" (Lukić & Lukić, 2020, p. 1507). Astin's (1985, 1993) input-evaluation-outcomes (I-E-O) model provides a conceptual and methodological background based on which Kano questionnaire was created. It is a well-recognised and accepted model used alongside other well-established constructs on the effects of engagement in student learning within higher education environments (Inkelas et al., 2011; Pascarella, 2006). Hu and Kuh's (2002) definition of student engagement is useful in this regard: "the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes …" (p. 555). Research over the last few decades has shown that Astin's "claim that the time and energy students devote to educationally purposeful activities is one of the best predictors of their learning and personal development in college" (Chen et al., 2014, p. 566). Satisfaction as a measure of student learning is a combination of affective responses as well as a cognitive process (Gray & Daymond, 2010; Padró & Kek, 2013).

Astin's model highlights the longitudinal nature of the higher education learning experience and the interactivity between student background characteristics and the HEI environment, placing these in the broader institution framework context (Kelly, 1996). "The I-E-O model was designed to address the basic methodological problem with all no experimental studies in the social sciences, namely the non-random assignment of people (inputs) to programs (environments)" (Astin & Sax, 1998, p. 252). The I-E-O model fits QFD methodology as QFD is a transformation system, with inputs, processes, outputs and feedback (Kathawala & Motwani, 1994). Universities are systems of interrelated components that transact within complex and inter-related internal and external environments, requiring them to continually assesses organisational performance and effectiveness (Hayes, 2002) for organisational

learning and accountability purposes. Figure 2.9 illustrates the various elements of Astin's I-E-O model and where QFD fits within Astin's model. Inputs influence the environmental experience of students in relationship with achieving desired outcomes (institutional and personal):

Figure 2. 9: Astin's I-E-O model



Source: Adapted from (Padró & Kek, 2013).

- **Inputs** refer to those elements shaping outcomes (Pascarella & Terenzini, 2005b). These elements include the characteristics of the student at the time of entry to the institution (e.g., information about student's demographics such as family backgrounds, prior academic and social experiences and accomplishments), which can be considered as influencing the VOC (expectations and requirements). Inputs also consider traditional institutional resources that are used to assess institutional performance (Birnbaum, 2000) such as programs, personnel, curricula, instructor, and facilities. Both types of input provide key information to the QFD customer requirements and technical requirement quality matrices (see below).

- **Environment** refers to the multi-faceted elements of the campus experience that shape and impact engagement, perception of how they fit within the university and satisfaction: in other words, institutional characteristics and

climate, curricular approaches (measures) instructor characteristics and modes of instruction, peer environment, individual involvement, individual perceptions, and stated and unstated outcomes as expectations (Astin, 1994; Kelly, 1996). The combination of student attributes background and student engagement with the university environment (in what is a reciprocal relationship) needs to be identified in order to fully understand the impact of campus-related events on achieving desired affective and cognitive outcomes (Inkelas et al., 2011). Interaction between inputs and the environment are based on transformation of antecedents to successful engagement experience opportunities provided by the university's many (technical) functional areas. These elements inform (classify and contextualise) the QFD matrices that eventually lead to identifying areas requiring explicit understanding of how things are succeeding or for improvement purposes.

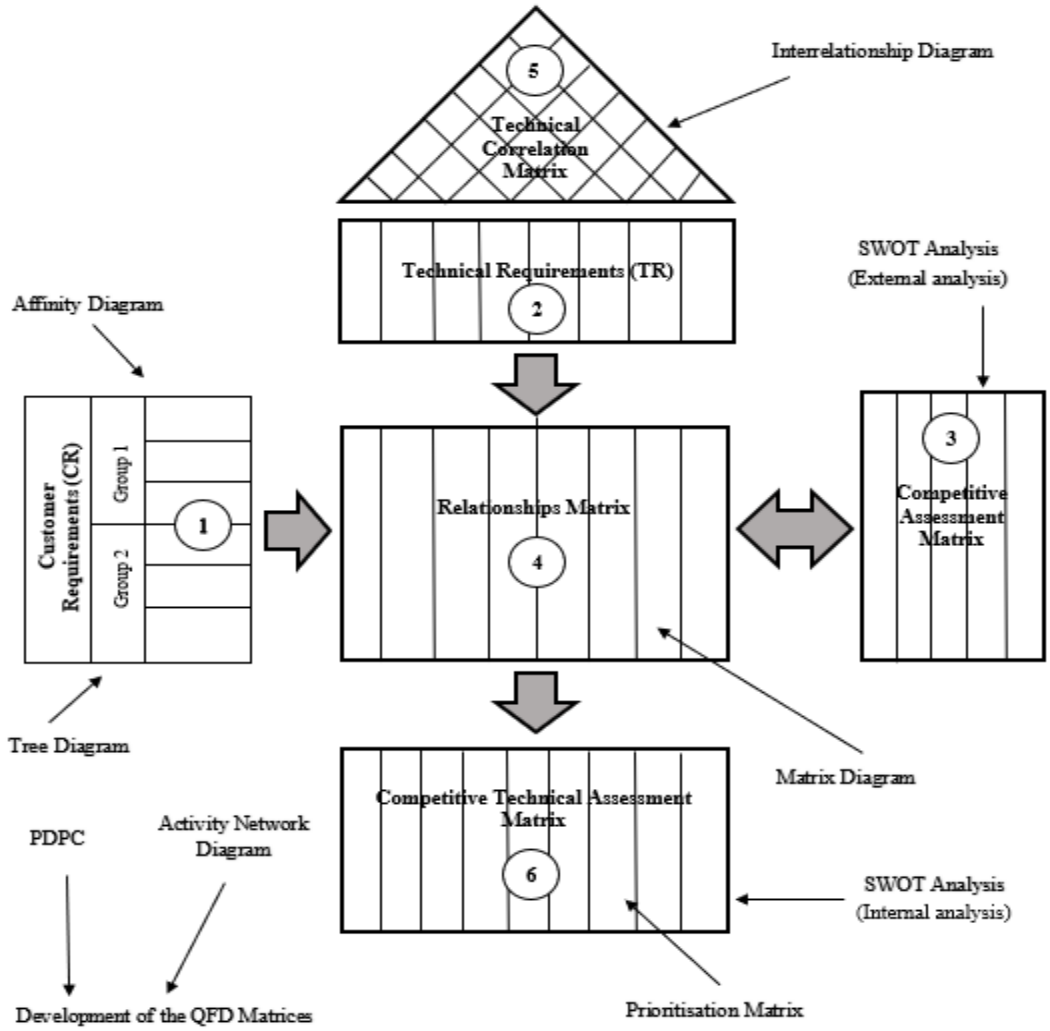
- **Outcomes** relate to institutional affective and cognitive domains (Inkelas et al., 2011) alongside meeting individual expectations. Outcomes in the I-E-O process are longitudinal in the sense that these are summative in scope, underscoring persistence (Kelly, 1996). Outcomes – knowledge, skills, attitudes, values, beliefs, behaviours, and student satisfaction – can be shaped directly and indirectly through the various experiences available in the HEI environment (Pascarella & Terenzini, 2005a). Inkelas et al.'s (2011) review of the literature concluded that many studies and existing practices were predictive in order to provide a proactive approach to enhancing learning opportunities and minimising at-risk behaviours.

2.4.5. QFD Tools and Techniques

As previously noted, QFD benefits from applying various tools from the field of quality. These techniques enhance the ability of QFD to fully capture the data needed to make improvements in existing programs and/or services. Below are tools recommended for use as part of a wider QFD study (cf. Andronikidis et al., 2009; Chen, 2013; Sower & Fair, 2005). Figure 2.10 illustrates where and how these fit

within the QFD HOQ. Table 2.2 explains when and why these tools should be applied (Özgener, 2003).

Figure 2. 10: TQM tools that can be used within the QFD matrix



Source: Developed for this research.

Table 2. 2: When and why the quality tools should be used in performing a QFD

Quality tools & techniques	Why used?	When to use?
Affinity Diagram	-Establish consensus when necessary. -Find an innovative approach toward the issue. -Challenge and avoid habitual thinking ingrained standard operating practices. -Promote evidence-based thinking and decision-making. -Establish common meaning; collecting linguistic data representative of culture and practices. -Identify and collect different ideas – tap into the institution's intuition.	-Winnowing a large amount of data, especially when dealing with divergent facts or ideas. -Encourage creativity in approach and encouraging new patterns of thinking toward problem solving and strategic planning.
Interrelationship Digraph	-Encourage dynamic rather than linear thinking. -Demonstrate the logical relationships between components, issues, practices, results, etc. -Identify which organisational components have greater effects on others (what has the higher influence capacity on organisational action). -Establish a phased sequence of a plan of action.	-Identify and understand cause and effect relationships. -Implementing and analysing complex solutions. -Explore the relationship of ideas involved in finding solutions.
Tree diagram	-Breaking down the broad general ideas and proposed actions into specific constituent parts to achieve identified goal(s). -Identifying the finer levels of detail involved.	-Moving from the broad generalised perspective to the details to allow detailed analysis. -Identification of root cause(s) of issue under review. -Plan implementation.
Matrix diagram	-Explaining and illustrating the relationship between ideas or groups of information. -Identifying problems affecting performance outcomes (product or service).	-Analysis of large amounts of data to and the relationship(s) between the data. -Linking customer (student) requirements to institutional processes. -Identify potential importance of collected data.
Prioritisation Matrix	-Weighting, prioritising and agreement of identified choices of action.	-Determining the importance of identified strategies. -Evaluation of different strategies for the purpose of identifying and reducing choices of action.
PDPC	-Risk identification and potential management (mitigation or elimination). -Identify potential countermeasures.	-Identifying foreseeable and reasonable risk. -Determine which risks are acceptable (i.e., inconsequential or insignificant) and unacceptable. -Risk avoidance and mitigation.
Activity Network Diagram	-Determining the scheduling of a work and its critical paths. -Identifying potential steps in the deployment and implementation of the action plan that may generate problems and adversely impact outcome attainment.	-When there are parallel activities are implemented due to the project's complexity. -Project scheduling and monitoring.
SWOT Analysis	-Identifying significant external and internal forces on an organisation. -Identifying and understanding the sources of competitive advantage and disadvantages related to sector position. -Strategic planning for improved performance.	-Assessment of the external and internal environments of an organisation for strategic planning purposes. -Recognition of the organisation's current performance (strengths and weaknesses) and the organisation's future capabilities (opportunities and threats) by accounting for the factors that exist in the external background.

Source: Adapted from Shahin, Arabzad, & Ghorbani, 2010, p. 190; Tague, 2005, pp. 96-99).

Activity Network Diagram (AND)/ Arrow diagram:

Project planning involves the use of Activity network diagrams since ages while implementing critical path method (CPM) and program evaluation and review methods (PERT) (Shahin et al., 2010). It is a planning and communication tool used to ensure the most suitable time planning for a certain task and to facilitate control through the course of sequential steps of the QFD technique (Shahin et al., 2010). Effective functioning of AND requires a complete understanding of project steps, their duration and their sequence (Tague, 2005).

- ***Affinity diagram:***

Affinity diagram technique allows collection and organization of several views, ideas and a great deal information regarding a particular issue or topic (Evans, 2008). It is used to promote creative thinking. It can be very helpful in breaking down barriers created by past failures and encouraging people to give up ingrained paradigms that are against finding new and different approaches. The affinity diagram highlights the main constituents of the problem and allows the individuals to identify better alternative solutions to the problems. Consequently, customer requirements can be arranged in a more effective manner and directly integrated into the QFD matrix or House of Quality. After constructing an affinity diagram, the learner and/or student's requirements portion are entered into the House of Quality matrix (Al-Bashir, 2016).

- ***Interrelationship digraph:***

The purpose of an interrelationship digraph is to take a central idea and map out logical or sequential links among related categories (Evans, 2008). It is a graphical cause-effect analysing tool used in the problem identification and description phase of strategic quality planning when there is a need to clarify and understand different relationships. The technical correlation portion in the QFD matrix is a good example of where this tool is used. (Shahin et al., 2010).

- ***Matrix diagram:***

Usually, the QFD tool namely the matrix diagram is employed by experts. A matrix entails the variables to be studied in different rows and columns (Aikens, 2011). Using a matrix is helpful for identifying and displaying connections among responsibilities, tasks, functions, etc. (Goetsch & Davis, 2010). Basically, a matrix diagram shows the relationship between two or more sets of factors. The heart of QFD matrix is an example of one of the many matrix diagrams that is employed presently for identifying the association between identified factors during the planning and quality improvement processes (Evans, 2008; Shahin et al., 2010).

- ***Prioritisation matrix:***

A prioritisation matrix or matrix data analysis is used to determine how strongly the variables are related by extracting data about variables entailed in a matrix diagram and performing a quantitative arrangement of the extracted data. The relationships identified through the prioritisation matrix can easily be comprehended by all. It is a rigorous, statistically based (factors analysis) technique (Evans, 2008). It is the only one of the quality tools that analyses numerical data to quantify the degree of the relationships between the various factors (Shahin et al., 2010). This method can be applied during the QFD while performing a competitive technical assessment.

- ***Process Decision Program Chart (PDPC):***

The PDPC allows the presentation of all the possible positive and negative events likely to arise at any step during the progression from the problem statement to the identification of possible solutions to the problem. It can be used to plan for each possible chain of events that could occur when a problem or goal is unfamiliar (Evans, 2008; Shahin et al., 2010). PDPC is used by planning experts to evaluate different options relevant to a process during the development of processes to enable them to come up with the most appropriate application of the QFD matrix (Shahin et al., 2010).

- ***Tree diagram**:*

A tree diagram shows the plan of activities and processes required to be executed and directions to be followed for accomplishment of an objective or completion of a particular project (Evans, 2008). It is used to communicate a logical relationship that is hierarchal between events and, in a top-down manner, to break down a topic into successive levels of detail until implementation. The tree diagram usually initiates with the results of the Affinity diagram.

- ***Strength-Weakness-Opportunities-Threat (SWOT) analysis:***

The SWOT analysis technique allows the QFD team and decision-makers in the development of the QFD matrix particularly in formulating the competitive assessment matrix or competition matrix. The results of the QFD project start to become apparent once the team begins to utilize SWOT analysis to advise a set of strategies, through analysing strengths, weaknesses, opportunities, and threats of internal and external assessment of a university for better interpretation of available information for effective decision making (Sharma & Rawani, 2008). Connecting the QFD with the risk register through the application of the SWOT technique enables decision-makers to make better use of these tools and leads to better planning through the identification of alternative solutions for reducing the chances of failure (Downer, 2011; Padró, 2014; Padró et al., 2015).

The main benefits of QFD are as follows (Tarigan et al., 2018):

a) Focus the design of new products and services on customer needs.
b) Prioritise design activities.
c) Analyse the company's key product performance to meet the needs of key customers.
d) Recent estimates show a saving of between one-third and a half compared to before the application of QFD.
e) Reduce the number of design changes after issuing it, by ensuring focused efforts at the planning stage.

f) Encourage implementation of work teams and eliminate barriers between sections by involving marketing, engineering, and fabrication from the beginning of the project.
g) Provide a way to make process documentation and provide a firm foundation for making design decisions.

The literature review on the use of application of QFD in HE can be classified into four main aspects: curriculum design, teaching effectiveness, educational service quality, and other applications (Ahmed, 2006; Eftekhar et al., 2012; Hwarng & Teo, 2001; Mukaddes et al., 2012). For example, the literature on the application of QFD to curriculum design is growing (Gonzalez et al., 2011). Teaching effectiveness QFD studies concentrate on programs as well as lifelong learning (Mukaddes et al., 2010). QFD has proven to be a useful tool for converting student needs into teaching techniques (Mukaddes et al., 2012). Improvement has been studied in educational service quality by finding the gaps between perceived and expected quality by the students as customers. According to the findings of these studies, QFD is an effective approach for translating stakeholders' needs into appropriate technical requirements.

2.4.6. Advantages of using QFD in higher education

QFD provides benefits to organisations trying to enhance their competitiveness by continually improving quality and productivity (Goetsch & Davis, 2010, pp. 428-429) such as customer focus, time efficiency, teamwork and document-orientation. On the other hand, QFD is not always easy to implement, and organisations have faced problems using QFD, such as being 'time-consuming', 'costly', difficult, and most importantly, having complex methodology (Delgado & Aspinwall, 2003; Jaiswal, 2012). Due to the ambiguity in the VOC, many of the answers that customers give are difficult to categorise as demands (Bouchereau & Rowlands, 2000). A much longer timeframe is required to achieve a return on investment. Without the commitment and support of top management, all attempts at QFD implementation could fail (Özgener, 2003, p. 973).

2.5. Applications of integrating the Kano-QFD in higher education

Various methods and techniques s have been developed to help organisations obtain a better understanding of CRs and incorporate the CRs into product/service design to achieve an optimal solution. Among them, the Kano model and QFD have been widely adopted to enhance the competitiveness of organisations by helping them focus on CRs in product/service development (Ji et al., 2014). Many studies proposed integrating the Kano model with QFD (He et al., 2017). Generally, the Kano model is integrated into QFD by adjusting the importance weights for re-prioritising requirements in QFD (Tontini, 2007; Chaudha et al., 2011; Chen & Chuang, 2008). The integrative approach provides the basis for adjusting the relative priority of product/service requirements based on Kano categories. However, these approaches remain as qualitative analysis of CRs, and provide limited decision support (Ji et al., 2014).

The literature review shows that QFD has been used for different purposes, such as to prioritise quality parameters in higher education and to identify the main factors that students consider when selecting study abroad programs. In this regard, it can be classified into four major categories, namely, teaching effectiveness, curriculum design, instructional resources, educational service quality, and other applications (Ahmed, 2006; Eftekhare et al., 2012; Hwarng & Teo, 2001; Mukaddes et al., 2012; Prabhushankar et al., 2015). For example, the literature on the application of QFD to curriculum design is increasing (Gonzalez et al., 2011). Teaching effectiveness QFD studies concentrate on programs as well as lifelong learning (Mukaddes et al., 2010). QFD has proven to be an effective tool for translating the student's requirements into teaching techniques (Mukaddes et al., 2012). Studies on educational service quality looked at improvement by identifying the gaps between perceived and expected quality by the students as users. Based on the findings of these studies, QFD is an effective approach for translating stakeholders' needs into technical requirements. The Kano model and QFD methodology were used separately and applied to various products and service by many researchers (Gangurde & Patil, 2018). Yet, the literature review on the application of the integrated QFD and Kano model indicated that they have been rarely utilised in the HE sector. Gariby et al., (2010) proposed an integration of the QFD and Kano model as a useful technique to evaluate service quality. They present the digital library of the university of Guadalajara, Mexico as a case study.

Hashim and Dawal (2012) conducted research at a rural secondary school in the Klang district of Selangor, Malaysia and applied the Kano model and QFD to improve the workstation. (see Appendix A).

The use of the QFD method can be integrated with other methods in order to develop the quality of HE sector, as seen from its internal and external aspects. One of these methods is SWOT analysis. SWOT analysis is a systematic procedure that identifies success determinant factors applied by the HEIs, such as internal strength and weakness, and external opportunity and threat. According to Wanti (2014) SWOT analysis is a crucial strategic planning tool to support planning for comparing a company's internal strengths and weaknesses with external opportunities and threats. The chronological order of the studies conducted around the world, as listed in Table (Appendix A), clearly shows there is a lack of research using QFD in combination with the Kano model.

2.6. The research gap

The current study is attempting to fill identified gaps in earlier studies. The review of the literature on the use of the Kano-QFD-SWOT approach in HE sector identified the following gaps:

- There is a dearth of applications of the Kano-QFD-SWOT approach, not only in the HE sector, but across all fields and industries.
- Limited attention has been given to its use in relation to the interaction between HEIs and IS, particularly AIS.
- Most of the existing studies have been based on single institutions and not at the HE system level.

2.7. Summary

Quoted in Mohsin et al. (2018) was the observation by Singh et al. (2008) that looking at and serving students as “customers” is a problematic notion in higher education:

> The question of "customer" for higher education poses a very sticky problem. Institutions or colleges are not unanimous on a specific definition of customer. There appears to be something inherently ominous about defining a higher education customer as the student. Faculty and administrators tend to hold the belief that they know what the students need, whereas the students may not necessarily be privy to this information at the early stages of their educational development. (p. 163)

The challenge is to ensure that responses reflect the views of students from a utilitarian perspective of optimising benefits from the learning experience. Bunce et al. (2017) warned that a consumer orientation on the parts of students mediates or influences traditional performance predictors.

This chapter began with the point that onshore international education is a by-product of a triple-helix relationship between universities, governments and the market. The market may not be defined as a typical sector because governments and international organisations have generated a perception that has guided three different forms of international education: onshore, universities partnering with universities or other recognised higher education service providers or universities establishing their own campus in another country. Social justice aims along with neoliberal perspectives regarding access, personal upskilling and workforce development have shaped the market into what it is today. The discussion then shifted into how universities plan for internationalisation, which for the purposes of this study centres on onshore international education. The review of the literature is summarised in Figure 2.11, which represents the National Association of College and Business Officers' (NACUBO) strategic planning in higher education framework based on seven steps. The process begins with the university knowing who it is (mission, vision, and values) and its various stakeholders. An environmental scan should be performed to fully understand context prior to pursuing goals and then undergo the formal planning process. The Kano-QFD instrument used in this study assists in these two steps and can also shape the strategies.

There is controversy regarding the linkage between planning and strategy formation and some of these issues have been presented in this chapter, which are related to this study. The outbreak of COVID-19 at the beginning of 2020 showed the challenges

universities had in responding to government mandates and how these adversely impacted on international student access to Australia and created major budgeting challenges as well as other issues at universities within the higher education sector. The specifics were addressed in Chapter 1; nonetheless, the impact of an event such as COVID-19 and the changes in strategic responses were discussed from the perspective of turbulent environments forming wicked problems, requiring a different or new look on how to overcome events that shift operational and strategic planning activities from a stable environment context to one where uncertainty prevails. Finally, the chapter provided a background into QFD and the Kano model and discussed key aspects of design and application that are discussed in Chapters 3 (methodology), 4 (Kano questionnaire) and 6 (QFD house of quality), and how the Kano survey used in this study was informed by Astin's I-E-O framework.

Figure 2. 11: NACUBO strategic planning in higher education framework

Source: Center for Organisational Development and Leadership (n.d, p. 4)

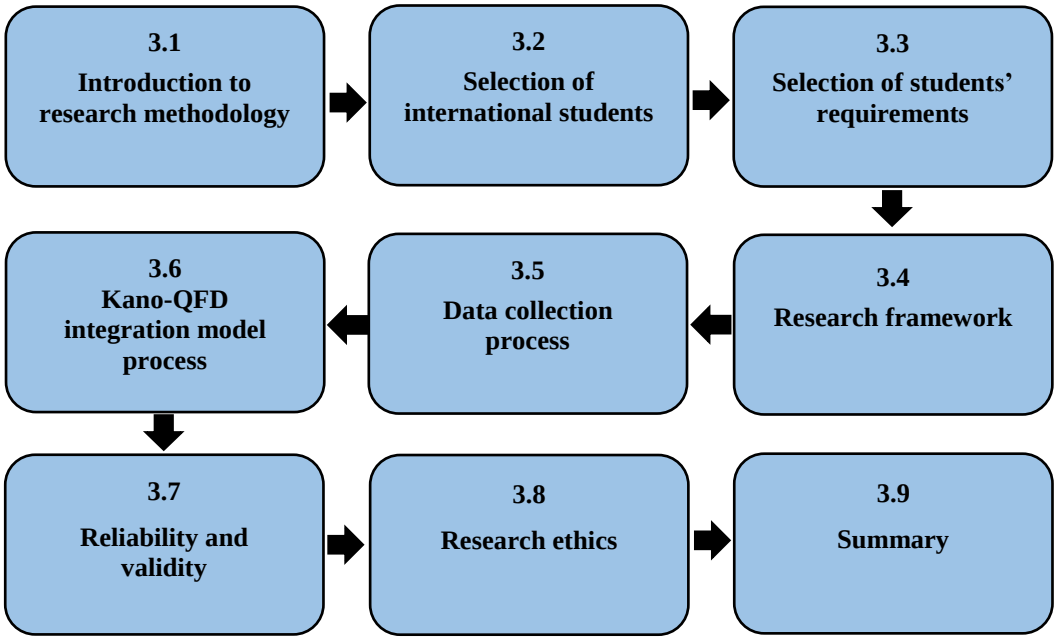
CHAPTER 3: RESEARCH METHODOLOGY

3.1. Introduction

The previous chapter reviewed relevant literature and was followed by the development of a research model. In this chapter, the research plan is outlined as well as the methodology used to collect and analyse the data for the integration of the Kano model into QFD, and how the QFD matrix is carried out to select the priorities of SRs and IRs.

This chapter describes the research methodology of the study. It has nine sections as shown in Figure 3.1. Section 3.1 shows an overview of the chapter. Section 3.2 explains and justifies the selection of international students – Arabic students targeted for this study. In Section 3.3 general explanations are made about the selection of Arabic students' specific requirements. A preliminary conceptual framework is presented in Section 3.4. Section 3.5 discusses the research data collection process, including population and sampling, and analysis procedures. Section 3.6 explains the process of integration of the Kano model into the QFD approach and provides details of the QFD formulation through the HOQ matrix. Next, in Section 3.7 explanations are made about the reliability and validity aspects of the research. Research ethics is explained in Section 3.8. Finally, conclusions regarding the main elements of the research design are drawn in Section 3.9.

Figure 3. 1: Outline of Chapter 3: Research methodology



Source: Developed for this research.

3.2. Selection of international students – Arabic students

The horizontal row of the QFD matrix represents customer requirements. Various studies (e.g., Bianchi, 2013; Natarajan, 2000; Raissi, 2018) have suggested that students, staff, parents, external recruiters, government and society are the key stakeholders of the higher education system. Students are one of the most important higher education system stakeholders when discussing any quality enhancement process within universities (Wilkins & Balakrishnan, 2013) because they are the users of teaching services and receivers of recognised credentials.

Australia has been a popular study destination for IS as discussed in Chapter 1. Larkins (2018) noted. that at the time of his analysis, IS students from 28 nationalities with more than 1000 enrolees in Australian higher education, with the majority now coming from China or India and an increasing number from important Australian strategic partners. Conversely, the number of AIS in Australia has been decreasing, especially after 2010 as seen in Tables 1.1 and 1.2. In the 2000s, the number of AIS, particularly

from Saudi Arabia and Gulf nations entering Australia for study purposes, rose by 50% during the period 2004 to 2005, with just over 2000 enrolments from Saudi Arabia alone. By 2009 there were more than 12,500 Saudi students, requiring their own data category that is still used today (ABS, 2009; DFAT, 2010). The increase and then decrease in enrolment makes AIS a worthwhile population to analyse, especially from the point of view of education service provision quality. Al-Mansouri (2014) saw this point from the point-of-view of enrolment increases; however, the disruption seen from the COVID-19 pandemic and a strategic rethink by the Australian government regarding too much over-reliance on one or two nationalities makes AIS a still useful population group to study.

3.2.1. International students coming to Australia

The number of international students in the Australian higher education sector has grown at a significant rate in recent years. Each year, thousands of international students come to Australia in pursuit of quality education and then return home (Benzie, 2010; Khawaja & Dempsey, 2012). Australian universities have an enviable reputation and Australia is one of the most desirable destinations for study by overseas students. Over the past decade, international student numbers have more than doubled, and they are a major source of revenue for the Australian economy. International students make up approximately 24% of the total Australian university student population (Khawaja & Dempsey, 2012), were up by As part of the total number of international students in Australia, approximately 82% comes from Asian countries. They have quite different purposes from immigrants who have come via a range of refugee or family reunion programs.

Choosing a country to study and live in is a highly important issue from the perspective of AIS. The choice may be made by a sponsor, such as in the case of those students sponsored in their country of origin, or, in some instances, by the students themselves. Self-funded students make their own decisions (Mostafa, 2006).

The contribution of international students to the Australian economy and the educational environment is significant (Khawaja & Dempsey, 2012). Hence, the research has focussed on investigating a student population in Australia. In this regard,

Australian universities have made contributions to ensure student well-being, particularly for international students. The Australian universities have, for example, established specialised support services with the aim to assist students in studies and language.

However, there are still gaps in our knowledge as far as the adjustment of international students is concerned. Although a number of studies point to international students experiencing more difficulties than domestic students, only a limited number of studies have focussed on using comparison groups and the majority of these studies failed to compare these groups with respect to the various variables identifying the source and nature of disparity among groups (Khawaja & Dempsey, 2012).

3.2.2. Who is not included?

This section focuses on the type of students excluded from the scope of this study. Student experience and student satisfaction are concepts that no higher education institution can ignore. Obviously, this study is concerned with assessing onshore student experience at campuses that fit with the study's objectives. Particularly, AIS who use the facilities available to them and who participate in activities – whether sporting, cultural or recreational – are more likely to be happy and satisfied with their overall student experience. This campus-related experience is a term that is commonly used to refer to student experiences that are not directly related to teaching and learning dealing with an onshore student is a student who is residing in Australia for the term/semester and is undertaking a program of study conducted by an Australian higher education provider https://heimshelp.dese.gov.au/resources/glossary/glossaryterm37e4.

Student services associated with study outside the classroom, careers and personal well-being are referred to as student support in this article. Thus, the campus experience is mainly concerned with the quality of the physical campus environment as a place to study, undertake sporting and recreational activities, socialise, and possibly live. However, it should be noted that the vast majority of international branch campuses do not offer student accommodation.

3.2.2.1. Online students

A large number of international students resort to using distance learning (Al-Mukhaini et al., 2014). Online studies are chosen for the flexibility that they offer, making it possible for the respondents to continue going to work, to care for children, and to meet other responsibilities. Therefore, online students take nothing but entirely online classes, are excluded from the scope of this research. The most recent research has focused on whether online learning is as effective as learning on traditional campuses (Stone et al., 2016).

3.2.2.2. Students who have formally emigrated to Australia

There are many factors involved in people's decision to move to a different country to take a formal course of study. Some simply have the desire to travel and further their understanding of the world, whilst others are more strategic in planning and accomplishing an educational sojourn. Some might have failed to secure a place in a domestic higher education institution, and many seek a 'western' education under the expectation that it will present them with more opportunities upon graduation.

Gopal (2016) points out that, the enrolment and registration of students from across the world in various vocational learning programs in Australian universities showed a significant rise owing to Australia's immigration policy that promised permanent residency in Australia to those with Australian degrees. The Indian students were specifically attracted to this policy. Additionally, the surge of student growth has also been attributed to fraudulent study incentives, and the situation has been exacerbated by the lack of oversight by regulatory authorities to control unethical practices by some student recruitment agents, which have allowed some private providers to go unchecked (Wheelahan, 2012). The fraudulent study incentives led to an unmanageable influx of international students in Australian TVET educational institutions (Adams, 2010; Wheelahan, 2012) and ultimately imposed a negative impact on the quality of educational programs in terms of lack of quality assurance, lack of accountability, and absence of regulatory structures. Also, the massive influx of Indian international students has led to attacks on these students, which have been

highly publicised in the Australian media. These attacks, combined with fraudulent institutional practices, have resulted in the collapse of the international students had fallen by a third, while demand for vocational-sector courses had substantially dropped, by 59% (Wheelahan, 2012). In 2011, the Australian government implemented new visa and quality assurance regulations for higher education providers (Milligan et al., 2011). The new visa policies granted a 2-year stay permit to international students with graduation degrees, three years stay-permit to those with master's degrees, and four years permit for doctorates. The graduate international students were granted work-permits allowing a maximum of 20 hours weekly both on and off-campus (Hawthorne, 2012). The Streamlined Visa Processing (SVP) system was also enforced by the Australian government to cater to university students and encourage international students to approach Australia as their study destination. The Program was later modified in 2013 to cover non-university students and in 2015 to cover students enrolled in higher education institutes or TVET institutes for advanced diploma programs (Australian Government, 2014). Because international education is a large industry in Australia, there is a high level of Government involvement. Commonwealth legislation requires "any education provider seeking to deliver an international education course to register with the Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS)" (Chow, 2012, p. 9). A requirement of registration is that "all registered institutions contribute to the Provider Registration and International Students Management System (PRISMS)", which closely interfaces with the Department of Immigration and Citizenship (DIAC) (Chow, 2012, p. 9). PRISMS systems involve the notification of the higher education institutions to DIAC about the enrolment of international students before they apply for an Australian visa (Adams et al., 2012). PRISMS system also supports Australian Education International in timely collection and dissemination of data (Chow, 2012; Milligan et al., 2011). DIAC also provides monthly reports on student visa applications and grant trends, providing invaluable information about likely prospective enrolments. Similar to Canadian trends, Australia recognises that the ease and expense of obtaining a visa will play a key role in a country's ability to attract international students. In 2015, Australia welcomed a ground-breaking number of international students. In a joint statement, Peter Dutton, the minister for immigration and border protection, and Richard Colbeck, minister for tourism and international education,

indicated that “almost 230,000 student visas were granted in 2014–2015, up 2.6% on the previous year” (Australia, 2015, p. 1). Additionally, the novel international student visa framework introduced in Australia in 2016 led to a significant rise in Australia’s significance in the global education sector, economic development, better and more reliable visa processing and simplified procedure for international students to study in Australia (Australia Government, 2015).

3.3. Selection of student requirements

The main goal of using the QFD matrix in the education system is to align the quality parameters with the satisfaction of student needs. How well a QFD House of Quality meets this goal is through ascertaining its potential to fulfill that student's identified needs. Therefore, as a first step to ascertain the quality of a university to meet these needs, it is necessary to know that university’s customer requirements. The difficult task in the QFD model is not the formation of the matrix or who is considered to be a university’s primary customer (Farahmandian et al., 2013). Whilst the big difficulty is to identify the student requirements and expectations (Mamaghani & Barzin, 2019). The horizontal rows in the matrix consist of what this study terms ‘student requirements’ instead of ‘customer requirements’. In the QFD matrix, ‘student requirements’ refer to a list of parameters, generally referred to as the ‘WHAT’ those students expect during or after completion of their course work (Singh & Rawani, 2019).

When AIS move from their home countries to a different country, they encounter a variety of challenges and difficulties, both academic and social, as they adjust to a new environment (Alharbi & Smith, 2018; Burke & Wyatt-Smith, 1996). What they require changes over time, but it is based on intrinsic expectations and needs that influence their choices and actions (Madzík et al., 2019), which in turn relates to university selection and experiences after enrolment. There is a large variety and complexity of student requirements, described in the literature. However, most of the responses can be classified in more general thematical categories based on university student needs and satisfaction.

One type of international student requirement frequently found in the literature consists of issues of cultural differences and adjustment (Alsulami, 2018; Mostafa, 2006). There is a great dissimilarity between Arabic culture and Australian and western cultures (Alsulami, 2018), which explains the importance of a social support network for AIS to manage their transition to a new culture (Alharbi & Smith, 2018). The role of universities within the social support network includes, on the one hand, promoting awareness, understanding, and tolerance/acceptance of AIS, and on the other international students' beliefs, cultures, and habits, and vice versa.

Another type of student requirement is a university's reputation (Azmat et al., 2013; Foroudi et al., 2019), which is often more important than quality because it is the perceived image that actually influences the choices made by prospective students; a better reputation is perceived to reflect the quality of the university (Harahap et al., 2018; Kotler & Fox, 1995). One reason as to why reputation is important is the potential to enhance career prospects (Harahap et al., 2018; Hasan et al., 2009; Lillyman & Bennett, 2014). Finch et al. (2013) found that the reputation factor of the university was crucial for new graduates looking for jobs. Thus, every university strives to create a positive image and reputation in the face of competition with other universities (Harahap et al., 2018). 'Research quality' has great importance for HE, and the learning experience is important not only for the student but is also involved in the facilitation and logisticians processes. Due to the complexity of requirements, it is not possible for this study to point out all the requirements of students described in the literature. However, it is possible to introduce some of the more general ones, which present interesting and often discussed topics within the quality of HE. A frequent theme in the debate about the quality of HE is "cultural differences and adjustment" (Alsulami, 2018; Mostafa, 2006). This is pertinent to AIS with diverse backgrounds and cultural norms including language which is by default different to those of Australians. Although Australian culture is multinational, it differs from the Arabic culture (Alsulami, 2018). To enrich the learning and cultural experiences of Arabic students at Australian universities, urging students, both domestic and international, to understand and accept each other's beliefs, cultures, and habits through awareness of the culturally diverse nature of Australia, in general, is important. In this regard, the "social support network", an important means for AIS to manage their transition to a new culture, is the level of social support they experience

(Alharbi & Smith, 2018). Another requirement is the "reputation of the university". The reputation attribute, addressing market accountability, the current image, and the reputation of an institution, is often more important than the quality because it is the perceived image that actually influences the choice made by prospective students (Hemsley-Brown & Oplatka, 2006; Kotler & Fox, 1995). It also has the potential to enhance career prospects (Lillyman & Bennett, 2014). "Research quality" has great importance for HE, and the learning experience is important not only for the student but is also involved in facilitation and teaching processes (Lillyman & Bennett, 2014; Taylor, 2011). Furthermore, educational methods and teaching techniques should satisfy international education requirements (Larina, 2015). "Quality of resources", intended to support "research quality", is also often discussed. Specifically, the educational use of ICT is generally seen to be beneficial to the learning experience of students (Ahmad, 2015; Cosh & Hughes 2009). Moreover, "English-language proficiency" is the most important enabler of positive learning outcomes for international students, particularly from non-English speaking background countries. It is a clear factor and potential barrier to the adjustment of AIS to living and studying in Australia (Alharbi & Smith, 2018; Alsahafi & Shin, 2017; Lillyman & Bennett, 2014; Volet & Ang, 2012), as language barriers can hinder the sociocultural adaptation and academic achievement of international students (Cowley et al., 2017; Smith & Khawaja, 2011). Their lack of proficiency in English often causes great difficulties in their studies, such as confusion, misunderstandings, anxiety, stress concerning participation and presentations, and difficulties with the course and program content (Lillyman & Bennett, 2014; Townsend & Jun Poh, 2008). Besides, the "supervisory relationship" between a student and their supervisor is a crucial issue because it is highly valued in Arabic countries (Mostafa, 2006). Arab graduate students, like other international students, appreciate the relative informality of the academic relationship as it provides a scope for discussion, and it means they can easily adjust to the relationship (Mostafa, 2006; Todd, 1997). Evans and Stevenson (2010) have indicated that the quality and nature of the supervision relationship is the most important factor influencing the learning experience of international students. Furthermore, "facilities" are associated with the accessibility of physical facilities that protect academic activities as well as non-academic ones. It plays an important role in influencing the choice of study destination for an international student (Farahmandian et al., 2013;

Jupiter et al., 2018). Since HE is a contact type of service, "quality of staff" also plays an important role (De Paola, 2009). Another significant aspect that influences student satisfaction within a university is the accessibility of "financial assistance and tuition costs" such as scholarships and loans and tuition costs (Farahmandian et al., 2013). Finally, in the case of quality of HE, there is debate about the consideration of the value of the university, based on their principles of responsibility, or, more generally, their "ethical orientation" (Dean & Beggs, 2016; Taft & White, 2007).

There are other internal and external aspects to quality that have to be taken into account ranging from what is meant by quality to institutional factors to sector factors (Madzík et al., 2019; Padró et al., 2019; Taylor, 2011). Generally speaking, these elements' influence on quality represent a selection of scientific and practical approaches, and partial parallels with these aspects can be also found in the work of Owlia and Aspinwall (1996). This set of elements is considered sufficient for illustration purposes in relation to this study. Implementation of the integrated Kano model into the QFD matrix in education—particularly higher education institutions—can, with respect to trends in the quality of HE, offer interesting results. This study aims to present the use of the Kano-QFD model to achieve a better understanding of how the aforementioned requirements influence the quality of HE from the perspective of students—the key university customers.

3.4. Research framework

This study uses an integrated QFD methodology through a house of quality matrix. It analyses interviews with institutional experts about the research topic in order to modify the original items in the quality house as related to Arabic international student requirements and institutional requirements. This is thus a relation matrix of students' requirements, and institutional requirements items, and the importance of institutional requirements (improvement sequence), which can then be used for subsequent analysis.

This study first classifies Arabic student requirements within the Kano model and determines their weight based on students' value. Interviews with university experts,

along with university policy and procedures, were considered as the base for the institutional requirements of the QFD. University experts were then invited to provide their input and the QFD team analysed and calculated the relationship between SRs and IRs, and finally the importance of IRs and the priority sequence for university was obtained by introducing the university integral approach into the quality house calculation. The research framework is shown in Figure 3.2.

The research framework of this study was achieved through the integration of the Kano model into the planning matrix of the HOQ, which is represented to gain a better understanding of students' voices. The integration of the Kano model involves first determining the appropriate Kano category for each requirement item. Then, multiplier values of *k* vary, according to the Kano category`2.0', ``1.0" ``0.5", and "0.0" (Details of Kano category are explained in Chapter 4), were assigned to the attractive, one-dimensional, must-be, and indifferent categories, respectively (Chaudha et al., 2011; Tan & Pawitra, 2001). The idea was to magnify the importance of higher-return requirements in increasing overall customer satisfaction. To achieve a high degree of customer satisfaction, an organisation needs to know its performance in satisfying each and every customer's need.

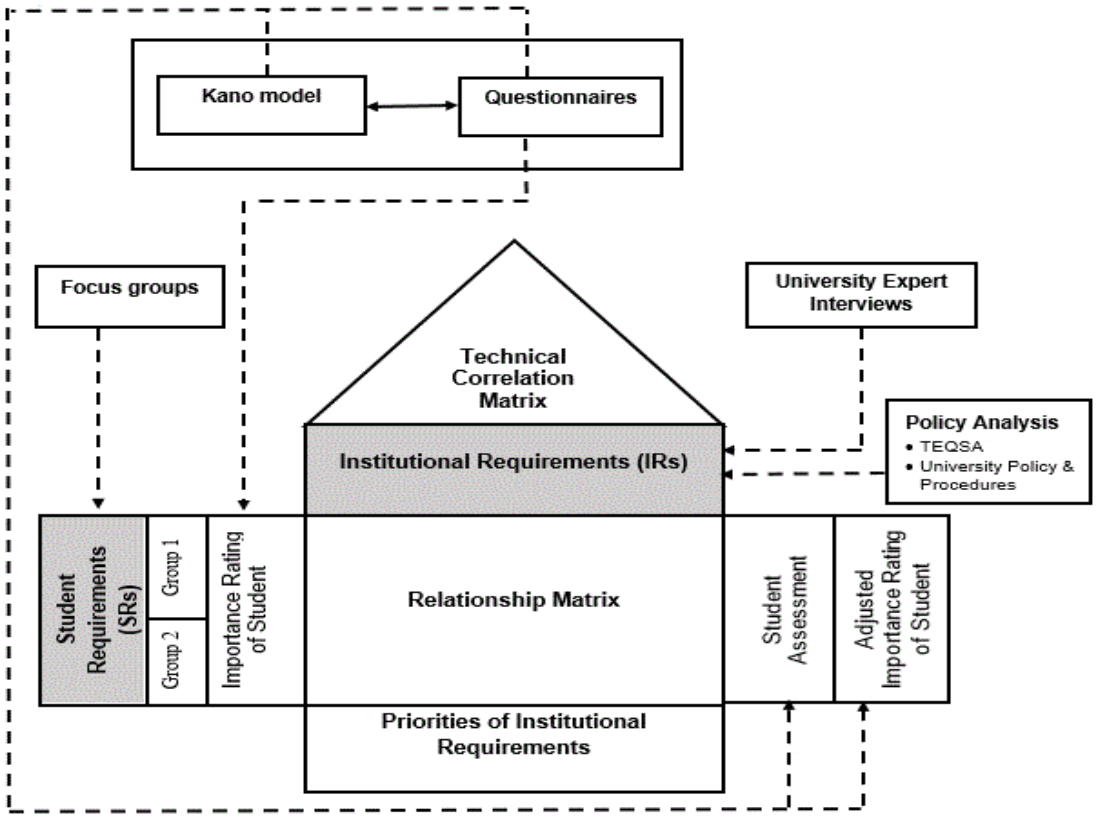
Pourhasomi et al. (2013) proposed a three-step approach to forming the HOQ that are the basis for this study's research design (Figure 3.2). The first step in this model is "understanding and receiving the voice of the customer" (p. 851) or, in this case, the student. There are two phases to this first step. Firstly, students were identified and categorised based on enrolment and high level of interaction with university staff. Secondly, students' needs and requirements were obtained through focus group discussions, in-depth interviews, and questionnaires as proposed by Pourhasomi et al. (2013).

The second step is the design of the HOQ matrix. In this step, requirements were identified along with other qualitative necessities followed by correlational analyses to determine appropriate weights of the findings to determine the 'what' and 'how' of translating needs into institutional action (Chen et al., 2015; Pourhasomi et al., 2013; van de Poel, 2007). Finally, the third step encompasses integrating the Kano model (and instrument) into the HOQ. Once again, this was done in two phases as per Pourhasomi et al. (2013). In the first instance the student requirements obtained

through the Kano questionnaire were classified as must-be, one-dimensional, attractive, indifferent, questionable, and reverse requirements through transfer function (Tan & Pawitra, 2001). This was followed by only using the adjustment parameter (K) that was selected according to the requirement categories based on the Kano model (Pourhasomi et al., 2013). Selection of the relevant comparative parameter for the transfer function was done by moderating the improvement ratio for every requirement in order to achieve the final adjusted importance rating of a requirement (Pourhasomi et al., 2013). This was done by multiplying the raw importance rating of a student with the adjusted improvement ratio (Chaudha et al., 2011).

The benefits of the proposed integrated approach included: [1] providing a basis for improvement planning; [2] a prioritization of action plans as per the students' (customers') voices; and [3] enhanced documentation, communication, and teamwork.

Figure 3. 2: Research framework



Source: Developed for this research.

3.5. Data collection process

The data collection process was sequential which meant collecting the data in stages. The overall sequential approach to the research design for the study used both qualitative and quantitative data collection methods (Cameron, 2009). The process in this project collected the quantitative numeric data first, followed by the descriptive data, which was qualitative. The reason that this process was adopted was to help to explain and elaborate the quantitative results, which emerged from the first phase.

This rationale for this sequential approach has been clearly stated in McKim (2016) as the quantitative data and their subsequent analysis provide a general understanding of the research problem. Then the qualitative data and their analysis refine and explain those statistical results by exploring participants' views in more depth. In the development of the House of Quality matrix, the Kano-QFD model approach was used to develop a list of 14 main students' requirements which were divided into academic and personal requirements. The Kano questionnaire developed from these requirements consisted of two statements, one positive and one negatively phrased, about considering or ignoring each "want" in the services provided by the university. Data obtained from four focus group discussions with AIS, from university staff members, expert interviews, and policy procedures were used to determine 18 to 20 technical or institutional requirements for three Queensland universities (see Chapter 5). These requirements were included in the Kano survey questionnaire, experts' interviews, and the university policy and procedures templates (see Chapter 5). The collection of data was completed in two stages. In the first stage, the Kano questionnaires for students were delivered to 401 randomly selected AIS who were studying at Queensland universities. Three Queensland universities agreed to participate in the study.

The study participants were provided with a consent form to be signed before the collection of data. The link to the consent form was attached to the survey. The participants were required to submit the signed form to the researcher. The participants participated willingly and were allowed to leave the study at any point. For the interviews, university managers, experts, and staff members were asked to sign the consent form and were also informed about their voluntary participation, and that they

did not have to answer if they did not want to do so. The interview of each participant was recorded with an audio device. The recorded interviews were then documented for analysis and used to review data when updating the findings, which were related back to the study's literature review. The data collection process involved three stages, as shown in Table 3.1.

Table 3. 1: An overview of the research stage and the data collection plan

Description	Stage (1)	Stage (2)	Stage (3)
	Focus group discussions	**Kano survey questionnaire**	**Interviews university staff**
Data collection instruments	Snowball technique	Online survey instrument	Face-to-face and telephone interviews
Participants	Undergraduate and Postgraduate AIS	Undergraduate and Postgraduate AIS	University managers, experts, and staff
The Purpose	Identifying student requirements (SRs)	Identifying final student's importance rate at the Kano-QFD matrix	Creating the institutional requirements (IRs) of the QFD matrix
Approach to data analysis	Thematic analysis	Statistical analysis & Thematic analysis	Thematic analysis
Research questions: **Q1.** Which institutional requirements are the most important and which are the least important as per the requirements of the Australian HE sector in regard to the recruitment and retention of AIS at the three universities?	√		√
Q2. What are the needs of AISs at the three Australian universities? Which student needs require more attention and/or resources to improve the recruitment and retention of AIS at these universities?	√	√	
Q3. What are the strengths, weaknesses, opportunities, and threats identified by the Kano-QFD analysis regarding each of the three universities' students and institutional requirements relating to the recruitment and retention of AIS		√	√
Q4. What potential strategies emerge for the three universities as a result of the Kano-QFD analysis of AIS?		√	√

Source: Developed for this research.

During stage one, the researcher administered focus group discussions and in depth-interviews with AIS via the snowball technique because it allows for studies to take place where otherwise it might be impossible to conduct because a lack of participants. . In the case of AIS, this included those who were studying in Australian universities and they were asked to send the invitation link to their friends in the same situation. During stage two, the electronic Kano survey targeted the Arabic students studying at

Queensland universities in both undergraduate and postgraduate programs to participate in the study. The researcher invited AIS to circulate the link to this survey in order to maximise participants' opportunity to respond to the survey questionnaire. The participants were sent the introductory email before the commencement of survey that clearly communicated the purpose of the study and included the invitation to take part in the study. The email also detailed the ethical approval obtained by the researcher for conducting the research. The introduction explained the nature of the study, gave the researcher's contact details and stated the reasons for doing this research (Burton, 2000). Participants were informed of the confidentiality of their data and their rights to anonymity. The participants were also provided with the contact numbers of the Office of Research and the research supervisor to allow participants to contact them whenever required to present their queries about the research.

After completing the second stage of the data collection process to capture the students' requirements, the third stage of this process was the completion of interviews with university staff to determine the institutional requirements to develop the matrix for the QFD tool. In the case of university staff members, they were asked to distribute the invitation to participate to other staff, experts, and managers who they thought were contacting AIS. Face-to-face and telephone interviews (lasting between 15 to 20 minutes) were conducted using questions. Pseudonyms were used to assure confidentiality and anonymity of the information gathered from all individuals.

3.5.1. Participants and sampling techniques

Research sampling is an essential stage in social research (Zikmund et al., 2013). The study sample should be determined accurately because it plays a key role in answering the research question(s) and achieving the study objectives (Brace, 2008). This stage was considered to be a critical issue because of the difficulties in selecting participants from the population. It was impossible to reach all population members to include them in the study (Healey, 2009) and therefore, a sample was used. Zikmund et al. (2013) define "sample [as] a subset, or some part, of a larger population" (2013, p. 385), and sampling as an activity that "involves any procedure that draws conclusions based on measurements of a portion of the population".

The sample of participants in this study were undergraduate and postgraduate Arabic international students (AIS) studying at Australian educational institutions, including Queensland universities, and local staff members who were responsible for or in contact such students. Their recruitment occurred in three phases and was three Queensland universities. Phase one involved focus group discussions with AIS through the snowball technique. Phase two, involved the administration of the online survey to students through the snowball technique. In phase three, interviews were conducted with university managers, experts, and staff members through purposive sampling within each institution. The participants in the survey were included both males and females. It is generally known that the interview process needs specific techniques to extract data from interviewees. The researcher collected the interview data. The following three phases explain the steps taken by the researcher to find participants for inclusion in the sample for this study.

(1) Sampling for the focus group discussion and university expert participants

Two of the most broadly used techniques in qualitative research are focus group discussions and individual interviews (Coenen et al., 2012). The first one was used in this study to find out about the AIS' requirements; during the second phase, the QFD team identified institutional requirements (IRs) was used to determine priorities that were most needed to fulfill student requirements and required further improvement in each of the three university cases. Therefore, the sample included experts and managers, and university staff members. According to the literature, QFD teams should have between five to eleven members (Kong et al., 2017; Peet et al., 2010; Sherriff et al., 2014). The appropriateness of the number of members participating in the team depends on the questions being asked, as was the case with the focus groups (Sherriff et al., 2014). Between six to eight individuals within the QFD team for each university were invited to participate as part of the interview process (Nyumba et al., 2018). The average number interviewed across the participating universities was six participants. This number was considered sufficient to, as Mohammed (2018) noted, "develop the conceptual research model for use in the quantitative stage" (p. 161).

In summary, regardless of the final sample size of the focus group discussions, "it is important to invite more participants than necessary, to fill gaps left by those who fail

to turn up" (Baig, 2010, p. 98). This helps compensate for the reality of different numbers of staff interviewed due to unavailability or other unexpected reasons (Gururajan et al., 2013; Mohammed, 2018). Therefore, either eight to ten or 12-15 individuals were asked to participate in the focus group discussions at the three universities. The result was that the focus group discusses included eight participants and between five to seven individuals were individually interviewed at each of the three Queensland universities.

The expert interviews were carried out with key informants (i.e. university staff members, university researchers, and managers) from three public research-focused Queensland universities in Australia. These three universities were chosen because it was feasible (in terms of location, time, and cost) for the researcher to conduct the initial study within close proximity. Guest et al. (2006) suggested seven to five interviews would be sufficient for high level, overarching themes development of key data with meaningful interpretations. This research, therefore, ascribes a purposive sampling or non-probability sampling with a sample size of 17 interviews, representing both university staff as well expert academic personal.

The resources used to conduct the qualitative study (focus group discussions and in-depth interview techniques) were:

(i) Logistics – own transport was used to travel to the three universities located in Queensland state, Australia covering approximately 110km.
(ii) Time – nine months were allocated to conduct the 17 interviews.

(2) Student participants

Choosing the most appropriate sample size requires careful consideration as sampling errors can occur due to insufficient sampling scale, leading to difficulties in presenting the parameters. However, it is wasteful to use an overly large sample, because of the uncertainty of the size of the parameters (Pourhasomi et al., 2013; Shyu et al., 2013). In line with the research goal, the present study is of an applied nature, and the method is descriptive. The population for this study includes all Arabic students studying on-campus at Queensland universities who are non-permanent residents in Australia. In order to test the validity of the questionnaire questions, survey questionnaires were distributed among 12 individuals as the pilot. Then, the sample size for the study was

calculated by the following the formula below at a significance level of .05 and the resulting number was 398. Taking into account the possible lack of cooperation by some sample participants, 250 individuals were selected through random sampling as the sample. From this sample size, 190 questionnaires were returned. The ratio method was adopted and the required sampling numbers were obtained according to the following formula, as described in (Kabir et al., 2018):

$$n_0 = \frac{z^2 * \pi * q}{\beta^2} \quad (1)$$

Where, n_0 = desired sample size; z = standard normal deviate (Z-value) for desired confidence level (1.96 for 95% confidence level and 1.645 for 99% confidence level); $\boldsymbol{\pi}$ = assumed proportion in the target population estimated to have a particular characteristic; $q = 1 - \boldsymbol{\pi}$; and $\boldsymbol{\beta}$ = degree of accuracy desired in the estimated proportion ($\boldsymbol{\beta}$ = 0.01 for 99% -100% confidence interval).

If $\frac{n_0}{N}$ is negligible (i.e., if the population size, N is very large), n_0 is a satisfactory approximation to sample size, n. If not (i.e., N is finite and small compared to n_0), the sample size n is obtained as (Kabir et al., 2018).

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \quad (2)$$

If the estimate $\boldsymbol{\pi}$ is not known, 0.50 (50%) is used, because, for given values of z and d, it produces the largest sample size. In this paper, we used $\boldsymbol{\pi}$ = 0.50 as the sample size would then be at a maximum.

Following the above formulas, this found the following number as the sample size:

$$n_0 = \frac{1.96^2 * 0.5 * 0.5}{.04^2} = 601$$

In this study, the population size was N=1180. So, the estimated sample size would be:

$$n = \frac{601}{1 + \frac{(601 - 1)}{1180}} = 398$$

Also, the size of the sample was calculated for the Kano survey questionnaire with the formula and the sample size obtained. As such, a random sampling was adopted to compensate for the lack of participation. Particularly, after omitting the incomplete questionnaire, 252 questionnaires were returned.

For the quantitative study, a field survey instrument targeted all universities. A sampling frame was established with the help of the communities of AIS university associated and research management offices by compiling a list of university researcher's names. The initial sampling frame consisted of 2,453 names of targeted participants.

The resources used to conduct this survey instrument were:

(i) Logistics – the researcher managed the mail survey (i.e. preparing the survey kit, posting, and collecting responded surveys).

(ii) Time – about four months were allocated to conduct both the pilot and actual surveys.

(3) Formation of cross-functional QFD team

A QFD study is typically carried out by teams of multidisciplinary representatives from all stages of product or service development and manufacturing. Forming these cross-functional teams for each university was important because these represent the organisational view from a requirements perspective of how the organisation responds to student CRs, a critical element in the development of each of the three HOQs (Özgener, 2003; Tague, 2005). Membership within the teams was also vital in identifying "holes" in the researcher's knowledge of IRs and their responses to CRs (Childs, 2019). Their task was to, in effect, assist the researcher in organising the process of extracting input information for the HOQ matrix. It helped that the QFD teams represented different levels from across the organisations with different perspectives of IS as suggested by Zikmund et al. (2013). QFD team members included unit directors with a high number of IS, senior management, staff in International Student Offices and institutional student services staff involved in admissions, retention and support. Teams for each university consisted of five to seven individuals as indicated in the literature (e.g., Dror, 2016; Özgener, 2003).

3.5.2. In-depth interviews and focus group discussions with students

The focus group discussion was carried out with nine Arabic higher education students representing three Queensland universities. There were two students from UQ, three students from QUT, and four students from USQ. In-depth interviews were conducted with a further 24 students from these three participating universities. According to Griffin and Hauser (1993), 20-30 customers should be interviewed to obtain 90-95 percent of possible customer requirements. Both focus group discussions and in-depth interviews were used in order to reduce the disadvantages of each method and to summarise students' requirements more specifically. The focus group discussion was conducted first to uncover the most important student requirements, followed by in-depth interviews to gather further details about these requirements. The participants in the focus group discussion and in-depth interviews were asked to explain Arabic International students' requirements, to determine the most frequently used services of their university and share their experiences (positive or negative). Both the focus group discussion and in-depth interviews were recorded on a digital recorder. Analysis of these transcripts enabled the development of a questionnaire related to Arabic university student requirements.

3.5.3. Questionnaire design and survey

3.5.3.1. Questionnaire design:

After identifying the student's requirements, a structured questionnaire was developed, was composed of four parts. The first part contained the title and a summary of the main purpose of the instrument. The second part of the questionnaire included demographic characteristics such as gender, age, marital status, have children, country of origin, prior qualifications, accommodation type, length of stay in Australia, duration of study to date, and level of study.

The third part covered statements used in categorising the requirements, identified by the focus group discussions and in-depth interviews, with respect to the Kano model. In the Kano model, the needs are asked in paired statements. The first statement asks

how the student feels if a specific feature exists. The second statement asks how the student feels if that specific feature does not exist. Therefore, the third part consisted of positively stated requirements followed by their negatives, reflecting the functionality and dysfunctionality of the requirements. The scale used was a five-point scale ranging from 1= Strongly Disagree 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree which was one of the scales recommended by (Bayraktaroğlu & Özgen, 2008; Wu, 2004). A five-point Likert scale was used to measure the students' perceived importance concerning the 14 quality requirements, where a higher score represented higher perceived importance or satisfaction (Bayraktaroğlu & Özgen, 2008; Ma et al., 2019).

The fourth part of the questionnaire asked the respondents to evaluate the questionnaire by providing any other comments that could be added for the researcher to consider.

3.5.3.2. Questionnaire survey:

The questionnaire was randomly distributed through an online survey facility. A total of 401 questionnaires were collected, and the questionnaires with incomplete and obvious errors which are were excluded. 252 copies were retained, and the effective response rate was 89.42%. In this survey sample, 60.71% were males and 39.29% were females. The ages were between 18-62 years old, but other age groups were also distributed. The respondents were both representative and comprehensive.

3.5.4. Pre-testing and survey

The survey questionnaire was pre-tested with 23 respondents consisting of both undergraduate and postgraduate Arabic international students who were at the time studying at Queensland universities. They were selected as this population had experienced the decision-making situation of selecting a university in their recent past.

Given that for many of the respondents' their first language was Arabic, the questionnaire was checked for linguistic errors and ease of understanding through a blind back translation methodology as a quality assurance method. The questionnaire

was initially translated from English to Arabic by the researcher whose first language was Arabic. The researcher then requested three native Arabic speakers to translate the Arabic version back to English. These back translators did not see the original English version of the questionnaire. The back-translated English version was then closely compared to the original English version by two first language English speakers to determine any differences in language and understanding between the two versions. This back-translation process ensured the face validity of the questionnaire. The final administered questionnaire was bilingual.

As indicated previously, a snowball sampling technique was used to select the respondents for this study. In total, 401 respondents were contacted for the survey, and 252 completed and usable questionnaires were collected back, resulting in a 62.8% response rate. Questionnaires were administered in an online setting by arranging a meeting with different groups and communities of Arabic international students at three different Queensland universities. Each group consisted of both undergraduate and postgraduate Arabic students who were studying at Queensland universities.

3.5.5. Data analysis procedures

According to Goodson and Sikes (2001), data analysis is defined as the "making sense" of, or interpreting of, the data obtained during the collecting phase. Interpretation is an important part of case study data analysis and, as noted, a critical element in the qualitative approach. Furthermore, in qualitative research, data collection and analysis is a simultaneous inductive activity with stages that are interactive and iterative (Creswell, 2008; Merriam, 1998).

Different data analysis procedures and techniques were used. Results from the preceding focus group discussions and in-depth interviews were used to inform the subsequent survey instrument. Qualitative data analysis utilises forms of thematic analysis to provide contextual detail and richness based on participant responses (Tharenou et al., 2007; Zikmund et al., 2013). As part of the analysis, the researcher first provided each participant with a transcript of their responses to review and make corrections to the transcript to ensure correctness. Participants were given a timeline for when they had to complete the review and provide any revision. The timeline was

based on providing sufficient time for the review and provision of revisions (Mohammed, 2018) and timeliness. Upon completion, they were then asked for their approval prior to inclusion into the study's dataset.

The qualitative data was analysed to identify various constructs and variables in the data as well as the themes present in the data. The analysed data was in the form of records and notes; the researcher employed manual methods along with content analysis software (NVivo 12) for data encoding and recoding and for extracting relevant themes (Ngulube, 2015; Paulus & Bennett, 2017). According to Muhammad (2018), "[t]his phase of the qualitative research was significant to refine and revise the research model by adding and/or deleting one or more constructs, categories, and/or items" (p. 130). The numerical data collected from the survey was analysed using 'SPSS' version 25, a generic statistical software, and 'Stata_14.2" software. Descriptive, factorial, inferential, and model analysis procedures were carried out on the quantitative data. There was one open-ended question in the survey, asking the participants about any opinions pertaining to the research. The answers were in textual form and analysed manually using a simple content analysis procedure where direct interpretations were made on participants' expressions. Details of quantitative and qualitative analysis procedures and findings are explained in Chapter 6: Data analysis and results.

The verbal data collected from the interviews were transcribed verbatim using 'f4' program version 2012, which is a transcribing software. Then, the transcripts consisting of textual data were analysed using 'NVivo' version 12, a qualitative data analysis software. A content analysis method was employed by using a themes identification procedure, whereby themes or constructs discovered in the interviews were categorised systematically. Chapters four and five provide a more detailed discussion of the procedures used and findings achieved from developing and performing the Kano analysis and the thematic analysis of policies and procedures from the three universities to identify institutional requirements.

Different data analysis procedures and techniques were used. Results from the preceding focus group discussions and in-depth interviews were used to inform the subsequent survey instrument. Qualitative data analysis involves the use of logic to understand and analyse the collected data (Zikmund et al., 2013). Qualitative analysis

works best for developing theoretical explanations and imparts detail, process and sensitivity besides enriching the research topic (Tharenou et al., 2007). Prior to data analysis, it is important to address two considerations. First of all, the researcher provided all participants with a copy of the transcript of the focus group session, as well as of individual interviews, for their reading and approval prior to inclusion in the definitive data collection. Then, the focus group transcript was given to each participant to be reviewed within the specified time so as to demand the changes required.

The qualitative data was analysed to identify various constructs and variables in the data as well as the themes present in the data. The analysed data was in the form of records and notes; the researcher employed manual methods along with content analysis software (NVivo 12) for data encoding and recoding and for extracting relevant themes (Ngulube, 2015; Paulus & Bennett, 2017). After the analysis of the qualitative data, changes were made to the content and approach of the instrument items to ensure proper alignment with the categories and constructs on which the items were based (Ngulube, 2015). The resulting Kano instrument items were then sent out to respondents in the second phase of this research project. Chapter 6 discusses the findings from the instrument that were then included in the construction of the HOQ.

3.6. Integration of the Kano model with QFD

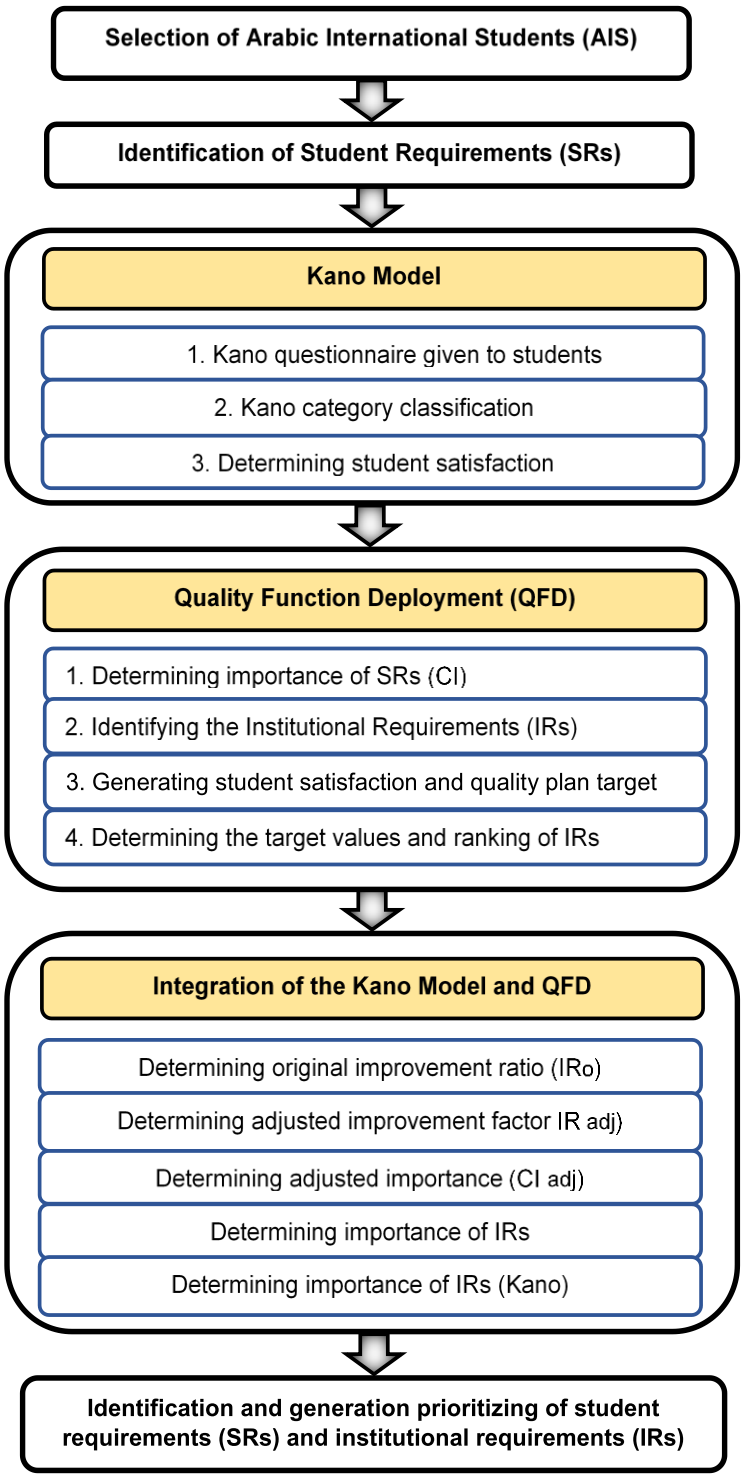
In this study, the main purpose of the QFD matrix is to identify reliable quality parameters for institutional requirements and prioritised ranking of those quality parameters as per the needs and desires of the students of HEIs (Singh & Rawani, 2019). QFD systematically translates the voice of the customer (VOC) into a product or service design. The QFD process involves the use of matrices, usually called the HOQ which are important for analysing the appropriateness of the translation logic (Abuzid, 2017). The HOQ tool consists of six sections: customer requirements (CRs), technical response, planning matrix, relationship matrix, technical correlations, and the technical evaluation matrix. The utilisation of these matrices makes the deployment process more traceable. Finally, the technical target can be decided on the basis of the

relationship between the technical target performance and the expected customer satisfaction (Cohen, 1995).

Originally, some experts believed that technical responses had a proportional impact on customer satisfaction, but after the introduction of Kano's (1984) categorization, they realized that technical responses have different impacts (Suef et al., 2017). In order to accomplish the intended objectives of the study, the research on QFD has been synchronised with Kano's categorisation. This approach integrates the Kano model into QFD methodology based on the Australian HEIs development, to select the priorities of student requirements (SRs) along with institutional requirements (IRs). The Kano-QFD method therefore required a number of sequential steps, which needed to be followed to get a final importance calculation and ranking of each quality parameter of IRs, as per the SRs.

Figure 3.3 shows a flowchart of the steps taken to achieve the objectives of integrating Kano and QFD models of quality for designing educational programs and services:

Figure 3. 3: Flowchart of the methodology



Source: Adapted from Gangurde and Patil (2018).

3.6.1. Kano model

The Kano model is an approach for evaluation of quality; it involves evaluating the customer requirements and giving preference to product or service features that fulfil customer needs and impart more satisfaction to them (Azizi & Aikhuele, 2015). As every client gives different level of importance to different requirements identified in the survey, the Kano model can help in the classification and ranking of the requirements of different customers/respondents to determine the requirement(s) with the highest priority.

The main objectives of the Kano model are (Gupta & Shri, 2018):

- To help organisations to understand customer needs better than their customers understand their own needs.
- To categorize customer requirements into five attributes that all manufacturers need to be aware of in order to remain competitive.
- To show how each attribute can influence satisfaction and dissatisfaction.
- To show how attributes add or detract value from the product.
- To provide a mechanism for prioritizing customer requirements for the development of satisfaction and loyalty. This is done through Kano analysis.

3.6.2. Kano category

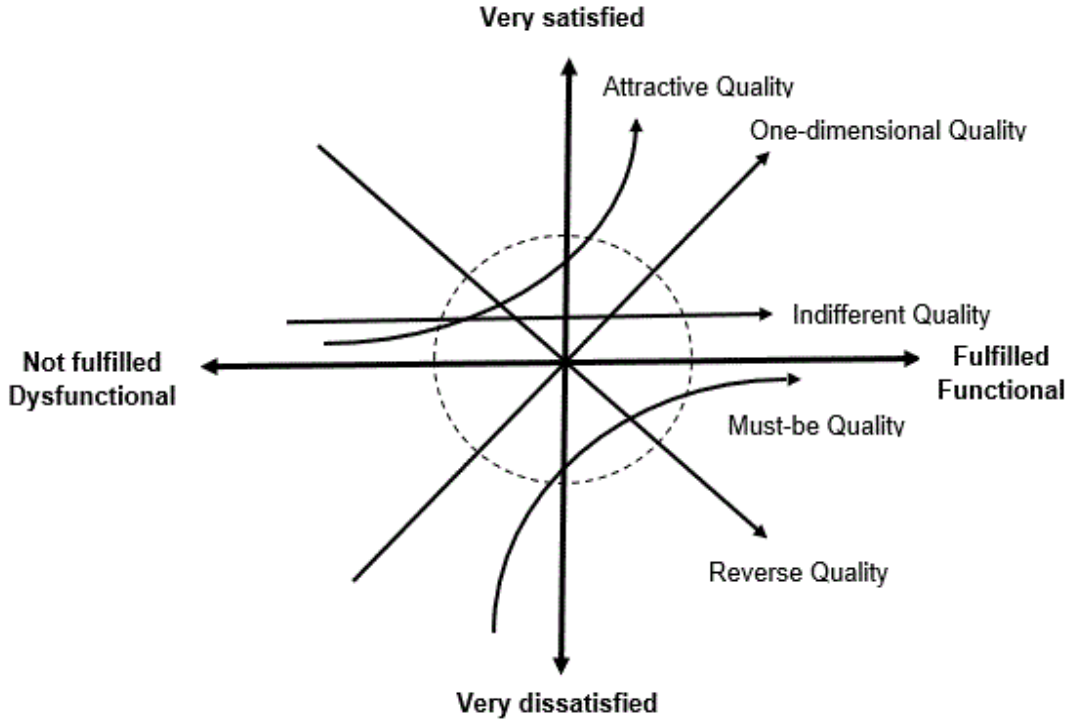
The Kano model (see Figure 3.4) distinguishes six types of requirements: must-be requirements (M), one-dimensional requirements (O), attractive requirements (A), indifferent requirements (I), reverse requirement (R), and questionable requirements (Q) (Bandyopadhyay, 2015; Gangurde & Patil, 2018).

The qualities of the requirements are categorised and ranked depending on how customers perceive them and how that affects customer satisfaction. The attributes of customer requirements in products or services are classified and prioritised on the basis of factors like customer requirement(s) that are known to result in customer satisfaction and areas in which the company is required to make improvements for staying competitive. Meeting the basic needs of the customers provides the right base for eliminating customer complaints and dissatisfaction. Exceeding the expectations

of the customer can create a competitive advantage for the company and can lead to new innovations (Azizi & Aikhuele, 2015).

The details of the Kano category in the middle block of Figure 3.4 are discussed below (Bandyopadhyay, 2015; Gangurde & Patil, 2018):

Figure 3. 4: Kano model



Source: Adapted from Kano et al. (1984); (Kuo et al., 2016; Lee et al., 2011; Roy et al., 2020; Salehzadeh et al., 2015).

1) Must-be requirements (M): These are fundamental and essential requirements. Customer satisfaction cannot be achieved in the case of non-fulfillment of the fundamental requirements of the product/service. Based on the provision of these needs, CS will not increase.
2) One-dimensional requirements (O): These are the requirements specified by the customers. There is a direct proportionality between Customer satisfaction and fulfillment of one-dimensional requirements. This means that a customer is more likely to be satisfied when more of the one-dimensional requirements are fulfilled.

3) Attractive requirements (A): Additional requirements are not demanded or expected by the customer. However, the fulfillment of attractive requirements leads to greater customer satisfaction with no negative impact on customer satisfaction because of non-fulfilment of these requirements.
4) Indifferent requirements (I): The customer does not care about whether these requirements are added or not. Moreover, customer satisfaction is independent of the fulfillment or non-fulfillment of indifferent requirements by a product or service.
5) Reverse requirements (R): The customer is likely to be dissatisfied with a product or service when the preferable functional features of the product or service are reversed.
6) Questionable requirements (Q): Basically, the answers do not fall into this category. Questionable scores indicate either inaccuracy of the question or the interviewee's inaccurate answer to a question.

The use of Kano model allows identifying the factors and requirements to be incorporated in the QFD. Kano et al. (1984) presented a technique for classification and prioritisation of the quality attributes through a functional-dysfunctional questionnaire. This questionnaire consists of pairs of questions or statements for each product/service attributes. The first question (functional) captures the customer's feelings when the quality attributes are provided in the products/service offering. The second question (dysfunctional) captures the customer's feelings when the quality attributes are not provided in the product/service offering. An evaluation table is used to categorise the collected data about quality attributes of a product or service into 5 Kano categories (Madzík, 2018; Priyono & Yulita, 2017).

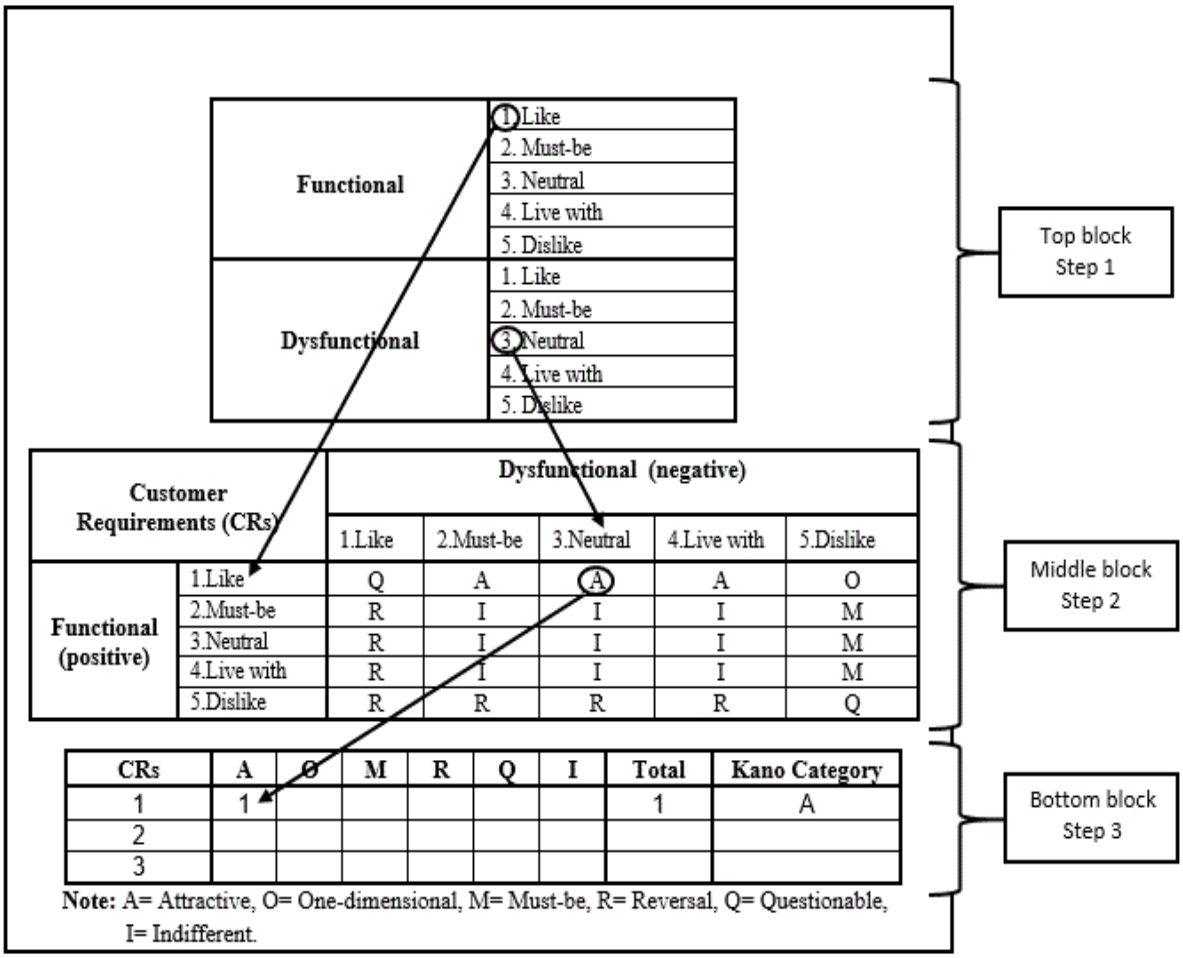
3.6.3. Implementation of the Kano model

The implementation process of the Kano model is composed of four basic steps (Dominici et al., 2015):

1) Identification of customers' needs and expectations.
2) Questionnaire design.
3) Questionnaire distribution.

4) Interpretation and evaluation of results.

Figure 3. 5: Process of Kano classification



Source: Adapted from (Gangurde & Patil, 2018; Gupta & Shri, 2018; Jylhä & Junnila, 2012; Lee et al., 2011; Madzík, 2018; Madzik et al., 2019; Madzík & Pelantová, 2018; Mikulić & Prebežac, 2011; Nascimento et al., 2012; Nzumile & Taifa, 2021; Suef et al., 2017; Violante & Vezzetti, 2017; Witell & Löfgren, 2007; Witell et al., 2013).

The Kano process is constructed through three blocks or steps: [1] Kano questionnaire; [2] Kano evaluation table (KET); and [3] Kano category result. Figure 3.5 shows the process of the Kano classification, in which the top block (Kano questionnaire) includes the functional and dysfunctional form of a questionnaire provided in the form of a customer survey sheet. The middle block (Kano evaluation table) is the Kano evaluation, and the bottom block (Kano category result) represents the summarised category result of the Kano model (Gangurde & Patil, 2018). For example, the reply

of customer to the functional form of the question "How would you feel if the features are added in your service?" is "like", and the reply to the dysfunctional form question "How would you feel if the features are not added in your service?" is "neutral", from the options: (1) Like, (2) Must be (3) Neutral (4) Live with (5) Dislike; the combination of these two answers falls under attractive attribute (A) (Suef et al., 2017), as shown in Figure 3.5 (middle block). After preparing the middle block, opinions of all the customers for the particular features and attributes are summarised in the bottom block (Gangurde & Patil, 2018; Madzík, 2018). The value "1" indicates the rating "attractive" by the first customer for the first feature. The results of the customer importance ratings are always used as a value of the importance of the student requirements in the QFD matrix. In this question, each student was asked to rate the importance of each requirement or feature on a Likert scale from 1 to 5 (where 1= strongly disagree to 5= strongly degree) (Bayraktaroğlu & Özgen, 2008).

Matzler and Hinterhuber (1998) identified five quality attributes categories based on their analysis of consumer perceptions using the Kano model: like, must-be, neutral, live with, and dislike. In this study, quality attributes were identified using the methodology proposed by Matzler and Hinterhuber (1995): "A" for attractive quality, "O" for one-dimensional quality, "M" for must-be quality, "R" for reverse quality, "I" for indifferent quality, and "Q" for questionable or invalid quality (Table 3.2).

Table 3. 2: The Kano evaluation table

Student Requirements (SRs)		Dysfunctional quality requirements (Negative)				
		Like (1)	Must-Be (2)	Neutral (3)	Live With (4)	Dislike (5)
Functional quality requirements (Positive)	(1) Like	Q	A	A	A	O
	(2) Must-Be	R	I	I	I	M
	(3) Neutral	R	I	I	I	M
	(4) Live With	R	I	I	I	M
	(5) Dislike	R	R	R	R	Q
M = Must-be quality requirements, O = One-dimensional quality requirements, A = Attractive quality requirements,		I = Indifferent quality requirements, R = Reverse quality requirements, Q = Questionable quality rerquirements,				

Source: Adapted from Kelesbayev et al. (2020).

3.6.4. Rationale

There are many advantages of the pure Kano model method. The application of the Kano model is useful for better discrimination between customer needs, whereas its integration in the QFD matrix will help product designers to decide on the most important product development activities to achieve maximum customer satisfaction (Chaudha et al., 2011). Kano's classification offers a more precise description of the behaviour of different types of service elements than traditional approaches. It allows researchers to identify the expected advantages or disadvantages of a service. Moreover, Kano's classification highlights various CRs leading to better decisions ensuring customer service differentiation. The benefits offered by the users are as follows:

i) This method facilitates better comprehension of customer requirements for a product/service. The experts must realise that the satisfactory level of must-be requirements implies not making efforts for its enhancement. However, improvements may be needed in one-dimensional or attractive requirements as they have a greater influence on perceived product (service) quality and consequently on the customer's level of satisfaction (Chiang et al., 2019; Tan & Pawitra, 2001; Matzler & Hinterhuber, 1998; Shahin & Zairi, 2009).

ii) Kano's method provides valuable help in trade-off situations in the product (service) development stage. In case of incompatibility between two features of a product or service, the one with greater association to customer satisfaction will be considered (Chiang et al., 2019; Tan & Pawitra, 2001; Matzler & Hinterhuber, 1998; Chiou & Cheng, 2008; Shahin & Zairi, 2009).

iii) Must-be, one-dimensional and attractive requirements differ, as a rule, in the utility expectations of different CR segments. This calls for the generation of customer-oriented solutions for resolving specific problems to obtain maximum possible customer satisfaction with respect to various CRs (Matzler & Hinterhuber, 1998; Chiou & Cheng, 2008; Shahin & Zairi, 2009).

iv) Discovering and fulfilling attractive requirements creates a wide range of possibilities for differentiation. Customer service differentiation can be achieved

by replacing the average services that only fulfill must-be and one-dimensional requirements and incorporating products or services with attractive features to stay competitive (Matzler & Hinterhuber, 1998; Chiou & Cheng, 2008; Shahin & Zairi, 2009).

v) The Kano model of customer satisfaction can be optimally combined with quality function deployment. A prerequisite is to identify customer needs, their hierarchy, and priorities. Kano model emphasises the significance of different features of customer service that yield customer satisfaction to determine optimal conditions required for service development processes (Matzler & Hinterhuber, 1998; Chiou & Cheng, 2008; Shahin & Zairi, 2009).

However, Mikulić and Prebežac (2011) identified three limitations to the use of the Kano model: [a] it does not provide insight into the potential of attribute(s) to influence overall customer satisfaction rather than demonstrating satisfaction with the attribute itself; [b] the model classifies but does not qualitatively or quantitatively indicate the performance of the various service features; and [c] the Kano instrument does not explain what drives customer perceptions, provide indications of why customers perceive the specific service superior or help identify customer behavioural intentions.

The Kano model can and often is integrated with QFD to identify customer needs, hierarchies and priorities (Chen et al., 2018). The Kano questionnaire instrument is based on writing items that are paired as positive and negative questions or statements. Like Chen et al. (2018) indicated, positive questions/statements look for the customer reaction based on provision or fulfillment of the service attribute; conversely, negative questions/statements were based on customer reaction when "the service attribute was not provided or fulfilled" (p. 6/16).

3.6.5. QFD process

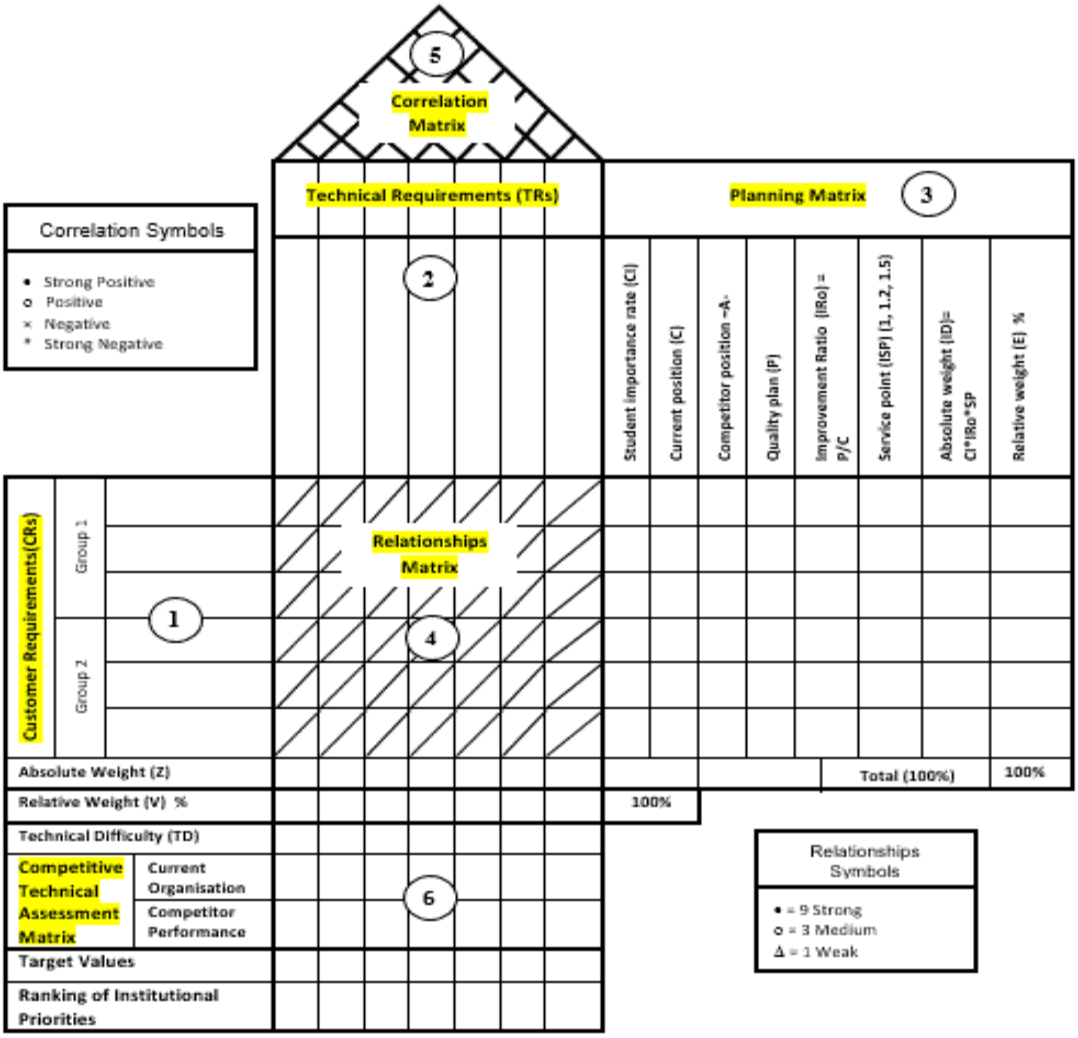
QFD considers the requirements, expectations and demands of the customers (VOC) and translates these into the technical requirements required to meet customer demands (Erdil & Arani, 2019). The voice of the customer is the term to describe the stated and unstated customer needs or requirements. The voice of the customer is captured in a

variety of ways: direct focus group discussion or interviews, surveys, customer specifications, field reports, or customer complaints (Gangurde & Patil, 2018). The customer requirements, thus identified are recorded in the HOQ matrix.

A set of multiple matrices including the HOQ are used in executing the QFD approach. As mentioned in the previous chapter, in full implementation, there are four matrices or phases. The first one is called the HOQ. The term HOQ is often used to refer to QFD, but this initial matrix itself does not constitute the full implementation. HOQ represents the identified customer requirements in the form of technical requirements. The other matrix represents technical requirements in the form of part specifications while the third matrix represents part specifications to corresponding process requirements. Finally, quality specifications are defined in the last matrix (see Figure 2.6 in Chapter 2).

HOQ is the most widely used and the most significant constituent of the QFD process that not only represents the VOC but also determines the potential course of action to be followed (Herzwurm & Schockert, 2006). It is the most commonly used QFD component. This tool helps the team or decision-maker to set a goal for issues that are most important to the customer and how this goal can be achieved technically. Furthermore, it is a graphical illustration used to define the relationships between customer preferences and product/service attributes (Azizi & Aikhuele, 2015). What follows are the steps involved in HOQ development as shown in Figure 3.6 (Talib & Maguad, 2011; Erdil & Arani, 2019). Each constituent of HOQ is assigned a number that represents the sequence completed by that constituent during the development of HOQ.

Figure 3. 6: House of Quality (HOQ) elements upon completion of the six steps

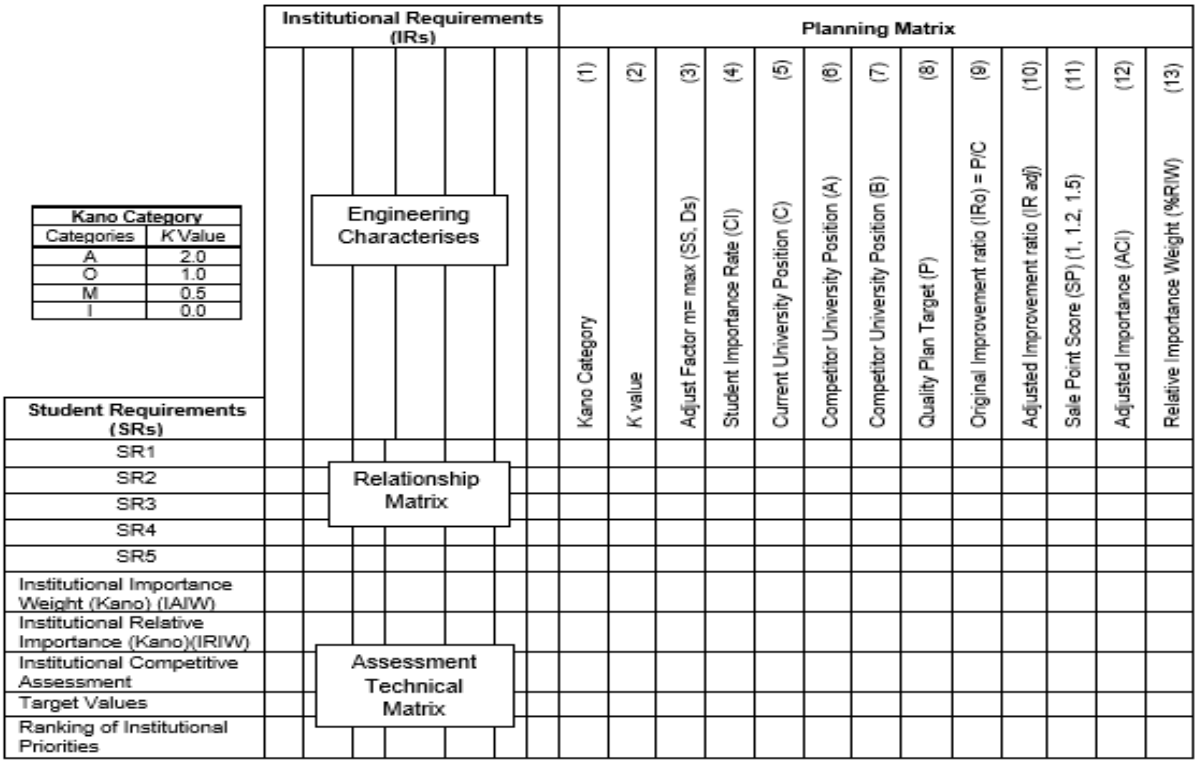


Source: Adapted from Talib and Maguad (2011).

Basically, every successful organisation always uses the data and information that can help it in planning processes (Bryson et al., 2018). In the planning of a new product or service, designers check the performance history of the current product or service. Design engineers have to analyse the data as well as compare their product or service with other competitors' products or services. QFD uses a matrix format to capture a number of issues that are essential to the planning process. The HOQ matrix is the most standard and widely used method. It translates CRs based on marketing research into an appropriate number of organisational targets to be met by new organisational requirements. Also, it is a kind of conceptual map that provides accurate data for process planning and communication. There are many different forms of the HOQ. Its

general format is made up of six major components. These include CRs, technical requirements, a planning matrix, relationship matrix, a technical correlation matrix, and a technical priorities and target values or assessment technical matrix. The format of HOQ is used in the integration of the Kano model with QFD, as shown in Figure 3.7. It shows how results obtained from the Kano model method are integrated into the HOQ matrix. The completion stage of the HOQ is a critical phase in determining the priority or priorities driving implementation of a product or service (Hashim & Dawal, 2012). Building the HOQ involves the following steps:

Figure 3. 7: House of quality with the Kano model



Source: Adopted from (Gangurde & Patil, 2018; Hashim & Dawal, 2012; Rahmana et al., 2014; Tan & Pawitra, 2001).

Step 1: Identify student requirements: Also called the voice of the customer (VOC), are on the left side of the HOQ matrix. The first step in a QFD project is to determine student requirements (SRs). The primary input in the HOQ is a prioritised list of basic

customer requirements that are usually expressed in vague and imprecise terms (Gangurde & Patil, 2018).

The main goal of using QFD in the education system is to align the quality parameters as per the satisfaction of students' needs. The quality of the QFD model may be measured by its potential to fulfill students' needs. Therefore, to ascertain the good quality of an education system, it is necessary to know the education system's customer requirements, i.e. students' needs. The difficult task in the QFD model was not to draw the matrix and calculate the final ratings, but the generation of matrix data. As the horizontal rows consist of customer requirements, so the generation of customer requirements was also one of the important tasks of the study. Considering students as the primary customer of the institute, as mentioned above, student requirements were considered to be the customer requirements for the education sector. Student requirements make up the list of parameters, generally referred to as WHATs that a student expects during their course work or after completion of the course work (Singh & Rawani, 2019).

In this study, the students' requirements were collected through focus groups and in-depth interviews. A total of 23 students were interviewed including 10 Ph.D. students, 5 master's degree, and 8 undergraduate students.

Step 2: Importance ratings of student requirements: After collecting the list of student requirements, the next task of the study was to find the importance ratings for each requirement. Importance ratings indicate how strongly a student's requirement was needed to fulfill that student's expectations of a university. In order to collect the ratings of each requirement, a survey questionnaire was designed and conducted using the Kano model, which consisted of a Likert scale for each requirement. This Likert scale consisted of 1, 2, 3, 4 and 5, whereby 1 indicated not required, 2 indicated moderately required, 3 indicated required, 4 indicated highly required, and 5 indicated strongly required.

Step 3: Identifying institutional requirements: After listing the customer needs and their degrees of importance, the technical requirements have to be established. These technical or institutional requirements (IRs) come in measurable attributes and indicate what must be achieved to satisfy these requirements. The basic standards and requirements are to be selected by the QFD team (Erdil & Arani, 2019). Once all

requirements are identified, it is important to answer what must be done to the service design to fulfill the necessary requirements. In this study, policies and procedures at the university, along with experts at the university, identified the IRs to satisfy the student requirements.

Each institutional requirement was specified with an improvement direction to be developed by using the symbols below (Vorasaiharit & Thawesaengskulthai, 2016):

 = Objective is to maximize

 = Objective is to hit the target

 = Objective is to minimize

Step 4: Planning matrix: The next step in the QFD process is forming a planning matrix. The main purpose of the planning matrix is to compare one's own product or service with competitors' products or services (Gangurde & Patil, 2018). This comparison part is always used when only the QFD method is applied and during the integration with the Kano model. The planning matrix shows the weighted importance of each requirement that all services are attempting to fulfill. Customers' ratings, ranging from 1 to 5, are given for each requirement. The customer ratings are combined with the weighted importance of each requirement to calculate an overall performance. In this step, competitors' products or services are reviewed in terms of how they satisfy the customer's needs.

Thus, experts from the university and students discussed and came up with a correlation matrix between customer needs and improvement actions.

Step 5: Relationship matrix: The relationship matrix is placed in the centre of the house of quality and shows which institutional requirements will meet students' needs and wants (Singh & Rawani, 2019). This section aims to assess what relationships are desired by students in terms of institutional needs (Prabowo et al., 2019). The main function of the relationship matrix is to establish a connection between the CRs of service and the IRs designed to improve the service or product. Usually, there are four types of relationships, i.e. strong relationship, a medium relationship, a weak relationship, or no relationship. The measurement scale used in this work ranges from

0-1 to 3-9 to quantify the above four relationships, where 9= strong relationship, 3= medium relationship, 1= weak relationship, and 0 = no relationship (Baki et al., 2009; Purba et al., 2018; Raissi, 2018; Walden, 2003). The QFD team used to identify the relationships between the customer and technical requirements (Erdil & Arani, 2019). The QFD team uses these values to solve the relationship matrix, based on their own judgment or knowledge. After this, the designer can evaluate which technical requirement should be tackled first, which can help to achieve more customer satisfaction (CS).

Step 6: Technical correlation matrix: The technical correlation matrix is always the roof of the HOQ. This helps in developing the relationships between technical requirements and also helps to identify whether these units will work together or not; otherwise, they will be vary in product/service design. The following symbols are used to represent what type of correlation each requirement has with the other: vary

Strong positive	●
Positive	○
Negative	×
Strong negative	*

These symbols are then entered into the cells of a matrix where a correlation has been identified. Many technical requirements are related to each other. This part is always used when only the QFD method is applied.

Step7: Technical properties and target values: The final output of the matrix is a set of target values for each technical requirement to be met by the new design. In some cases, organisations are not able to create the optimum design because of limitations such as cost, technology or other related items.

In this regard, the research methodology strived to confirm the ISO 16355 standards and its parts through the QFD process and application within university environment.

3.7. Reliability and validity

Any research must be attributed with reliability and validity so that the reader is certain that the outcomes of the study are significant and applicable. Campbell and Fisk (1959, cited in Winter, 2000) described validity as "[a]n agreement between two efforts to measure the same thing with different methods", and reliability is "[a]n agreement between two efforts to measure the same thing with the same methods" (p. 2). Many experts conducting qualitative research have shown keen interest in reliability and validity since ages. It is essential for the researcher to confirm the validity and reliability of his research.

3.7.1. Reliability

Generally, Reliability implies the internal consistency in the measurements made by a measuring tool (Neuman, 2006). It determines the level of accuracy of the measurements made by the tool. Reliability of research means the accuracy, consistency, integrity, and conformability of research outcomes. Reliability is considered differently in qualitative and quantitative research. During quantitative research, reliability deals more with "the consistency and explicability over time, over instrument and over groups of respondents" (Cohen et al., 2013, p. 146). In quantitative research, the reliability is confirmed before and after the collection of data for the study. The reference groups are employed for reliability confirmation prior to the actual data collection process while SPSS software (Cronbach's alpha analysis) is used for confirming reliability after the collection of data through surveys. Cronbach's alpha is "an important concept in the evaluation of assessments and questionnaires" (Tavakol & Dennick, 2011, p. 54) and to measure the consistency of the items (Cypress, 2017). To reinforce this, Fink (2002) notes that Cronbach's alpha should be used if the researcher conducts a Likert scale of more than two options. The analysis of qualitative data required meeting the reliability standards. Hence, the researcher employed a reference group and asked questions to check the efficiency of questions in extracting accurate information from interviewees before conducting actual interviews with the participants in order to confirm the reliability of the survey.

Consequently, when actual interviews were conducted, the researcher carefully recorded all the interviews digitally and replayed them continuously to listen as much as possible during the transcription in order not to miss any part of the participants' views. The following two sections explain the steps taken by the researcher to best ensure the reliability of the data. The use of Cronbach's alpha for testing the reliability has been discussed in Chapter 4 while Chapters 4 & 5 present a detailed account of confirming the validity of the questionnaire through pretesting and pilot testing.

3.7.1.1. Survey instrument reliability

The researcher used the reference group for developing the survey questionnaire and testing its reliability prior to using this questionnaire for collecting data for the study. The reliability and validity of the prepared questionnaire was first tested on a sample consisting of a few Arabic students. The modification of questions helped to improve their clarity and in turn, the reliability of the data collected from students by ensuring their understanding. Thus, the survey questions were carefully edited and phrased clearly and unambiguously to make sure they met the standards of reliability as outlined by Kuh (2001). The AIS involved in the trial were also very similar to those in the actual survey, thus contributing to the survey reliability. The questionnaire was developed in both English and Arabic language to check if the translation was accurate. The surveys obtained the views of the students regarding their educational and personal experience during their stay in Australia. This contributed to decreasing errors and increased accuracy (Kuh et al., 2001).

After acquiring the questionnaires, a reliability investigation of the used range was carried out. The statements of positive and negative characters were tested separately. The main indicator of reliability was Cronbach's alpha. Cronbach's alpha coefficient was used in this study to measure the internal consistency of the questionnaire items. Hair et al. (1998) asserted that although the alpha coefficient lacks a standard absolute value, an alpha coefficient of 0.7 is universally accepted as the reliability standard, and questions evaluated to have an alpha coefficient below 0.35 would not be included in the survey. According to Wortzel (1979), the acceptable questions are ones with Cronbach's alpha value equalling to 0.6; however, the questions with values from 0.7

(or 0.66) to 0.98 are considered better and those with coefficients below 0.35 are excluded (Biasutti & Frate, 2017).

In this study, the values of the Cronbach's alpha coefficients concerning the importance of the four parts in the questionnaire included Kano's functional form of statement, Kano's dysfunctional form of statement, total functional items, and total dysfunctional items. Chapter 4 offers detailed information on this subject.

3.7.1.2. Interview reliability

The reference groups were used in this research to test the reliability of the interview questions. The specialists of English language from an Australian university were part of the first reference group. The second reference group comprised of experienced PhD students in the last stage of their study; they provided a check on the cultural issues to prove the consistency and to acquire more in-depth information. The two reference groups suggested that the study outcomes could have inadequate reliability and would be expected to involve random errors if the interview responses were not recorded or noted. To avoid these errors, the researcher recorded all the interviews with permission from the University of Southern Queensland's Ethics Committee and permission from the interviewees.

3.7.2. Validity

Validity implies the truthfulness or correctness of anything (Neuman, 2006). Validity indicates the attribute of being logical, being reasonable, relevant, significant, and based on established concepts, effective, useful, impartial, and well-founded (Cypress, 2017). The issues surrounding the use and nature of the term validity in qualitative research are controversial and ample. It is a highly debated topic both in social and educational research and is still often a subject of debate (Creswell, 2007). A valid study should demonstrate what actually exists and be accurate, and a valid instrument should measure what it is actually supposed to measure (Morse, 2012). In research, validity refers to the significance, correctness, and sincerity of the conclusions of the study components. (Cypress, 2017).

This study used a mixed method in its research design requiring validation of the various sources of data used, sample selection and size (cf. Best, 2012). A snowball technique was utilised that simplified the critical task of identifying the potential participant population and consequently selecting the study participants from a large Australian population. Initial samples were selected and then sub-samples were created based on purposiveness to ensure these participants were representative of the larger group. Afterwards, data collection instruments were developed, trialled and analysed using SPSS do determine the Cronbach alpha of the Kano instrument and NVivo to perform a qualitative thematic analysis of AIS responses (focus groups) and the QFD teams.

Face validity of the Kano instrument and policy and procedure documents was performed as a supplemental form of validation (Razak, 2016). Validity confirmation may involve subjective evaluation of measurement tools utilised (Drost, 2011), but its basis is the obviousness of the instrument used and the situation in which it is administered (Holden, 2010). Research has shown there is a relationship between face validity and instrument item accuracy (Holden, 2010). This study used the Kano model to measure student requirements of AIS, and the designed questionnaire included 14 items. The testing of questionnaires like a Kano model instrument "s demands an assessment of face validity, often employing qualitative methods to ascertain levels of understanding and comprehension, relevance and meaning" (Moores et al., 2012, p. 517).

3.7.2.1. Survey instrument validity

The data obtained from the survey was validated through a survey validation procedure which involved obtaining inspection services from a qualified reference group. The reference group had expertise in cross-cultural research. The validation process was conducted over a period of 25 days to allow for scrutiny of the appropriateness of the survey items and questions to prepare for its trial. This reference group provided feedback on:

- Survey instrument Likert-scale design.
- Survey completion time (approximately 5-7 minutes).

- Languages (English and Arabic) and terms used in the survey instrument.
- The clarity of the questionnaires in the light of their relevance and the way the questionnaires were written.
- The appearance of the survey in terms of word spelling, grammatical errors, scale rearrangement, font type and design, and structure of the sentences.
- Quality and scope of items.
- During the administration of the questionnaires at the three universities, requirements regarding the questionnaires were noted and action taken to rectify them. All the three universities were given the same questionnaires to fill in.
- Construction of the questions and statements asked to maximise participants' opportunity to respond.
- The language used in relation to cultural understanding.

The reference group evaluated the survey and gave their opinions regarding the language used in the survey, the efficiency of questions in communicating the concepts and obtaining required feedback from participants, question composition and the adherence of questions to cultural and ethical values. The survey questions were altered and adjusted in light of the evaluations made by the reference group. Based on the feedback, and before the actual implementation of the survey, the researcher modified some questions to clarify and improve the validity of the survey design. For instance, the reference group suggested changing the 5th question in section A of the survey. In question 5, the reference group provided a list of Arab countries for respondents to choose from instead of asking them "what country do you belong to".

In another example, the reference group suggested relating the items that asked about students' experience to their different requirements in section B (pair statements of the quality of academic and social experiences). Therefore, the researcher edited this and made it a complete section.

The final step involved the researcher editing the questions that the reference group suggested to change and arrange the survey sections to distribute to teachers and students for a trial.

3.7.2.2. Interview validity

Validity of research implies the accuracy and integrity of research outcomes (Cypress, 2017). It is more difficult to ensure the validity of qualitative research since it is essential to integrate rigidity, partiality as well as creativity into the qualitative research process (Johnson, 1999). According to Cypress (2017):

> Some naturalistic inquirers agree that assuring validity is a process whereby ideals are sought through attention to specified criteria, and appropriate techniques are used to address any threats to the validity of a naturalistic inquiry. However, other researchers argue that procedures and techniques are not an assurance of validity and will not necessarily produce sound data or credible conclusions (p. 257).

Lub (2015) agreed with Creswell and Miller's (2000) criteria for the validity of a qualitative study, which is dependent on the researcher's ability to bring together the perspectives of respondents, that of the researcher's and that of the study's reader. The researcher followed the interview procedure Creswell and Miller outlined. This pre-testing step demonstrated that the interview questions and their structure were well understood and sufficient to meet the research objective.

Issues of rigour and validity of qualitative questions were considered by the researcher in order to ensure the interview schedule was suitable to create the institutional requirements of the QFD matrix for each of targeted universities. The way to ensure face validity was to gain feedback from a reference group through a trial run. It took approximately one month for the reference group, who were specialists in cross-cultural communication, to scrutinise, discuss and provide feedback. Their feedback proposed the following:

- Editing some linguistic expressions in the interview questions.
- Restructuring some questions to make them clearer and more understandable for students.
- Reorganising some questions to make them more appropriate for the interview aims.
- Adding and deleting some parts of the questions in order to make them more comprehensible for experts and university staff members.

For example, one question was added - “What is your understanding of issues and requirements that international students need to address in order to be a student at your university?” - to the list of the interview questions. The reference group suggested making this change in the survey so as to improve linguistic clarity and to help the researcher to obtain additional information from participants during interviews. In addition to the reference group feedback, the researcher continuously revised the interview questions to ensure they fitted with the research framework and answered the research questions. In the subsequent step, the changes suggested by the reference group were made by the researcher and interview questions were rearranged before finally asking the university managers, experts, and staff members to respond to the survey questions.

3.7.2.3. Face validity

For the purpose of ascertaining face validity, both the interview guide and the survey instrument were pre-tested using non-participant individuals consisting of university researchers and postgraduate research students at USQ.

One interview session was conducted to pre-test the interview guide. The researcher followed the same interview procedure as outlined earlier for the qualitative aspect of this study. This pre-testing step demonstrated that the interview questions and its structure were well-understood and sufficient to meet the research objective. For the survey, the first version of the questionnaire was administered online to pre-test the instrument among ten non-research participants. Pre-testing the survey helped the researcher (1) to estimate the survey completion time, which was approximately ten minutes, and (2) to improve the appearance of the survey in terms of spelling, grammatical errors, scale rearrangement, font type and design, and structure of the sentences.

3.8. Research ethics

The primary objective of research ethics is to guide researchers in conducting trustworthy scientific research that respects and protects the participants of the

research. The ethical protocol employed ensures the rights, anonymity, and welfare of the subjects (people, animals or environment) are protected and promoted (Joungtrakul & Allen, 2012). There are three different ethical philosophies when considering the ethical appropriateness of research: [1] the de-ontological approach based on a universal code or rule used to assess standard ethical issues assessment; [2] the ethical skepticism perspective in which the researcher's conscience decides what is right or wrong; and [3] utilitarianism when ethical decisions are weighed based on a comparison between the benefit accrued from the research and the potential consequences to some or a majority of the participants (Johnson & Christensen, 2012).

Because this research aims to contribute to a better understanding of the needs of international students to successfully improve their quality of education at Australian HEIs, it adopted the perspective of utilitarianism in its approach and thus in its ethics approval application. Specifically, this research followed the USQ ethical guidelines for human research in accordance with the Australian Code for the Responsible Conduct of Research and the National Statement on Ethical Conduct in Human Research 2007. Research commenced only after the USQ Human Research Ethics Committee (HREC) (approval number H16REA166) granted approval. The approval letter of the University of Southern Queensland (USQ) is given in Appendix B.

There are three primary aspects of ethical concerns in research: the relationship between science and society, professional issues, and the treatment of the research participants (Johnson & Christensen, 2012). This research is concerned with applying the integrated Kano-QFD approach for Arabic students in the Australian HE sector.

This study required two types of participants: students and key university staff members. Recruitment of student participants involved finding students who had come to study in Australia for the specific purpose of attaining a university degree. Key university staff were identified and asked to participate in the study through various methods. Staff members sought were for the most part those who had direct responsibilities pertaining to recruitment, admission and engagement of international students, especially those from Arabic countries. The researcher also sought key decision-makers overseeing some of these areas in order to provide a more complete picture of university requirements – stated and unstated - from potential and new international students.

One method for identifying key staff was identifying staff known to the researcher and/or supervisors, who were then asked to participate. A second method was for staff known to the researcher and/or supervisors to identify other key personnel. These individuals were then formally asked to participate either by email or by telephone call. A third method was to look at the directory of the universities who agreed to participate in the study to identify potential key staff to interview. These individuals were then formally contacted by email and given an explanation of the purpose of the study as part of their invitation to participate. There were instances when these individuals declined to participate because they did not feel they were the appropriate individuals to be interviewed; however, most of them identified other individuals within their university or unit to contact, with a number of them willing to provide the researcher with an introduction to ensure their participation. This enabled the researcher to study the experiences of AIS when they were studying in Australia.

3.8.1. Risks and benefits

In research, risk refers to the probability that harm, discomfort or inconvenience will occur to the subject and their potential severity, while the benefit relates to the result of the research, which may include a contribution to knowledge, improvement of educational quality status and enhancement of skills to participants or researchers. Research is ethically accepted only when its potential benefits justify any risks identified in the research (NHMRC, 2007). In this research, social risks and time imposition were identified and assessed as a generally low level of risk.

As this research involved focus group discussions, in-depth interview techniques, and survey instruments, there was a possibility of social risks whenever a participant expressed their opinions during the interview session. These risks might be related to a participant's feeling of (1) anxiety prior to, during or after the research, (2) perception of being judged by the researcher, (3) discomfort when discussing personal experiences, and (4) concerns regarding disclosing sensitive information and how the information would be used. In order to negate these social risks, this research implemented strategies such as: [1] provided a well-written participant information sheet, [2] briefing the participants about the research procedure, [3] providing

opportunities for participants to answer questions freely, [4] treating the participant's opinions and experiences with respect, [5] keeping all information confidential, [6] reporting all the findings as anonymous, [7] using an interview guide to ensure discussions were within the research topic, and [8] convincing them that they had the freedom to refuse or withdraw from the study with no adverse effect on them.

Strategies to mitigate time and time scheduling risks were: (1) using an interview guide to ensure discussions were within the research topic, (2) designing the survey instrument in the simplest format, and (3) pre-testing the survey to ensure a data collection time of about ten minutes. Overall, the anticipated benefits of the study outweighed the risks identified in terms of the advancement of knowledge and enlightening the participants (i.e. Australian HEIs and stakeholders) about the importance of better understanding international students among various Australian universities as part of educational processes.

3.8.2. Informed consent process

Two consent methods were obtained in the research: active and implicit consent. Active consent was applied in the expert interviews. Before each of the face-to-face interview sessions commenced, the researcher explained the research procedures based on the information sheet. Once the participants understood and agreed with the research, the researcher could then not collect the data without their consent to participate in the study.

For the anonymous survey, a tacit consent was obtained whereby a statement of consent was included within the participant information sheet that was distributed via email or letter during the invitation process. A participant who then completed the survey (either via online or mail) was assumed to have consented.

Both the interview and survey participants were also advised of the voluntary nature of the research. Any participant's decision not to be involved in the research was fully respected. This research did not involve any deception and participants had the opportunity to ask questions and provide feedback about the research personally to the researcher via email or phone as the researcher's contact details had been provided on

the participant information sheet. In writing the research reports, the researcher-maintained privacy, anonymity, and confidentiality of the participants' identity.

3.8.3. Data storage

In keeping with ethics regulations, the data are stored in identifiable and non-identifiable forms. The interview data are in an identifiable form where specific individual data can reasonably be ascertained as the researcher collected information from a participant in a face-to-face interview. The non-identifiable form refers to the survey data that were not labeled with individual identifiers during the anonymous data collection process. In turn, participants who were involved in the interviews were still able to remove data if they chose to withdraw from the research at any time. For the survey participants, however, because the survey was anonymous, it was impossible to identify specific data pertaining to each participant for data withdrawal.

The primary voice-recorded data collected from the interviews were stored digitally, and then each interview session was de-identified during the transcribing process. Data collected from the online and mail surveys were also de-identified by assigning a unique respondent identification number. The soft copy data were copied and stored in the researcher's password-protected computers, personal hard drives, NVivo 12 Pro version and USQ network drive. The hard copy data were kept in a locked cabinet at the School of Management & Enterprise, USQ. All the data are retained for five years.

3.9. Summary

The chapter described the methods utilised in this research to fully answer the research questions and reap rich data from the application of a mixed-methods design. The data were collected sequentially through focus group discussions and in-depth interviews with the AIS, and Kano survey questionnaires being sent to the students to identify the students' requirements. Then, follow-up individual in-depth interviews were conducted with university staff members, for the development of the QFD matrix in three Queensland universities of varying sizes and types. In this context, this chapter discussed the construct development process of the integrated Kano-QFD model

toward meet student needs and expectations. For the recruitment of participants, a non-probability sampling technique was applied via snowball sampling for the survey. Purposive sampling was then used to select a sub-sample of the survey participants for follow-up in-depth interviews. The next chapter describes the development of the survey instrument and pilot study.

CHAPTER 4: DEVELOPMENT OF THE KANO SURVEY

4.1. Introduction

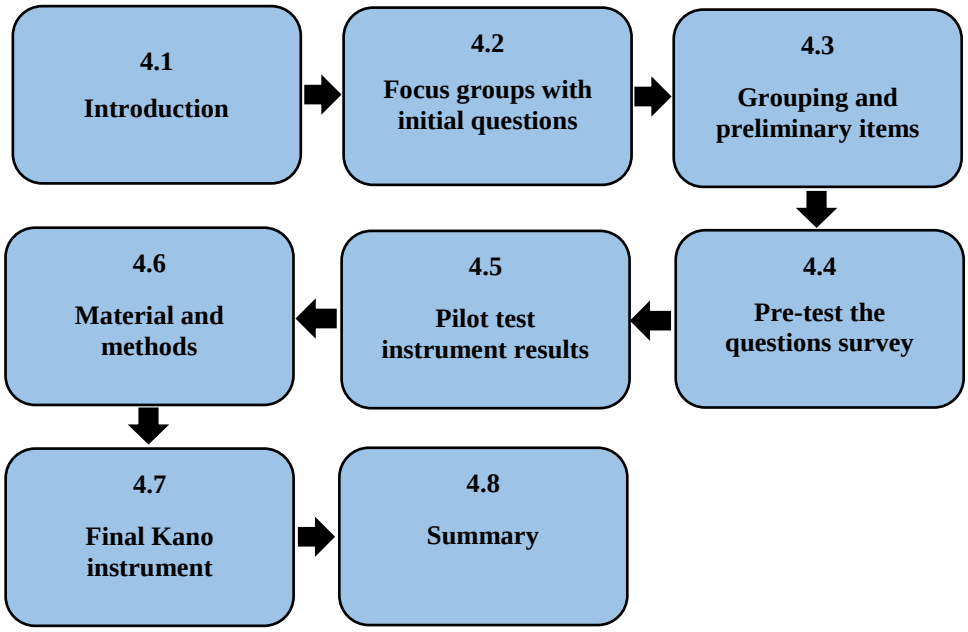
The previous chapter explained the research design that guided the overall methodology of the research process. In this chapter, the development of the Kano survey instrument and the pilot study conducted prior to actual data collection are discussed. The qualitative research methods, including focus group discussions and in-depth interviews with AIS, were organised to address the first research objective of the study, as well as to complete the main part of the QFD matrix. The core purpose of the chapter is to identify the themes and requirements which may influence a student's satisfaction that arose from the focus group discussions through the development of the Kano survey.

Service-providing organisations like universities must focus on their customer's requirements to be enabled to provide better service and fulfill the students' needs. The university is more likely to lose its clients in case of the undesirable first experience of the student with the university. It is also very hard to convince customers that the service is improved since it is intangible (Priyono, 2016). Therefore, service organisations require a careful analysis of customer requirements before effective service production. In this context, the universities can make use of the QFD tool for identifying VOC and delivering quality products and services to their students accordingly (Kogure & Akao, 1993). QFD involves the critical process of determining customer needs. The various steps taken in developing the final Kano instrument are outlined in this chapter.

This chapter is organised into eight sections as shown in Figure 4.1. The first section gives an overview of the chapter; in Section 4.2 descriptions are given of the focus group discussions conducted and the initial questions. Next, Section 4.3 presents details of the grouping and preliminary items associated with the students' requirements results from the perspective of AIS. Section 4.4 discusses the outcomes of pre-test processing including checking language validity, the survey instrument

reliability and validity, and USQ online survey development. The outcomes from the pilot study are presented in Section 4.5. Section 4.6 then describes the material and methods of the Kano instrument process. The results of the Kano instrument related to the final student requirements are provided in Section 4.7. Finally, this chapter is summarised in Section 4.8.

Figure 4. 1: Outline of Chapter 4



Source: Developed for this research.

This study was conducted through a descriptive approach with a combination of quantitative and qualitative studies. The descriptive approach in this context means a study that involves the transformation of raw data into a form that is easily understood and translated (Devi et al., 2019). The instrument used in this study was developed in a series of stages. In the QFD model, defining students' requirements is a critical task as this reflects the voice of customer (VOC). Once the requirements have been defined, priorities must be assigned indicating to what extent they are important. Kano's model is an excellent tool that can be used to identify what the priorities are that can satisfy customers' needs. In addition, Kano's model assists service companies to understand what service attributes can meet basic and excitement needs of customers as well as

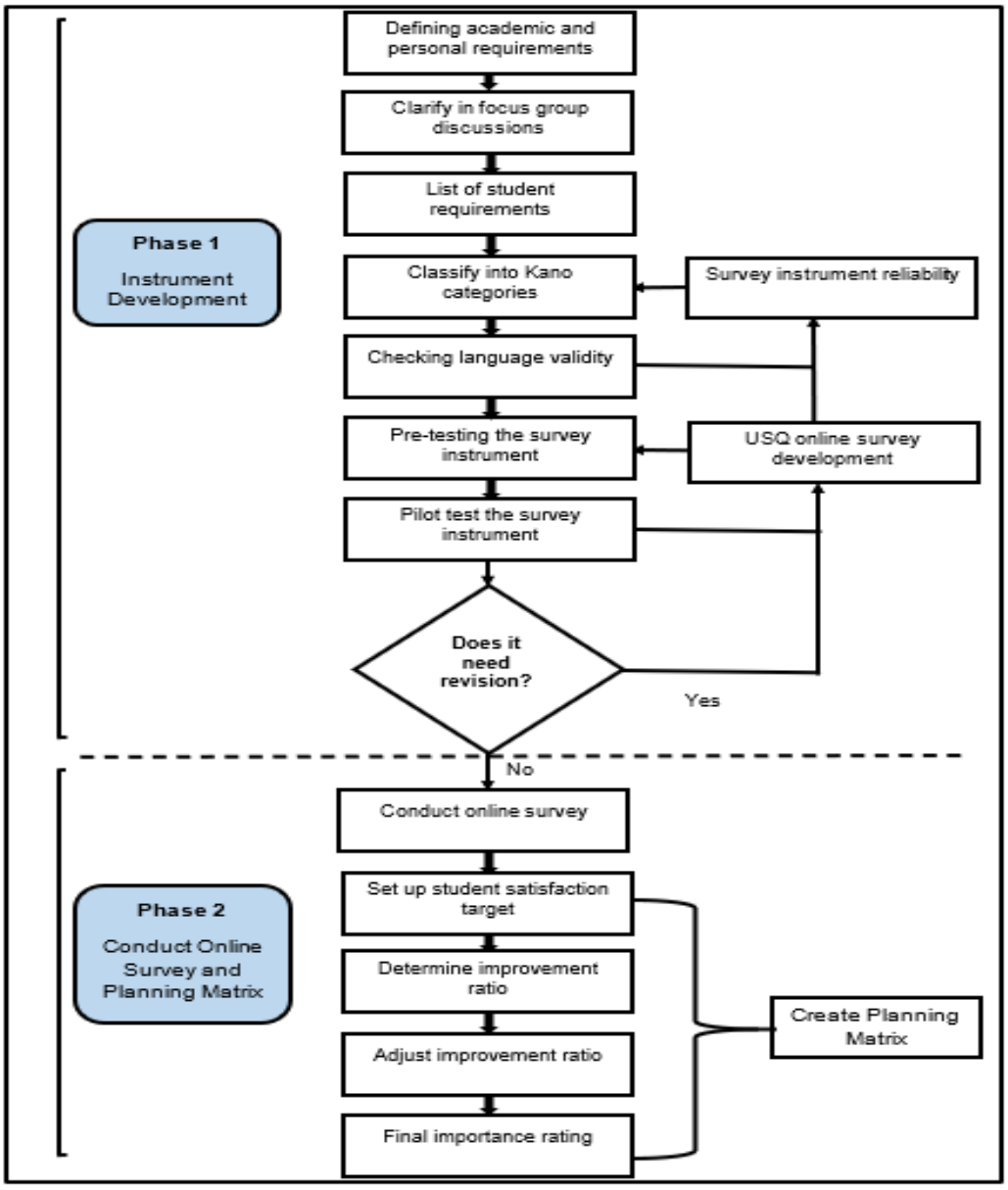
one-dimensional attributes (Matzler & Hinterhuber, 1998). Due to the usefulness of Kano's model in understanding how service attributes can meet different customers' needs, integrating it with QFD will result in powerful tool design (Priyono, 2016). It is important to have a good understanding of students' requirements, needs, and expectations, otherwise, the design process would not be able to include student expectations, or the services designed may not meet the needs of students. Therefore, it is important to identify who the target students are and to listen to and understand their voices.

As per the objectives of this research, this chapter includes data about the educational and personal experiences of AIS during their stay in Australia for the pursuit of postgraduate and undergraduate degrees at three Australian universities in Queensland. Before the survey's administration, it was trialled with small samples of Arab students. As noted in the methodology, its development involved seeking feedback from two critical reference groups to increase its validity and prove that the language used in the survey questions was meaningful to the participants to facilitate easy comprehension of the questions by respondents. The questionnaires were also checked for their ethical relevance. In this way, the researcher obtained the data pertaining to the experiences of the AIS during their stay and study in Australia.

In general, the procedure was divided into two phases: instrument development; and conduct of the survey to develop the planning matrix. Figure 4.2 shows a flowchart of the series of steps in the analysis procedure used in this study for integrating the Kano model and QFD. The first phase covers several activities, including identification of the criteria or features of high importance to the students, through in-depth interviews and focus group discussions. The results of the list of student requirements from data collection were then converted into questionnaires following pre-testing and pilot testing the survey instrument, which resulted in modifications being made using the feedback from the development process. The second phase involved the conduct of the final online survey instrument to participant respondents who were AIS studying at three Queensland universities. Then, the planning matrix was created as an important first part of the HOQ matrix. During this stage, due to the usefulness of Kano's model in understanding how service requirements can meet different students' needs, it was integrated with QFD through the variables in the planning matrix, resulting in a

powerful tool. The combined Kano model and QFD tool developed was then used to identify weaknesses found in educational services using raw importance, Kano categories and the measured satisfaction level (Priyono, 2016). The importance of quality requirements is captured directly from the students using a scale to obtain the final importance rating (Mkpojiogu & Hashim, 2016). The improvement ratio of each requirement in comparison to the present condition of the service/product is provided in this step. The final student rating for requirements involves deciding on the final weight of each requirement (Pourhasomi et al., 2013).

Figure 4. 2: The development procedures of the Kano instrument



Source: Developed for this research.

The combination of QFD and Kano's model may be considered as a practical tool for gaining a better understanding of the students' requirements. The key factor in this method is how the requirements in QFD are associated with Kano's model (Garibay et al., 2010). QFD is applied as a significant technique in understanding and hearing the voice of students (VOSs). This is important to enable organisations to identify the criteria or features that are of high importance to their customers. Kano's model categorises the must-be, one-dimensional, and attractive attributes and verifies the features that drive customers' satisfaction that can then be integrated into the QFD matrix. Therefore, Kano's model may be implemented as a complementary tool in QFD for analysing and classifying the customers' requirements. The integration of these two models can then facilitate the offering of products/services according to customers' needs and requirements. The flowchart of this model is achieved through this integration of the Kano model into the planning matrix of the house of quality, which is represented in Figure 4.2.

4.2. Focus groups with initial questions

Data analysis is an approach which researchers use to make sense of and create information from the data they have gathered. In this research, the use of particular data analysis techniques adds to the rigor of the research because it provides more than one perspective on the topic (Bouma, 2000). This section of the chapter reports the results of focus group discussions and in-depth interviews with AIS. These interviews were designed to follow-up on the issues and themes that emerged from the initial parallel surveys with AIS with two different groups of participants.

To determine the needs of the students, several techniques were available (e.g. questionnaires, individual interviews, focus groups, and so on). The number of students required to be interviewed in order to identify the majority of their needs is always an issue (Griffin & Hauser, 1993). In a typical study between 10-30 students is considered sufficient to identify most of the needs (Bayraktaroğlu & Özgen, 2008; Griffin & Hauser, 1993). Similarly, Cussler and Moggridge (2011) suggest about 15 interviews based on studies arguing that less than 10 interviews may not be enough to catch important information but more than 15 also result in little new information.

These authors also agree that individual face-to-face interviews are the best way to identify customers´ needs. Griffin and Hauser (1993) compared focus groups with individual interviews and concluded that despite some market research companies advocating group synergies as producing more and varied customer needs, that is not the case, and individual face-to-face interviews are also more cost-effective than focus groups.

The analysis of focus group discussions and in-depth interviews with AIS was thematic. Themes and patterns were sought in the data and each participant's responses were analysed under categories or themes which "[focus] on identifiable themes and patterns of living and/or behaviour" (Aronson, 1995, p. 1). The response from the focus group discussions was coded into data by dividing the text into small units and then assigning a label to each unit. "This label can come from the exact words of the participants [in NVivo coding]" (Creswell, 2007, p. 131). Creswell and Poth (2018) note that in thematic analysis, the researchers can have themes as families and then sub-themes as the children, which belong to that family. Therefore, the analysis in this chapter consists of overarching themes and under each theme, there are sub-themes to detail the interviewees' views about the social and academic experiences of AIS in the three Australian universities.

4.2.1. Selection of focus group discussion members

The participants for focus group discussions were AIS studying at the three participating universities. The participants were included for their levels of study, for example, undergraduate and postgraduate (master's and doctoral) programs. This was done to minimise the potential dominance of post-graduate students over undergraduate students, and to ensure interactive participation among the group members. Research examining students' choice processes of university course selection used 23 students as focus group members (Brown et al., 2009). As noted in Chapter 3, the appropriate sample size of a focus group varies depending on purpose. A review of the literature found that an appropriate size for a focus group ranges between four and ten individuals (Ahmed et al., 2015; Gates & Statham, 2013; Krueger & Casey, 2015; Mohammed, 2018; Wiklund et al., 2014; Zikmund et al., 2013). For

example, Krueger and Casey (2015) indicate that an appropriate number consists between five to ten. Crowe et al. (2017), Luo (2015), and Wang et al. (2017) have argued for a range between six to twelve participants, while others like El-Gohary et al. (2013) and Sim (1998) have proposed eight and twelve participants respectively. Another point that was taken into consideration in this study was the number of focus groups or focus group sessions needed to collect sufficient data. Studies such as Morgan's (1988) and Stewart et al. (2007) suggest that three groups are needed based on the presence of distinct population segments. For this research, a larger number of groups was considered, with four to six participants in each focus group.

Thus, for this study, there were eight, nine, and six undergraduate, master's degree and doctoral students, respectively, in four focus group discussions in this study. The members of these groups could be selected using non–probability sampling techniques (Babbie, 2007). Studies also suggest that both the convenience sampling technique (Gatfield et al., 1999) and the purposive sampling technique, which are some types of non-probability sampling chosen for expediency or simplicity (Punch, 2005) are useful for the selection of focus group members. This study design included four focus group interviews (Appendix C provides the demographics of the participants) at the main campus using both convenience and purposive sampling as per the suggestions of these studies. This approach also enabled conduct of the groups within budget constraints and time limitations.

The respondents had more than six months of experience at the three Queensland universities. Research shows that novices/beginners are lacking concrete insights with regard to service attributes (McGill & Iacobucci, 1992). As stated, the respondents for the focus group discussions were selected using convenience and purposive sampling techniques (Babbie, 2007; Gatfield et al., 1999; Morgan, 1997; Punch, 2005). The focus group discussions included the representative members (for example, AIS in both levels undergraduate and postgraduate) of the larger population in order to avoid possible bias. In this context, one study suggested that:

> In selecting participants for a focus group project, it is often more useful to think in terms of minimizing sample bias rather than generalizability. Focus groups are frequently conducted with purposively selected samples in which

> participants are recruited from a limited number of sources (often only one) (Morgan, 1997, p. 35).

Following the recommendations of previous studies, this study included representative individuals of the greater population in each of these groups (Morgan, 1997; Stewart et al., 2007).

4.2.2. Designing the topic for discussion

The use of focus group discussions in this study allowed insight into the requirements of university students. This exploratory approach was used in the current study for identifying different themes as well as the association between various identified themes. Using a facilitator or moderator for this type of investigation may bias the findings in that the cues provided by the moderator, knowingly or unknowingly, inform the group what information is desired and can lead to group consensus on a particular issue (Stewart et al., 2007). In addition, hiring a moderator can be time-consuming and increase the cost of the research project substantially (Morgan, 1997). Hence, the research carried out focus group interviews in an unstructured manner. The researcher asked broad questions of each of the focus groups (Zeithaml et al., 1993). First, the respondents were told about the research aims, and the tasks they would perform during the focus group discussion. This was followed by presenting broad and open–ended questions to the focus groups:

- What are the most important factors that affect student satisfaction?
- Which are important factors that are related to academic or social experiences?
- How do you evaluate service quality in your university?
- What are the critical quality aspects of this university?

Third, to facilitate the discussion and to keep it compact within the aim of this study, the researcher summarised the discussion when necessary during each of the interviews. This allowed participants to focus on the content of the discussions. The discussions were recorded using an electronic device. On average, each discussion took 45 minutes.

4.2.3. Conducting focus group discussions

Aldhaban (2016) and Gururajan et al. (2015) emphasised the use of focus group discussion for collecting data for the research. The aim of conducting a focus group session is to gather qualitative data through focused discussion of a topic (Krueger & Casey, 2015). Researchers in focus group discussions should be as flexible as possible to enable the members' discussion to guide new topics and points of interest and to shed light on them (Litosseliti, 2003). The main objective of conducting focus group discussion is to identify novel themes and problems and to present detailed clarification of each identified problem. This was achieved in this study by conducting focus group discussions for about 60-90 minutes and analysing the obtained data (Cooper & Schindler, 2011; Krueger & Casey, 2015). Ahmed et al. (2015) have previously addressed optimal processes for conducting and analysing focus group discussions, which involve a researcher firstly determining the number of participants, followed by the date, time, and place. The subsequent steps in conducting this research involved data collection, introduction and clarification of research objectives revealed during the focus group session, statement of research questions, discussion of the research topic and its conclusion. Finally, the data was evaluated and results prepared.

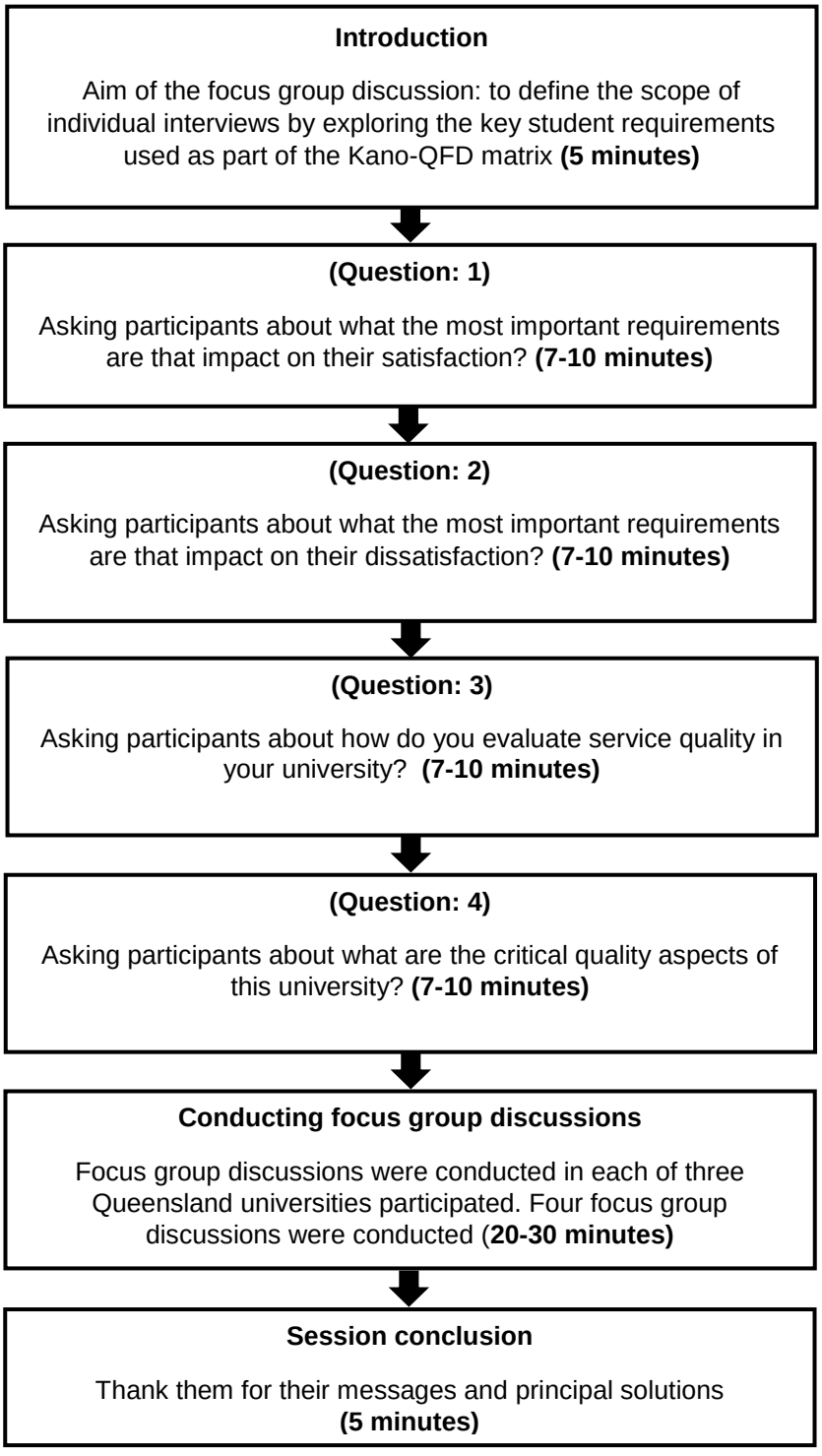
In this study, the focus group session was conducted to confirm the questions and to define the scope of the individual interviews. The focus group session occurred in a meeting room at the University of Southern Queensland's Toowoomba campus. The focus group discussion lasted 70 minutes. The facilitator arrived an hour prior to the starting time to prepare all required materials such as writing materials, refreshments, and recording devices. The facilitator had approached participated Queensland universities in advance with an information sheet for the project, including the research objectives. This enabled the prospective respondents to be fully informed about the nature of the research before being involved in the focus group session. Once they agreed to participate, further details were provided as well as the consent form. The participants needed to read the consent form and sign it. The participants were advised that they could withdraw at any time without consequence.

The focus group session began with a short introduction where the moderator and the facilitator welcomed participants by introducing themselves and the research topic. A quick summary explanation of the purpose of the session was supplied and the 23

participating students (18 males and 5 females) from the three Queensland universities, were then asked to introduce themselves before the formal discussion began. This took about five minutes. Four questions were designed to collect about 55-60 minutes' worth of information on the scheduled day (Figure 4.3). Answering these questions was sufficient to confirm the findings of the scope of individual interviews, while working towards the first research objective. This process assisted with determining the themes related to the requirements of AIS. As mentioned earlier, each round ideally requires five minutes for each participant to answer (Börekçi, 2015).

The 23 participants were divided into four separate focus group discussions and shared their thoughts and information, for about 55-60 minutes, around the main requirements of AIS in their university. The moderator encouraged the participants to share their final thoughts and views prior to the conclusion of each focus group session. The session was terminated by the moderator and facilitator appreciating the time and effort invested by the participants. The significant discussion at the focus groups indicated that the participants experienced a sense of motivation and association with the research topic. Following each session, the researcher evaluated the details and formulated a synopsis of events prior to undertaking the procedures for transcription. The focus group discussions were audio-recorded in MP3 format and then transcribed, without the spontaneous character of the speech being eliminated. The processes of different parts of the focus group discussion and the time spent on each part has been depicted in the following diagram.

Figure 4. 3: The schedule of the focus group discussion



Source: Developed for this research.

4.2.3. Focus group implementation considerations and challenges

Mohammad (2018), whose study was based on similar lines to this study, observed that focus group data may prove to be more challenging to analyse than individual interviews. He identified five issues that were taken into account in this study:

- Group dynamics can potentially influence the responses of the participants, as noted by Masadeh et al. (2016) and Saether and Mehus (2016).
- Environmental and social contexts may also potentially influence comments in a negative direction, which was observed by Besen-Cassino (2017), Goyder and Shickle (2016).
- Skewing of the focus group's dynamics and responses due to the domination of the discussion by vocal participants.
- Logistical difficulties arising from getting participants in one place at one time along with the use of focus group facilitation techniques.
- Participants may not feel that their responses may not be fully representative or capture the view of the target population because their experiences and opinion are simply their own (Cochran et al., 2016; Giles & Adams, 2015; Mandić et al., 2013; Masadeh et al., 2016).

To address these issues, like Mohammed (2018):

- The number of focus groups was restricted to a single session for each group, which was deemed sufficient in terms of identifying key issues to use in the development of the Kano analysis instrument and of the questions to ask during individual interviews (e.g., Dilshad & Latif 2013; Gururajan et al. 2014; Torres & Carte 2014).
- The researcher invited participants enrolled that the three universities who came from different Arab countries to provide a wider representation from the Arab world. Participants were graduate and post-graduate students enrolled in different courses (programs) within their universities.
- The researcher led the focus group session based on his "negotiation management" experience while a supervisor at the Ministry of Trade in

Baghdad. This provided the participants with a degree of familiarity that increased their comfort with the focus group process.

- The researcher, as moderator, ensured that equal time was provided to all participants to minimise "monopolization" of the session by any one or two individuals. The sharing of experience was encouraged and emphasised, which increased participant attention and the amount of sharing of experiences by the participants, findings reflecting results from other studies (e.g., Goldenberg & Wiley, 2011; Kornish & Hutchison-Krupat, 2017; Litcanu et al., 2015).
- All focus group meetings were performed face-to-face.

After the sessions, transcripts were made and provided to participants for review. The opportunity was given for them to make revisions. Generalisation of results occurred from comparing the responses from the three different universities and these were then converted into items based on the Kano survey method that was provided to AISs at all three Queensland universities.

4.3. The grouping and preliminary items

The main goal of using the QFD matrix in the education system was to align the quality parameters with the satisfaction of student needs. How well a QFD house of quality meets this goal is by ascertaining its potential to fulfil a student's identified needs can be ascertained by exploring its potential to fulfil that student's identified needs. Therefore, the first step to ascertain the quality of a university in meeting these needs is to identify the university's student requirements, which are referred to in the list of parameters, and are generally referred to as the WHAT's that students expect during or after completion of their course work (Singh & Rawani, 2019).

When AIS move from their home countries to a different country, they encounter a variety of challenges and difficulties, both academic and social, as they adjust to a new environment (Alharbi & Smith, 2018; Burke & Wyatt-Smith, 1996). What they require does change over time, but these requirements are based on intrinsic expectations and needs that influence their choices and actions (Madzík et al., 2019) relating to university selection and experiences after enrolment. A variety and complexity of student requirements are described in the literature. However, most of the responses

can be classified in general thematical categories found in the literature on university student needs and satisfaction. After identifying the students´ requirements it is necessary to structure them. To simplify analysis and application, the concerns obtained from the individual interviews are usually systematised in a tree like hierarchical structure (Dia et al., 2019), where some levels of customers' needs are formed and, depending on the specific situation, those at the more specific level are usually chosen to represent the customer needs.

A causal map (Eden, 1988, 2004) represents the issues/problems as the student perceives them and as the arrangement of a means-end network representation. The individual causal maps (cognitive maps) can be combined to give rise to a group map, and a post-it session can be used to cluster and link concepts. Other methods to organise the concepts into natural and logical sets are the affinity diagrams, or cluster analysis used to aggregate and structure the customer needs into a hierarchy representing increasing level of detail (Dia et al., 2019).

One type of student requirement of international students frequently found in the literature relates to issues of cultural differences and adjustment (Alsulami, 2018; Mostafa, 2006). There is great dissimilarity between Arabic culture and Australian and western cultures (Alsulami, 2018), which explains the importance of a social support network for AIS to manage their transition to a new culture, and the level of social support they experience (Alharbi & Smith, 2018). The role of universities within this social support network includes on the one hand promoting the awareness, understanding, and tolerance/acceptance of AIS and other international students' beliefs, cultures, and habits; while simultaneously promoting AIS and other international students' awareness, understanding, and acceptance/tolerance of Australia's cultural perspective (Figure 4.4).

Another type of student requirement is the university's reputation (Azmat et al., 2013; Foroudi et al., 2019) which is often more important than quality because it is the perceived image that actually influences the choice made by prospective students (Harahap et al., 2018; Kotler & Fox, 1995). A better reputation reflects the quality of the university. One reason why reputation is important is the potential to enhance career prospects (Harahap et al., 2018; Hasan et al., 2009; Lillyman & Bennett, 2014). Finch et al. (2013) found that the reputation factor of the university was crucial for

new graduates looking for jobs. Thus, every university strives to create a positive image and reputation in the face of competition with other universities (Harahap et al., 2018). 'Research quality' has a great influence on HE in terms of reputation, and learning experiences are critical for the student, including the facilitation of learning, teaching processes and the complexity of requirements. It is not possible for this study to point out all the requirements of students described in the literature. However, some of the more significant ones, which present relevant and frequently discussed issues regarding the quality of HE, are discussed.

One frequent theme in the debate about the quality of HE is "cultural differences and adjustment" (Alsulami, 2018; Mostafa, 2006). Although Australian culture is multinational, it differs from the Arabic culture (Alsulami, 2018) in a number of distinct ways that impact on learning and expectations of HEIs. To enrich the learning and cultural experiences of Arabic students at Australian universities, it is essential for both domestic and international students to understand and accept each other's beliefs, culture, and habits. Whilst awareness is developed through the culturally diverse nature of Australia in general, social support networks are an important means for AIS to manage their transition to a new culture and have been found to positively impact the level of social support experienced by students (Alharbi & Smith, 2018).

The other key requirement mentioned above, is reputation of the university. The reputation is based on attributes that address market accountability, including the current image. These current perceptions regarding reputation of an institution are critical for HEIs to consider, as choices made by prospective students have been found to be based on the perceived image or the university rather than measured performance indicators of quality that are used by accrediting bodies or international rankings (Hemsley-Brown & Oplatka, 2006; Kotler & Fox, 1995). One reason for the focus of students on perceived reputation is the potential it provides for them to enhance their potential career prospects (Lillyman & Bennett, 2014) on completion of their degree program. This can be a key motivator in selection above other indicators of quality.

Quality of teaching and learning, including research capability, are the other key factors of importance for HEIs (Lillyman & Bennett, 2014; Taylor, 2011). This includes educational methods and teaching techniques that should satisfy international education requirements (Larina, 2015) and also meet the learning needs of

international students. The resourcing of teaching and learning is also often discussed. Specifically, the provision technological resources and the educational use of ICT is generally accepted as beneficial to the learning experience of students (Ahmad, 2015; Cosh & Hughes 2009).

Related to the teaching and learning environment, English-language proficiency is an extremely important enabler of positive learning outcomes for international students, particularly those from non-English speaking background countries. It is a clear enhancement factor or potential barrier to the adjustment of AIS living and studying in Australia (Alharbi & Smith, 2018; Alsahafi & Shin, 2017; Lillyman & Bennett, 2014; Volet & Ang, 2012), as language barriers can hinder the sociocultural adaptation and academic achievement of international students (Cowley et al., 2017; Smith & Khawaja, 2011). A lack of proficiency in English often causes great difficulties in their studies, such as confusion, misunderstandings, anxiety, stress concerning participation and presentations, and difficulties with the course and program content (Lillyman & Bennett, 2014; Townsend & Jun Poh, 2008).

For postgraduate research students, the supervisory relationship between a student and their academic supervisor is a crucial issue because it is highly valued in Arabic countries (Mostafa, 2006). Arab graduate students, like other international students, appreciate the relative informality of the academic relationship as it provides scope for discussion, and assists with their sociocultural adjustment too, in addition to enhancing academic outcomes (Mostafa, 2006; Todd, 1997). Evans and Stevenson (2010) indicated that the quality and nature of the supervision relationship was the most important factor influencing the learning experience of international students.

Pragmatically, facilities associated with the accessibility of physical resources that contribute to conduct of academic and non-academic activities play an important role in influencing of choice of study destination for any international student (Farahmandian et al., 2013; Jupiter et al., 2018). Related to this resourcing requirement, since HE provides services based on interpersonal contact, quality of staff also plays an important role (De Paola, 2009). Another significant aspect that influences student satisfaction within a university is the accessibility of financial assistance such as scholarships and loans, and tuition costs (Farahmandian et al., 2013).

Finally, in the case of quality of HE, there is also debate about the consideration of the university about its values, based on their principles of responsibility, or more generally, about their ethical orientation (Dean & Beggs, 2016; Taft & White, 2007). Ethical orientation represents a basic orientation which includes utilitarianism, justice and honesty, duty and responsibilities, cultural recognition, and self-interest, through individual ethical decision-making (Douglas et al., 2001; Uyar & Özer, 2011). Ethical orientation has four dimensions: justice, deontology, relativism, and teleology (Uyar & Özer, 2011).

Whilst each of these requirements are necessary, it important to note that the quality or preference of HEI is not only determined by these quality elements (Madzík et al., 2019). Many sources propose that the quality of education is multidimensional and influenced by many internal and external factors (Taylor, 2011). However, the elements of quality discussed represent a selection of technical and practical approaches that align with those aspects found in the work of other researchers, such as Owlia and Aspinwall's (1996). This set of elements is therefore considered sufficient to indicate requirements of AIS for the illustration purposes of this study. Implementation of the integrated Kano model into the QFD matrix in the context of education—particularly higher education institutions—can offer interesting results with respect to trends in the quality of HE. This study therefore aims to present the use of the Kano-QFD model to achieve a better understanding of the aforementioned requirements' influence on the quality of HE from the perspective of students, the key university customers.

In order to listen to the VOC, 19 semi-structured individual face-to-face interviews were carried out. During interviews, students were asked questions about both main types of requirements such as "What are the most important of your academic requirements?", or "What would you like to see improved on the social requirements and why?" Cognitive maps were built during each individual interview, as well as a group causal map in which all the identified individual requirements were considered. The group causal map was validated by a smaller group of three students, who were also the decision group for the subsequent phases.

The VOC was represented with the help of 14 customer requirements (CRs). This was followed by evaluating each CR against two weighting references. The group was

questioned as follows: “If you could improve the performance from neutral to good in only one CR, which one would you select?” The answer to this question allowed the identification of the CR with the most relevant “neutral to good” swing, to which the highest weight was then assigned. Similar questions were asked concerning the remaining neutral to good swings not yet selected, to obtain a complete ranking of the CR swings. The subsequent step involved asking the group for qualitative judgments about the attractiveness of neutral to good swings of various CRs.

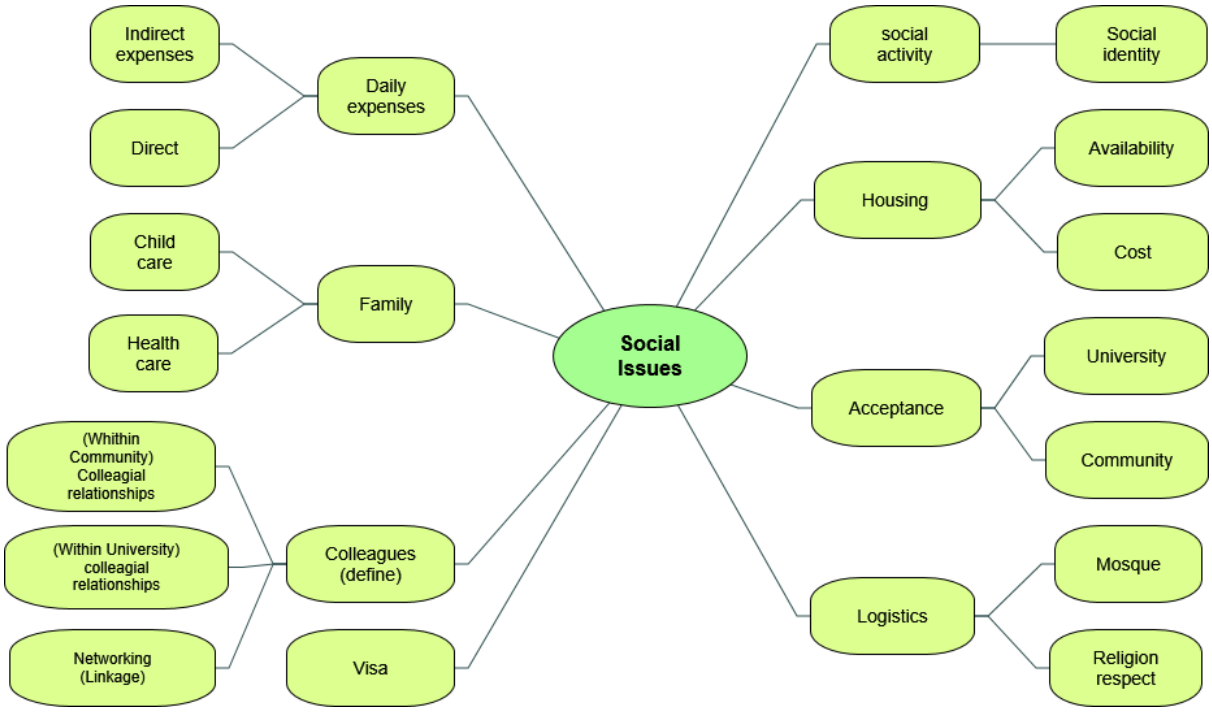
Also, educational methods and teaching techniques should satisfy international education requirements (Larina, 2015). “Quality of resources”, intended to support “Research quality”, is often discussed. Specifically, the educational use of ICT is generally seen to be beneficial to the learning experience of students (Ahmad, 2015; Cosh & Hughes 2009). “English-language proficiency” is the most important enabler of positive learning outcomes for international students, particularly from non-English speaking background countries. It is a clear factor and potential barrier to the adjustment of AIS to living and studying in Australia (Alharbi & Smith, 2018; Alsahafi & Shin, 2017; Lillyman & Bennett, 2014; Volet & Ang, 2012), as language barriers, can hinder the sociocultural adaptation and academic achievement of international students (Cowley et al., 2017; Smith & Khawaja, 2011). Often their lack of proficiency in English causes great difficulties in their studies, such as confusion, misunderstandings, anxiety, stress concerning participation and presentations, and difficulties with the course and program content (Lillyman & Bennett, 2014; Townsend & Jun Poh, 2008). Besides, the “Supervisory relationship” between a student and their supervisor is a crucial issue because it is highly valued in the Arabic countries (Mostafa, 2006). Arab graduate students, like other international students, often appreciate the relative informality of the academic relationship as it provides a scope for discussion, and it allows them to easily adjust to the relationship (Mostafa, 2006; Todd, 1997). Evans and Stevenson (2010) indicated that the quality and nature of the supervision relationship was the most important factor influencing the learning experience of international students, particularly postgraduate students. Furthermore, “Facilities” is associated with the accessibility of physical facilities that protect academic activities as well as non-academic ones. It plays an important role in influencing choice of study destination for an international student (Farahmandian et al., 2013; Jupiter et al., 2018). Since HE is a contact type of service, “Quality of staff”

also plays an important role (De Paola, 2009). Another significant aspect that influences student satisfaction within a university is the accessibility of "Financial assistance and tuition costs" such as scholarships, loans and tuition costs (Farahmandian et al., 2013). Finally, in the case of quality of HE, there is also debate about the consideration of the university in terms of its values, based on their principles of responsibility, or more generally, their "Ethical orientation" (Dean & Beggs, 2016; Taft & White, 2007).

The perception of the quality of curricular and co-curricular education offerings and learning experiences depends on numerous internal and external variables, not just the elements mentioned so far (Madzík et al., 2019; Press & Padró, 2022; Taylor, 2011). The elements discussed above, however, are considered sufficient in terms of illustrating critical requirements of AIS for the purpose of this study. Implementation of the integrated Kano-QFD matrix in education—particularly higher education institutions—can, with respect to trends in the quality of HE, offer interesting results.

This study aims to present the use of the integrated Kano-QFD model to achieve a better understanding of the aforementioned requirements influencing the quality of HE from the perspective of students—the key university customers. Figures 4.4, 4.5, 4.6, 4.7, 4.8, and 4.9 show the grouped issues of the AIS, which reflected the main student needs or requirements drawn from the focus group discussions at the three Queensland universities.

Figure 4. 4: Social issues – results preview



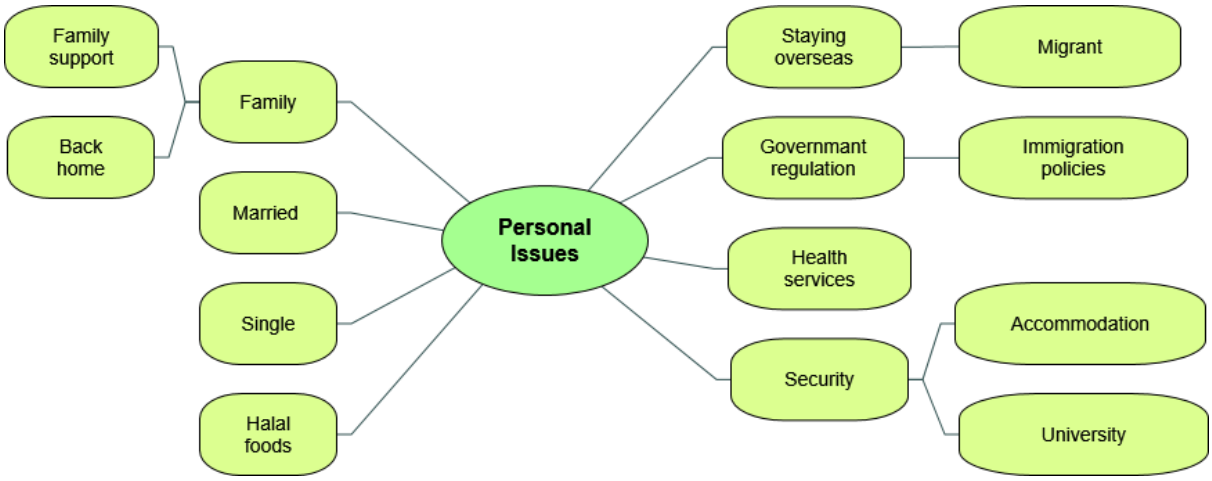
Source: NVivo output.

Referring to Figure 1, in relation to the requirements issues and the variables identified in the selection of study destinations abroad, we can see that the influence of institutions is the dominant influence in student decision making. As such, the university should manipulate the variables and apply them in its internationalization strategy and promotion strategies to increase the attraction of international students into the country.

Figure 4. 5: Academic issues – results preview

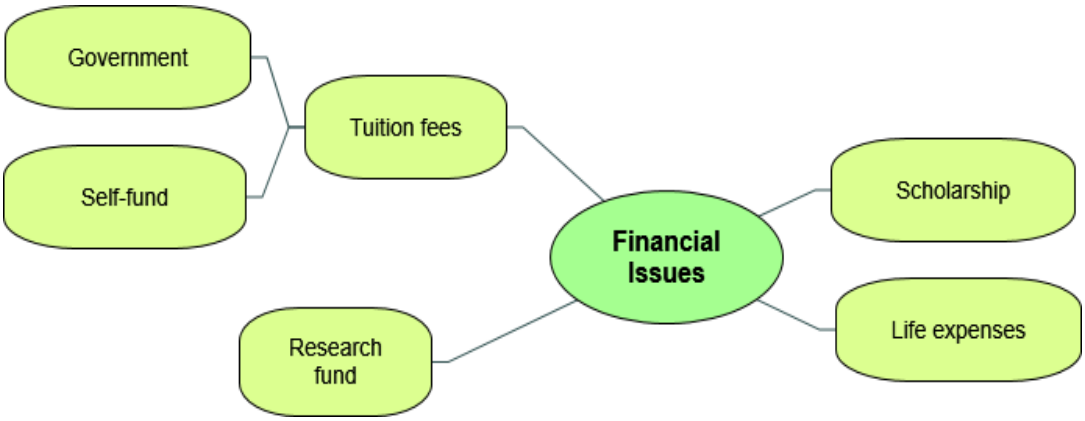
Source: NVivo output.

Figure 4. 6: Personal issues – results preview



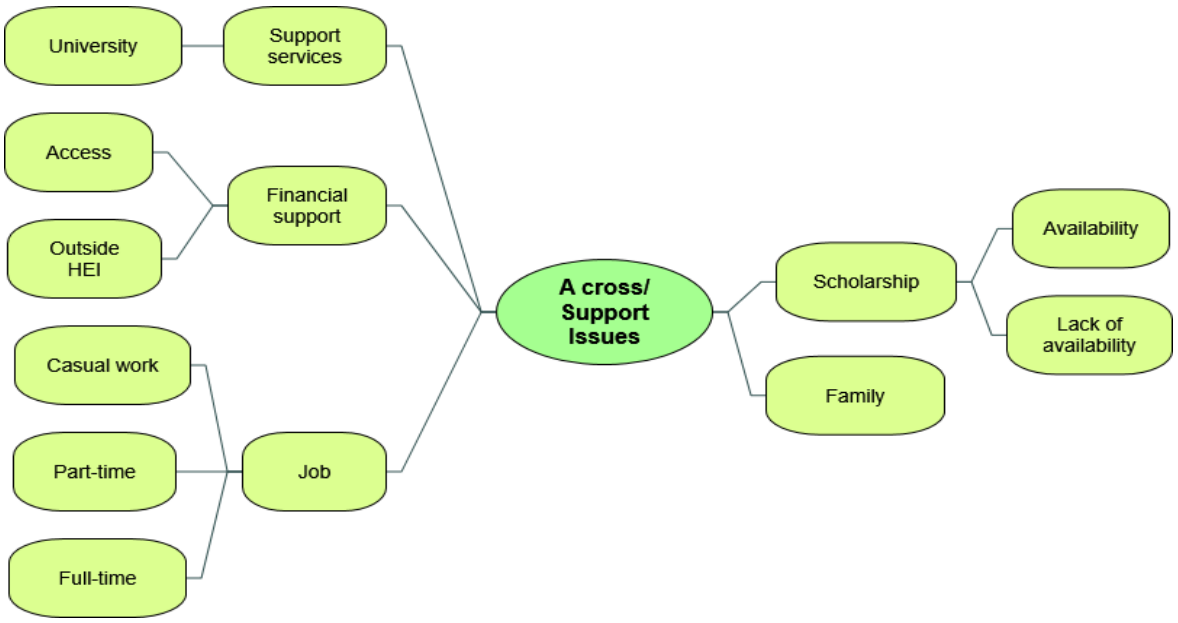
Source: NVivo output.

Figure 4. 7: Financial issues – results preview



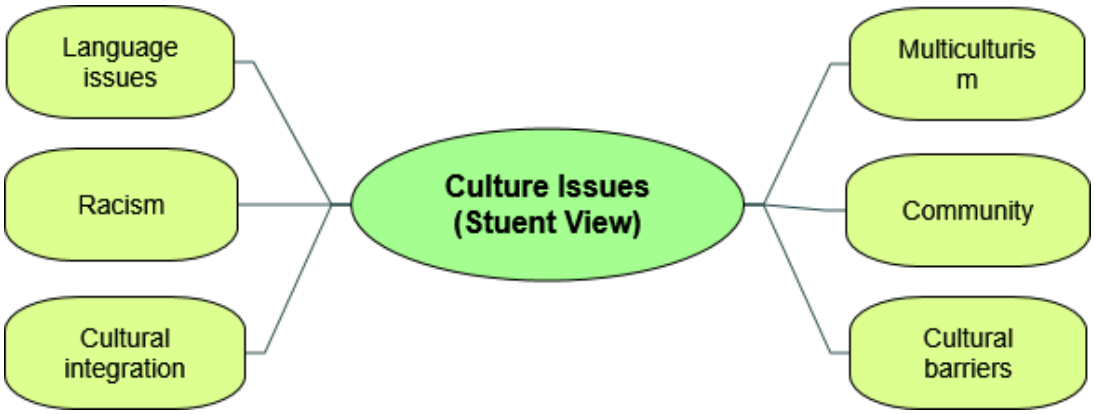
Source: NVivo output.

Figure 4. 8: A cross support issues – results preview



Source: NVivo output.

Figure 4. 9: Media issues – results preview



Source: NVivo output.

4.4. Pre-test of the Kano survey

To finalise the survey instrument a pre-test was required to examine the questions developed for it and to improve the overall structure of the questionnaire (Zikmund et al., 2013). Furthermore, pre-testing was conducted to ensure that participants understood and responded well to the discussion questions and statements (Kai-Wen, 2014). Another pre-testing aim was to obtain some practical experience of activities to be performed in the qualitative data collection (Hurst et al., 2015). Therefore, pre-testing included both focus group discussions and individual interviews with nine AIS in the two months prior to commencement of data collection with participants. Pre-testing participants were recruited as per their willingness to participate in this research.

In this pre-testing the participants' suggestions, comments, and feedback for the questions provided in the Discussion Questions Guide were obtained. These inputs helped to bring greater clarity and simplicity to the questions provided in the Discussion Questions Guide. Initially, pre-testing was conducted with two participants who were competent in English to ensure the face validity of the questions. Their comments included a few grammatical mistakes, layout issues, and rephrasing of questions. In pre-testing the participants' suggestions, comments and feedback to the questions provided in the Discussion Questions Guide were obtained. These inputs helped to bring greater clarity and simplicity to the questions provided in the Discussion Questions Guide. Initially, pre-testing was conducted with two participants to ensure the face validity of the Discussion Questions Guide. These two participants were competent in English. Their comments included a reference to a few grammatical mistakes, layout issues, and rephrasing of the questions. An example comment is as follows:

> *'Instead of using "advisor" use lecturer and supervisor in the academic statement (SR5) of student requirements'.*
>
> *'Try to follow a logical sequence for the demographic questions so that if question A is not applicable to a participant then he/she need not browse through the other questions which are linked with question A.'*
>
> (Source: Pre-testing comments)

In response to the feedback, the Discussion Questions Guide was revised accordingly. A further sample of nine respondents comprising university students and professionals were selected and, as with the discussion question guide, the survey was conducted at their university and workplaces respectively. The key objective of this exercise was to evaluate the survey questionnaire for clarity of the questions and identify any potential bias. Furthermore, these respondents were requested to make recommendations about the language and the time taken to complete the survey (Zikmund et al., 2013). Findings from the pre-test revealed that the majority of the participants had no issues with the survey questionnaire. However, a few reported that some questions were similar in the way they were phrased and that this might create confusion. Some also reported that the questionnaire was lengthy, due to its large number of questions that were repeated for both positive and negative statements.

4.4.1. Survey instrument validity

To ensure that the questions compiled for the study were as valid as possible, the researcher implemented the survey validation process, though face validity or surface validity was further assessed as a supplemental form of validation step in order to increase the research quality. It is a subjective and superficial assessment of the measurement instrument (Drost, 2011). For this purpose, the survey instrument was pre-tested using non-participant individuals consisting of university researchers and postgraduate research students at USQ. This included inviting an experienced reference group, who were specialists in cross-cultural communication and research methods, to scrutinise the survey. This validation process confirmed the face and content validity of the survey items prior to the pilot of the instrument. Feedback was requested from this reference group in relation to the:

- survey instrument Likert-scale design;
- estimated survey completion time;
- languages (English and Arabic) for items to be used in the survey instrument;
- clarity of the items in the way the questionnaires were written and relevance of content;

- improvements in the format of the survey in terms of words used, grammar, font type and design;
- quality and scope of items and Likert scale categories;
- construction of the items asked to maximise participants' opportunity to respond; and
- whether language used is culturally appropriate for the intended participant group.

Critical feedback was provided by the reference group about the language, translation, concepts, and the appropriateness of the formation of questions to extract the best quality information, taking account of cultural issues and sensitivities. Based on the feedback, the researcher modified some statements to clarify and improve the validity of the survey design. The first version of the questionnaire was administered online to pre-test the instrument among ten Arabic students who were non-research participants. Pre-testing the survey helped the researcher (1) to estimate the survey completion time, which was approximately ten minutes; and (2) to improve the appearance of the survey in terms of spelling, grammatical errors, scale re-arrangement, font type and design, and structure of the sentences. Participants in this pre-testing were requested to maintain their confidentiality in regards to the survey and not to participate if they received the link from their institution for the actual survey. This ensured that there was no overlap between participants in the trial and the actual research sample.

4.4.2. Survey instrument reliability

Reliability (or consistency) assesses consistency of a measure over time. The central concept of reliability is that the set of items being measured is stable as a measurement scale. The assumption is that an instrument with a relatively small error will produce reliable data (Osborne & Waters, 2002). However, no measurement instrument is perfect and every instrument has a tendency to produce some degree of error. Among the main source of errors is participants' behaviour (Drost, 2011), which the researcher has little control over. Therefore, if possible, a relatively stable instrument with high-reliability results needs to be achieved to ensure good research quality. The Cronbach's alpha test and composite reliability are the common methods for assessing

measurement instrument reliability. Steps taken before the actual data collection to assure the reliability of the survey instrument included the involvement of a reference group to provide feedback during the development of the survey instrument.

Before the actual data collection, to ensure the reliability of the survey instrument, the researcher's recruitment of a reference group in the development of the survey questions, and the subsequent trial of the survey with a small sample of Arabic students to check its accuracy and to get trial answers, made a major contribution to both the validity and reliability of the items. The modification of questions following the pilot feedback helped to improve their clarity and in turn, the reliability of the data collected from students by ensuring their shared interpretation and understanding. Therefore, the survey instrument questions were carefully edited to be phrased clearly and unambiguously so as to ensure they met necessary standards of reliability as outlined by Kuh (2001). The AIS involved in the trial were a similar demographic to those in the actual survey, thus contributing to the survey reliability. Based on the pilot feedback, it was decided that the survey needed to be in both Arabic and English languages to further contribute to decreasing errors and increasing accuracy (Kuh et al., 2001). This was done by the researcher since the researcher is bilingual in Arabic and English.

Following the completion of questionnaires by participants, a statistical test of reliability of responses was carried out. The positive and negative statements were tested separately. The main indicator of reliability selected was Cronbach alpha to measure the consistency of the questionnaire of constructs that are not directly observable. Cronbach's alpha coefficient was used in this study to measure the internal consistency of the questionnaire items. Hair et al. (1998) assert that although the alpha coefficient lacks a standard absolute value, ideally, Cronbach's alpha should be around 0.8 to 0.9. However, an alpha coefficient of 0.7 is accepted as the reliability standard (Tavakol & Dennick, 2011) for most research purposes. Wortzel (1979) stated that a reliability coefficient of 0.6 is acceptable, even though one between 0.7 and 0.98 is preferred, but it is universally agreed that coefficients lower than 0.35 should be rejected (Biasutti & Frate, 2017).

In this study, the values of the Cronbach's alpha coefficients were calculated for the four parts in the questionnaire (Kano's functional form of the statement, Kano's

dysfunctional form of the statement, total functional items, and total dysfunctional items). Table 4.1 shows there were 14 functional items and 14 dysfunctional items used to develop the Kano survey questionnaire at three Queensland universities.

Table 4. 1: Functional and Dysfunctional items of the Kano survey

Kano's two-dimensional	Questions/ Statements
1. Functional	The way courses are taught by my university allows me to learn what I need to know.
1. Dysfunctional	The way courses are taught by my university does not allow me to learn what I need to know.
2. Functional	My university has learning spaces that are conducive to optimising my learning and/or research opportunities.
2. Dysfunctional	My university does not have learning spaces that are conducive to optimizing my learning and/or research opportunities.
3. Functional	Getting a degree from my university will help me become employed in the type of job I want.
3. Dysfunctional	Receiving a degree from my university may not assist me in getting the type of job I want.
4. Functional	Learning resources at my university are sufficient to meet my learning and/or research needs.
4. Dysfunctional	Learning resources at my university are not sufficient to meet my learning and/or research needs.
5. Functional	I am able to meet with my advisor or supervisor as needed and I get useful feedback from my interactions with them.
5. Dysfunctional	I am unable to meet with my advisor or supervisor when I need to and the feedback I receive from my interactions with them is not helpful.
6. Functional	The reputation of the academic staff in my area of study and of the university as a whole were major reasons for my selecting to enrol at my university.
6. Dysfunctional	My choice of university was not based on the reputation of the academic staff in my area of study or my university's overall reputation.
7. Functional	Academic and non-academic support services and outside the classroom experiences at my university have enhanced my learning experience.
7. Dysfunctional	Academic and non-academic support services and outside the classroom experiences at my university did not enhance my learning experience.
8. Functional	I am able to integrate myself into the university because I feel welcomed and accepted by all members of the university community.
8. Dysfunctional	I am unable to integrate myself into the university because I do not feel welcomed or accepted by all members of the university community.
9. Functional	I am accepted, understood and welcomed by the community outside my university (where it is located), which allows me to maintain a healthy and positive lifestyle based on my beliefs and values.
9. Dysfunctional	I cannot maintain a healthy and positive lifestyle based on my beliefs and values because the community in which my university is located does not make me feel welcome because they do not seem to accept and understand my different lifestyle.
10. Functional	My university makes the entry regulation requirements to Australia easy to understand and manageable, making the process of becoming a student easier.
10. Dysfunctional	My university does not make the process of completing the entry regulation requirements to Australia sufficiently uncomplicated for an international student to enrol at this university.
11. Functional	I am able to manage paying for all of my direct education expenses as well as related costs to attend my university.
11. Dysfunctional	I am not able to manage paying for all of my educational costs either direct educational expenses or as related costs to attend my university.
12. Functional	I manage to meet my financial obligations through receiving financial assistance that is available through my university.
12. Dysfunctional	I manage to meet my financial obligations without receiving financial assistance that is available through my university.
13. Functional	On-campus facilities influence my learning experience.
13. Dysfunctional	On-campus facilities do not influence my learning experience.
14. Functional	My family and I are able to fit in and have our needs met because of what the community has to offer us.
14. Dysfunctional	My family and I are not able to fit in and have our needs met because of what the community has to offer us.

Source: Developed for this research.

Kano's two-dimensional student requirements items ranged from 0.819 to 0.887, and were therefore not lower than 0.7 (Nunnally, 1978; Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011). Apart from the university services design construct, all the remaining coefficients' results exceeded the recommended level of 0.6, suggesting that

the students' needs scale and the questionnaire achieved acceptable reliability. Table 4.2 shows outcomes distribution of reliability for items of students' requirements (academic and personal requirements).

Table 4. 2: Distribution of reliability of the student's requirements

Student Requirements (SRs)	Categories	Items in	Items out	Cronbach's Alpha Rate
Functional	Academic Requirements	8	8	0.876
	Personal Requirements	6	6	0.703
	Total Requirements	**14**	**14**	**0.887**
Dysfunctional	Academic Requirements	8	8	0.783
	Personal Requirements	6	6	0.679
	Total Requirements	**14**	**14**	**0.819**

Source: Developed for this research.

As can be seen in Table 4.3, all Cronbach's alpha for composite variables of functional and dysfunctional requirements were greater than 0.679, but the Cronbach's alpha value would be 0.819, if keeping all 14 items in the model, and this indicates that composite variables of total requirements were acceptable in their current form. The internal consistency of the scale was also checked by the iterative elimination of questions. These results can be found in Table 4.3.

As shown in the Table 4.3, the removal of individual statements would, in almost all cases, result in a decrease in the overall consistency. Only the third statement, SR3 'My university degree provides me with more job opportunities', was an exception to this. If item SR3 were ignored, Cronbach's alpha for the remaining items would be 0.87, and it can also see that the "Corrected Item-Total Correlation" value was low (0.548) for this item. That means, adding SR3 in the model did not increase the Cronbach alpha value that much, making it probably better to delete SR3 from this model does not increase the Cronbach alpha value much, making it better to delete SR3 this item.

Table 4. 3: Positive academic items (functional) overall statistics

Functional Items (Academic)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if item Deleted
SR1– positive	25.44	32.099	0.661	0.859
SR2- positive	25.32	30.956	0.718	0.852
SR3- positive	25.22	33.072	0.548	0.87
SR4- positive	24.9	29.19	0.671	0.859
SR5- positive	25.36	32	0.649	0.86
SR6- positive	25.84	31.883	0.584	0.867
SR7- positive	25.59	31.98	0.66	0.859
SR8- positive	25.43	32.771	0.629	0.862
Total				**0.876**

Source: Developed for this research.

Using the same procedure, the group of negatively formulated questions reached a higher value of Cronbach alpha, i.e., if the third or sixth items were ignored, Cronbach's alpha for the remaining items would be 0.769. The testing of the scenario of removing individual variables and subsequently calculating the reliability can be found in Tables 4.3 and 4.4.

Wilson (1989) asserted that although the alpha coefficient lacks a standard absolute value, an alpha coefficient of 0.7 is universally accepted as the reliability standard (Heilemann et al., 2004; Tavakol & R. Dennick, 2011), and items with an alpha coefficient lower than 0.35 should be rejected. Wortzel (1979) stated that a reliability coefficient of 0.6 is acceptable, but one between 0.7 (or 0.66) and 0.98 is preferred, and that coefficients lower than 0.35 should be rejected (Biasutti & Frate, 2017).

In this study, the values of the Cronbach's alpha coefficients concerning the importance of the four parts in the questionnaire (Kano's functional form of the statement, Kano's dysfunctional form of the statement, total functional items, and total dysfunctional items) are further explained in the data analysis in Chapter 5. Kano's two-dimensional student requirements items range were from 0.819 to 0.887, and were therefore not lower than 0.60 (Nunnally, 1978; Tavakol & Dennick, 2011). Apart from the university services design construct, all the remaining coefficients' results were

exceeding the recommended level of 0.6, suggesting that the students' needs scale and the questionnaire achieved acceptable reliability.

The table clearly indicates the decline in overall consistency with the exclusion of specific items. The only exception is the sixth item-SR6 (Quality Resources), after whose removal the total consistency would increase. This increase, however, would be relatively small, and the exclusion of the variable from the questionnaire would therefore be disputable. Similarly, a high Cronbach's alpha value of 0.638 was found for a set of inappropriate questions. Table 4.3 depicts the entire testing process of exclusion of specific variables individually and evaluation of the corresponding reliability.

Table 4. 4: Positive personal items (functional) overall statistics

Functional Items (Personal)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if item Deleted
SR9-positive	16.42	11.558	0.581	0.619
SR10- positive	16.59	11.942	0.52	0.638
SR11- positive	17.01	12.795	0.271	0.721
SR12- positive	17.38	12.938	0.287	0.711
SR13- positive	16.41	11.887	0.453	0.658
SR14- positive	16.68	11.864	0.562	0.627
Total				**0.703**

Source: Developed for this research.

As shown in this table, the removal of individual statements would, in almost all cases, result in a decrease in the overall consistency. The only exception is the third statement-SR3 My university degree provides me with more job opportunities, after whose removal the total consistency would increase. The increase, however, would be relatively small, and the exclusion of the variable from the questionnaire would therefore be disputable.

Table 4. 5: Negative academic items (dysfunctional) overall statistics

Dysfunctional Items (Academic)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if item Deleted
SR1- negative	15.62	20.349	0.418	0.771
SR2- negative	16.02	20.118	0.564	0.75
SR3- negative	15.91	20.66	0.429	0.769
SR4- negative	16.03	19.205	0.57	0.746
SR5- negative	15.73	19.709	0.52	0.754
SR6- negative	15.04	19.067	0.449	0.769
SR7- negative	15.53	19.3	0.543	0.75
SR8- negative	15.72	20.578	0.435	0.768
Total				**0.783**

Source: Developed for this research.

Cronbach alpha after the removal of the items was in no case higher than the originally obtained value of this variable. This showed that the range was consistent and therefore it was possible to proceed to further analyses (Tables 4.5 and 4.6).

Table 4. 6: Negative personal items (dysfunctional) overall statistics

Dysfunctional Items (Personal)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if item Deleted
SR9- negative	13.28	10.566	0.58	0.579
SR10- negative	13.14	10.792	0.577	0.583
SR11- negative	12.71	11.341	0.34	0.665
SR12- negative	12.5	14.019	0.021	0.764
SR13- negative	13.25	10.993	0.471	0.615
SR14- negative	13.13	10.881	0.593	0.58
Total				**0.679**

Source: Developed for this research.

4.5. Pilot study

It is always recommended to conduct a pilot study before introducing the final survey questionnaire to the respondents (Bell & Bryman, 2007). An essential component of sound research design is a pilot study. All types of research investigations must begin with a pilot study, which is a crucial first step. (Hazzi & Maldaon, 2015). Before the updated survey was administered in actual field research, a pilot study was conducted for evaluating the feasibility (in terms of time, cost and other adverse events) in an

attempt to improve the quality of the data collection method on a large scale (Polit & Beck, 2010). Also, the pilot study helped to (1) estimate sample size based on response rate, (2) try out the research instrument, and (3) check the reliability and validity of the trial results (van Teijlingen & Hundley, 2002).

The pilot study was conducted following the general procedure for anonymous survey research using an online survey technique for the advantages of shorter time and lower cost of survey delivery and data entry (Fan & Yan, 2010). The online survey was in English and developed on the University of Southern Queensland (USQ) Custom Survey System platform, which was administered by the Strategic Business Management & Improvement (SBMI) unit. Although AIS, a non-English speaking background cohort, the targeted research participants were considered well-educated people and predicted to have suitable English language competency needed to participate in the research in both Arabic and English languages.

4.5.1. Method

The pilot study was conducted on individuals among the targeted populations that were then excluded from subsequent actual survey instruments to avoid contamination or interference of the results (van Teijlingen & Hundley, 2010). To determine the sampling frame, the researcher contacted (via telephone) every research management office at all three public universities in Queensland to express the intention to conduct such research. Then, a formal letter of intent was emailed to each of the universities, together with information on the research, ethics approval, and sample of the survey. The universities' assistance was sought to provide a name list of the targeted participants with their email addresses. These documents were also posted to the universities as they required a hardcopy of the documents for their record.

Out of the three universities contacted, (1) one university advised participating Association community of AIS, (2) the second university agreed to participate and provided email addresses of AIS who are studying at this university, and (3) the third university allowed the researcher to visit the university physically and contact with AIS directly.

4.5.2. The outcomes

The pilot study questionnaire comprised 14 statement-based items, and the pilot study that used the online survey showed a low response rate, which resulted in a small size of reliable data. This outcome gave an early warning on potential weaknesses of the proposed research method about the survey strategy. The problems faced by the researcher in this pilot study were: (1) a total of 10 email addresses out of 45 (i.e. approximately 22%) were no longer valid, resulting in the email bouncing back, and (2) after four weeks of the survey invitation, only 15 participants responded in the pilot study which yielded a response rate of 3.3%.

The initial research plan was to use the online survey method for the quantitative study. Based on the pilot study outcomes however, it was decided that the online mode was not a feasible method for the survey administration. Although the online survey method offers superior advantages (in terms of lower cost, shorter time and easier administration) compared to other methods such as a mail survey, the adverse event of lower response rates is evidenced in online surveys (Fan & Yan, 2010; Kaplowitz et al., 2004; Manfreda et al., 2008). Indeed, the pilot study achieved the aim of feasibility assessment but not instrument validation. The researcher needed to address these weaknesses before proceeding with the actual research.

4.6. Material and methods

The most popular technique for describing the needs of the student is perception metrics. These metrics are frequently based on a questionnaire survey instrument (Madzík et al., 2019). The starting point of the Kano questionnaire is the identification and characterisation of the creation of the survey instrument, which will be held with research on student requirements. The sample consisted of Arabic students at both undergraduate and postgraduate levels who were studying at Queensland universities. The students' year of study was also recorded. The sample thus included first, second, and third-year students. Before commencing with the questions, a brief explanation was provided to the students regarding each of the 14 requirements being investigated to increase reliability and decrease the risk of misleading responses. The Kano model

is used to understand the requirements and identify them (Madzík et al., 2019). Some of the generally expected requirements, based on the literature review and personal experience, were initially identified in Section 1.3. This thesis later confirms that these are found to be critical requirements of AIS participants in this study. The approach taken by the researcher was similar to other studies integrating Kano methodology with other quality-based tools. Items within the Kano instrument used to collect data of respondent CRs looked at general attributes as a means of determining if more detailed information was needed as noted in studies conducted by Formánková et al. (2018), Gajewska and Zimon (2018), and Madzík et al. (2019).

Requirements within the area of AIS requirements were divided into two main groups, which were academic requirements and personal requirements. Subsequently, the researcher worked with these groups as separate requirements. Specifically, the following requirements were used: The first group was academic requirements (ARs), which were divided into four groups (see Table 4.1): AR1- Courses content; AR2- University reputation; AR3- Available resources; AR4- Educational facilities. The second group was personal requirements (PRs), which were divided into three groups: PR1- Culture activities; PR2- Student services; PR3- Other supports. A standard pair-wise Kano questionnaire was created for each of the requirements of the students. To achieve this pairing, every statement was elaborated in two formulations—a positive one (if a requirement was met) and a negative one (if a requirement was not met). The Kano methodology requires every requirement to be categorised according to the answers responding to a positive and negative question. Apart from two ID variables (field of study and year of study), the questionnaire contained no detailed questions to avoid the risk of low return rates due to a long questionnaire. The respondents then indicated the level of satisfaction they felt in a given situation. A five-degree scale was used, ranging from “Strongly Agree”, through “Agree”, neither satisfied nor dissatisfied “Neutral”, “Disagree”, and up to “Strongly Disagree”. Answers were consequently evaluated according to the revised evaluation sheet (Lee et al., 2011).

Each requirement for each respondent was located in one of the following categories: Attractive (A); One-dimensional (O); Must-be (M); Indifferent (I); Reverse (R); Questionable (Q). The total amounts of all the requirements allowed for them to be calculated into two separate indices—the Satisfaction Index (SI) and Dissatisfaction

Index (DI). In total, 401 respondents (students) were involved in the survey. The answers which were categorized according to the aforementioned methodology as questionable and reverse were not included in the calculation of SI and DI—as recommended by earlier studies (Juan et al., 2019).

Mikulić and Prebežac (2011) presented a comprehensive review of the techniques of classifying quality attributes into Kano categories. They compared the Kano method to other available techniques like penalty-reward contrast analysis (PRCA), importance grid technique (IGT), and critical incident technique (CIT). In comparison to the Kano method, each of the aforesaid methods has serious limitations. A summary of such methods and their limitations is presented in Table I (for details, see (Mikulić & Prebežac, 2011). In this study, three different methods have been used to classify the Kano categories. The first method was use of an excel sheet to collect the data as part of classifying the Kano categories (see Appendix F). This initial step was performed based on the recommendations from Dr. Peter Madzik[1] and Professor Süleyman Barutçu[2]. The second method involved performing an assessment of the data acquired by the Kano instrument based on frequencies for each of the categories. The third method used the M (must be) >O (one-dimensional) >A (attractive) >I (indifferent) rule. The results derived from each of these three methods were consistent. Consequently, upon comparing the three methods for creating a Kano classification, the researcher decided to adopt the Kano excel sheet to determine the Kano categories at the three Queensland universities due to its ease and accuracy.

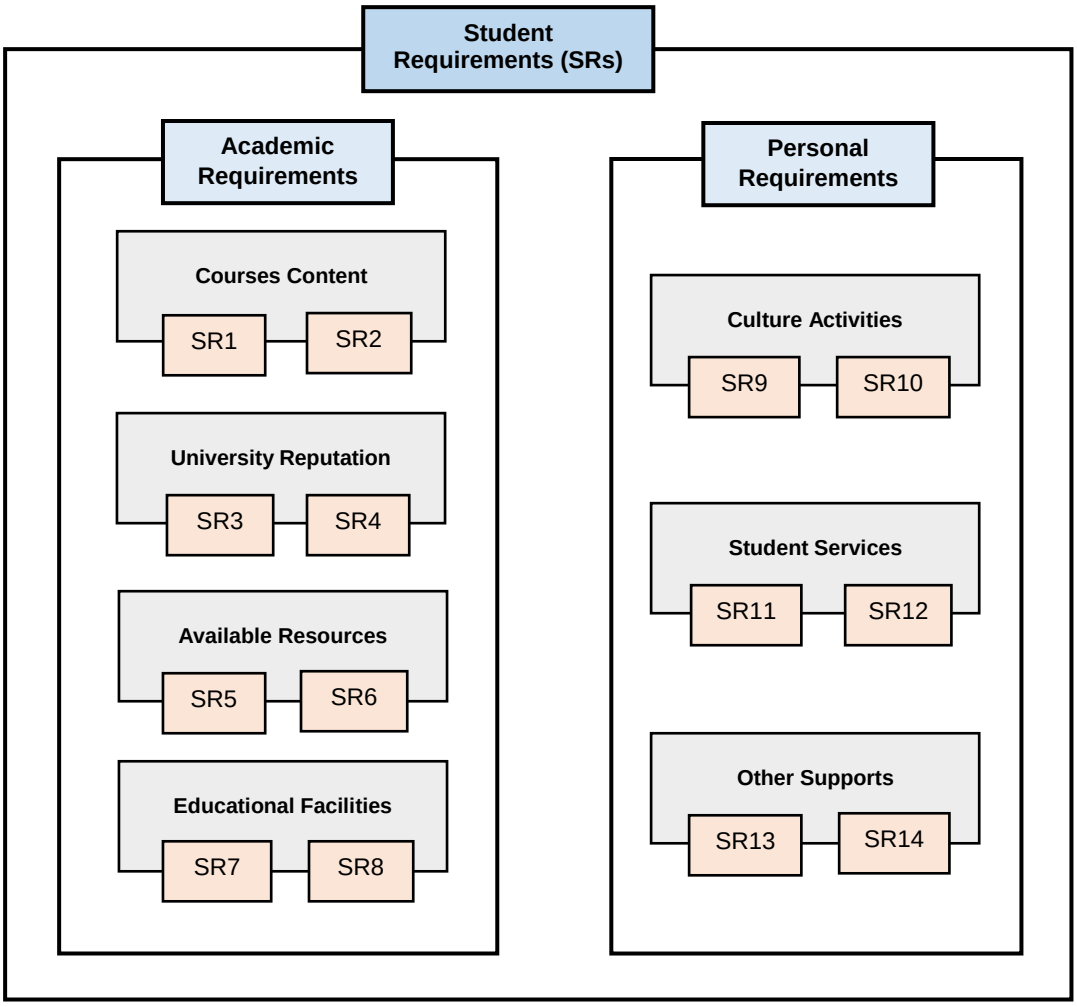
As Mikulić (2007) observed, there have been a number of studies of TQM that have used the Kano model. According to Mikulić and Prebežac (2011), Kano's model is "logically valid for the assessment of customer feelings regarding a particular product/service attribute if the fulfillment (or non-fulfillment) of that attribute is clearly defined" (p. 49). It explores the instrumentality of quality attributes and customer satisfaction with those quality attributes (Witell & Löfgren, 2007). Initially, Kano's model was developed to understand product quality (Kuo et al., 2016). However, it has subsequently been used to understand service quality also. The SRs

[1] Dr Peter Madzik – Catholic University, Slovakia.

[2] Prof Süleyman Barutçu - Pamukkale University, Turkey.

were grouped (academic and personal requirements) using an affinity diagram – a tool that offers structure to the creative process by organising the ideas in a way that allows the institutional developers to discuss, improve, and collaborate with the participants (Awasthi & Chauhan, 2012), as shown in Table 4.7.

Table 4. 7: Affinity diagram for SRs



Source: Developed for this research.

Tables 4.8 and 4.9 showed the final groups of the student requirements (SRs) as well as the primary and secondary student requirements.

Table 4. 8: The first group of academic requirements

Primary	Secondary	Details of student requirements	Coded Items
Academic Requirements	Course Content	Courses are available effectively at my university	SR1
		The learning is conducive to my learning and research	SR2
	University Reputation	My university degree provides me with more job opportunities	SR3
		The academic staff in my area of study at university have a good reputation	SR4
	Available Resources	Able to meet with supervisor and lecturer, and receive feedback	SR5
		Provides sufficient access to the library resources and online database	SR6
	Educational Facilities	Student services adequately enhance my learning experiences	SR7
		Logistics and facilities support my learning experiences	SR8

Source: Developed for this research.

Table 4. 9: The second group of personal requirements

Primary	Secondary	Details of student requirements	Coded Items
Personal Requirements	Culture Activities	I feel welcomed and integrated into the university community	SR9
		I feel welcomed and integrated into the wider community	SR10
	Student Services	Student support services made immigration regulations easy to understand and manage	SR11
		I usually have no difficulty paying for education and living expenses	SR12
	Other Supports	Support is available for students who have a financial hardship	SR13
		Support is available for my family if required	SR14

Source: Developed for this research.

4.7. Final Kano survey instrument

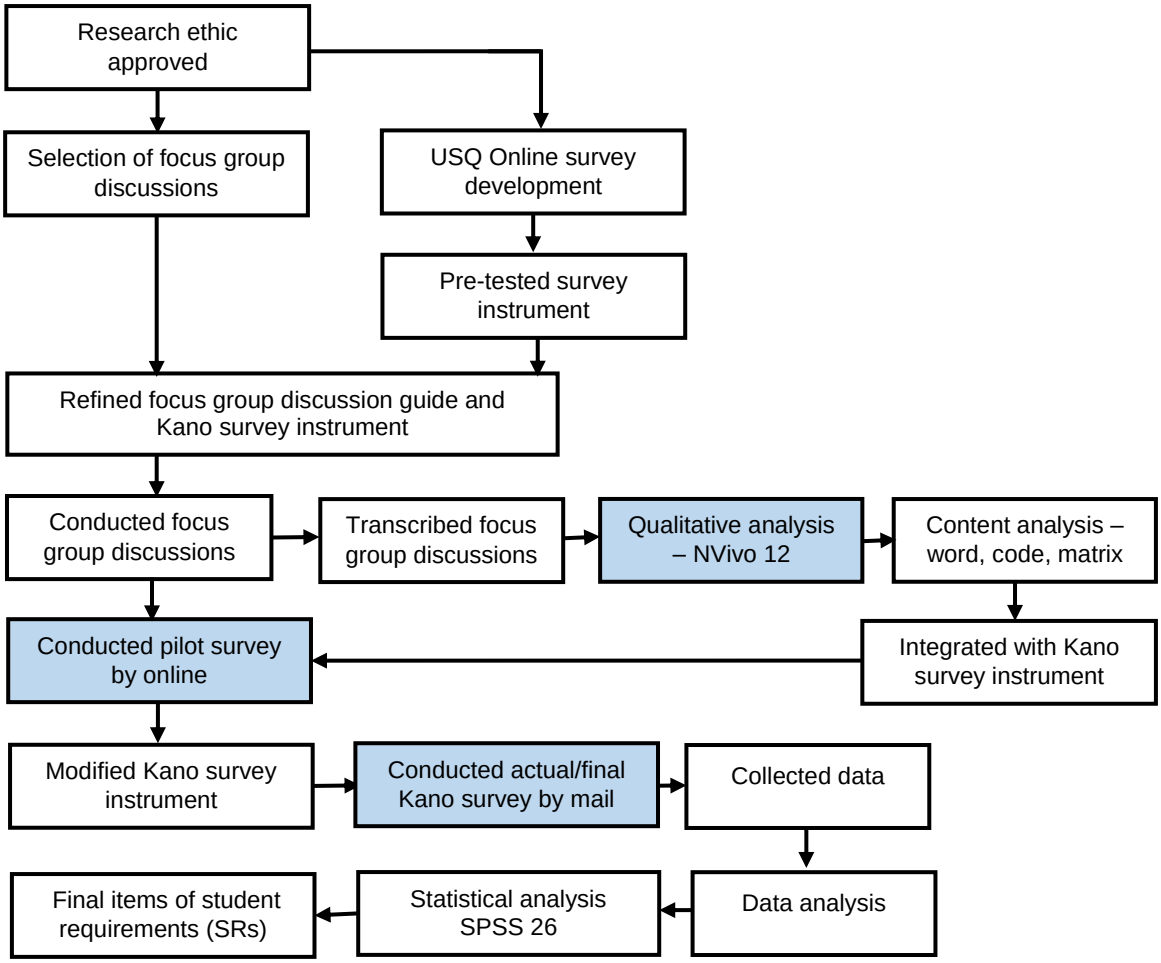
Following the return of the questionnaires, a reliability investigation of the used range was implemented. The questions of positive and negative characters were tested independently. Cronbach alpha was the most important indicator of reliability. Simultaneously, the reliability testing was carried out under the scenario of excluding the question (variable/item). With positively formulated questions, the value of Cronbach alpha was 0.887. However, since the questions were more broadly conceived, it was considered sufficient. The internal consistency of the used scale was checked by iterative elimination of questions, as well. The results can be found in

Table 2. The Kano survey instrument to students (Appendix D) consisted of three main parts. Part one explained the survey questionnaire through an outline of the goal of this survey.

During the pre-test of the Kano survey, findings from the interviews were cross-checked and integrated with the preliminary survey instrument for refinement purposes. The updated survey instrument was sent for proofreading by the University of Southern Queensland's (USQ) Course Evaluation and Survey Officer. Then, an online survey instrument was developed using the USQ Custom Survey System platform that was administered by a Course Evaluation and Survey Officer at the Sustainable Business & Management Improvement (SBMI) Unit. The online survey was pre-tested for face validity on non-sample respondents (i.e. among USQ undergraduate and postgraduate students). Issues of spelling, word choice, design, measurement scale, time to completion, and technical problems were identified during the pre-testing. Corrections were made on the online survey in terms of content (words and phrases related) and design (colour, text appearance and arrangement). The decision to use the USQ Custom Survey System platform was due to the current USQ Higher Degree Research Office recommendation on the use of the USQ proprietary online survey system.

In the implementation phase, the survey was administered in the actual research setting in the three Queensland universities. Considering the items used in the survey were adapted, some modifications were made using the feedback from the pre-test, and pilot testing was conducted. A more detailed explanation of this pilot study was discussed in next Section 4.8. Finally, in the interpretation phase, data from the survey were analysed and interpreted using appropriate statistical procedures, as further discussed in Chapter 5. A summary of actions implemented in this sequential mixed methods research design is shown in Figure 4.10.

Figure 4. 10: The workflow of the Kano survey instrument process



Source: Developed for this research.

4.8. Summary

This chapter has discussed the development of the Kano survey employed in this study. In this review of the qualitative methodology, a number of the procedures were proposed for the planning and organising of the qualitative data collection. The instrument used in this study was developed using a series of steps. It was developed using the focus group discussion technique and questionnaires, ensuring that the requirements were of high relevance. The overall purpose was to determine and understand the student requirements, which is considered one of the most important steps of research methodology in the Kano-QFD analysis model. This was important

to determine and understand the student requirements that influence AISs' experiences in the context of Australia.

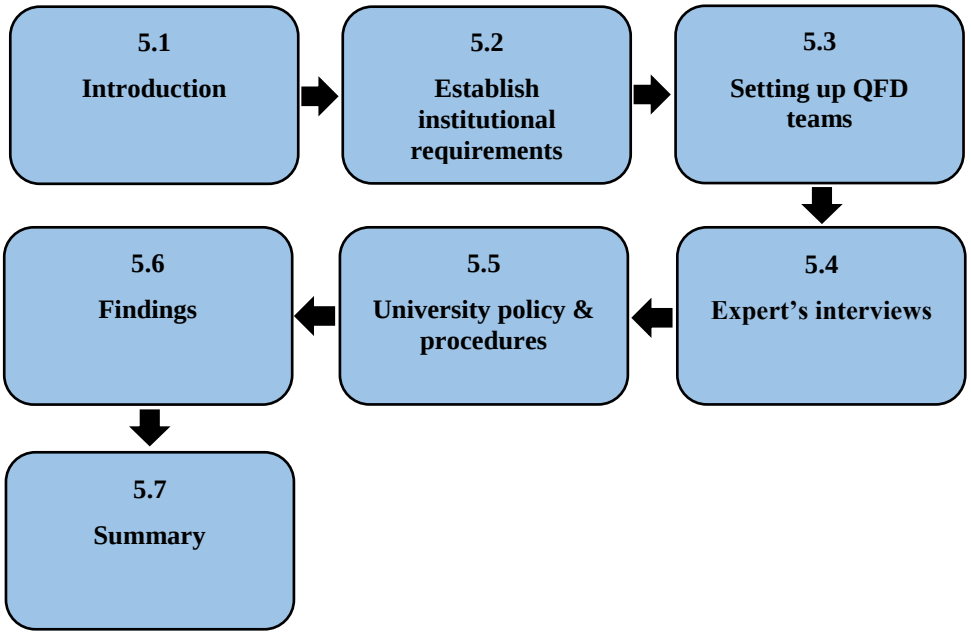
In summary, regarding the development of the Kano survey, the first version of the survey instrument was developed from focus group discussions consisting of 14 items under seven primary requirements of AIS. The pre-test was done on the first version of the survey to assess face validity. Then, through some modifications, the constructs were validated in terms of their meanings, checking language, and inter-relationships within the real research context which were conducted with the AIS as a part of data collection. Content analysis of the interviews helped the researcher to identify themes that were used to reduce and refine the initial survey instrument. A pilot study was done on the second version survey to assess the actual field research feasibility. Four focus group discussions with the participation of 23 AIS respondents were conducted as part of the pilot study, which took place at different Queensland universities. The proposed online survey technique was changed to a mail survey because of the very low response rate observed in the pilot study. The survey was modified into a third version (i.e. in hardcopy form) for the mail survey (see the Kano survey form in Appendix D and E). All of these changes were made for the purpose of increasing the quality of the research. A workflow of the Kano instrument processes conducted is shown in Figure 4.10.

CHAPTER 5: DETERMINATION OF INSTITUTIONAL REQUIREMENTS

5.1. Introduction

In the preceding chapter, the development of the survey instrument, the Kano questionnaire, and associated results were discussed. The key purpose of that chapter was to identify the students' requirements which is one of the two most important data sources needed in building the QFD matrix. The next step in the construction of the HOQ is the development of technical or institutional requirements (IRs) (Paryani et al., 2017). In this chapter, the IRs are generated which represent the "Voice of the Developer" (VOD). In this study this is the university, as they are the service provider responding to student needs. This chapter presents the main data sources used to determine the IRs, including interviews with university experts, managers, and staff members at each of three Queensland universities. These interviews were designed to follow up on the issues and themes that emerged from the initial parallel survey with different AIS participants discussed in the previous chapter.

Figure 5. 1: Outline of Chapter 5.



Source: Developed for this research.

This chapter consists of eight sections as shown in Figure 5.1. Section 5.2 presents the general purposes of the IRs in the QFD matrix. Section 5.3 explains how to set up the technical decision-making team or the QFD team, which is responsible for addressing the defined student requirements. Then, Sections 5.4 and 5.5 present the major data sources used in generating the IRs. Section 5.6 describes the findings of the IRs items for the three universities. Finally, the summary of the determination of the IRs is outlined in Section 5.7.

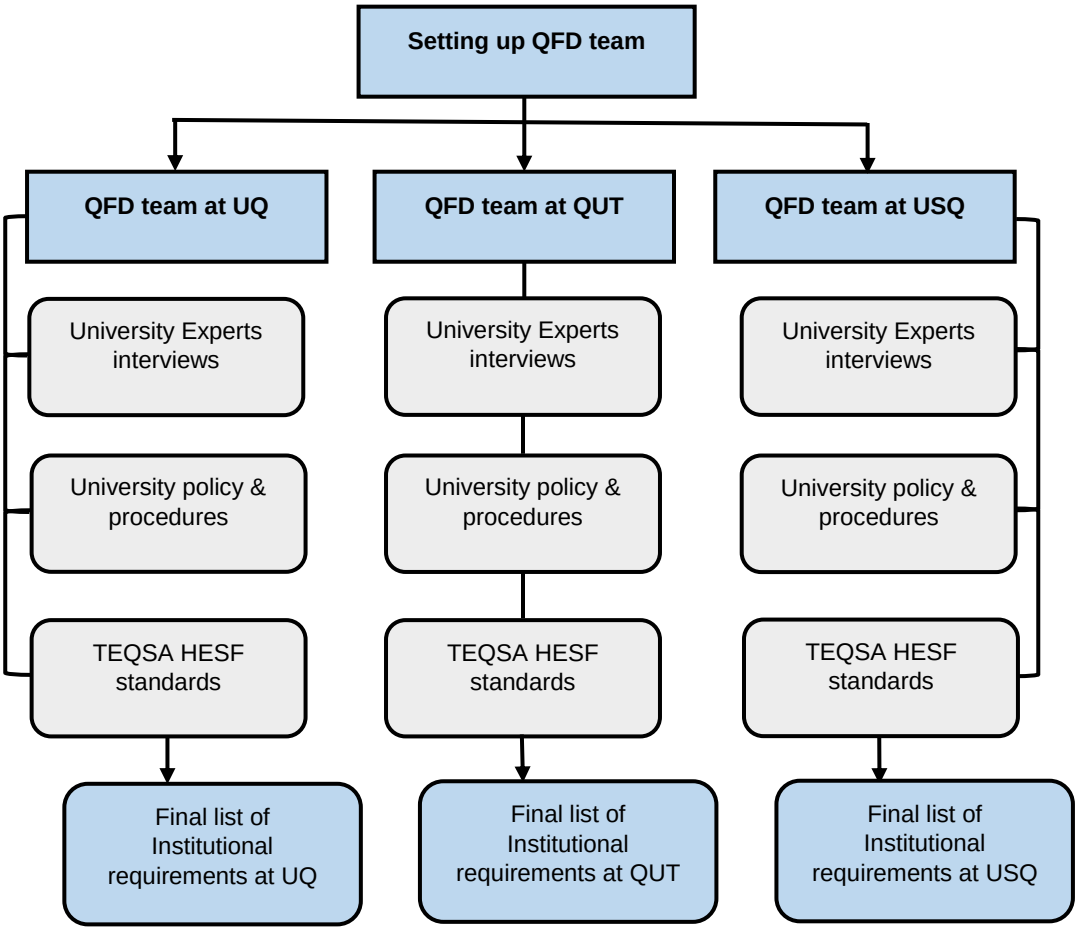
5.2. Establish institutional requirements

The main goal of the HOQ is to identify the weighted customer (student) requirements for the products or services and translate these demands into technical qualities. (Pourhasomi et al., 2013). When the student's perceptions are captured about how well different services perform in the marketplace, it leads to a better understanding of what is driving their university selection decision. This helps in determining what the market likes and dislikes (Sharma & Singh, 2010). The IRs are the design specifications that satisfy student consequences. The key question in this step is "how", in a measurable sense, the university would be able to deliver the required services to its students (Paryani et al., 2017). It must be noted that IRs are not understood here in a sense of functional versus non-functional requirements, as described in Chapter 4. The quantification of IRs is similar to the external assessment but involves technical details of the service rather than SRs. IRs are elements such as government legislation, safety requirements, quality standard requirements, and classification requirements (discussed in following sections). In QFD they are technical in the sense that they no longer take on the voice of the student but instead the voice of the university. These IRs should describe the service through controllable and measurable characteristics of the service and there can be more than one IR corresponding to each student requirement (Uppalanchi, 2010).

The generation of IRs is a crucial part of the House of Quality. During this step, the voice of the student is translated into the design requirements to be implemented (Mukaddes et al., 2010). This translation of SRs into language that is meaningful to a designer is a very important step in the QFD process and deserves considerable study

and development. If the step is performed correctly, the customer's voice will be carried through. If not, one of the major objectives of the study, the student's voice, will have been lost. QFD teams should avoid ambiguity in the interpretation of the IRs. In this step, the competition's services are compared in the light of SRs. Technical and institutional personnel provide the data for the technical benchmarking. Studying the competition gives valuable insight into market opportunities and aids in setting reasonable targets (Sharma & Singh, 2010). The marketing domain suggests what to do, the organising domain suggests how to do it (Sharma & Singh, 2010). The technical requirements help the different disciplines to understand customer requirements in the same context and to avoid confusion that can arise while interpreting customer needs (Dikmen et al., 2005). In order to identify technical requirements, the QFD team conducts brainstorming sessions in light of their expert knowledge (Pakdil et al., 2012). The QFD team then lists, along the top of the HOQ matrix, those institutional characteristics that are likely to affect one or more of the student requirements. Figure 5.2 illustrated the workflow of the development of IRs and setting up the QFD team at three Queensland universities.

Figure 5. 2: The development of the institutional requirements (IRs)



Source: Developed for this research.

5.3. Setting up a technical QFD team

Once the student needs are identified, the QFD team can establish appropriate institutional requirements that would satisfy those needs. The QFD team is the main executive and decision authority for the QFD application (Akao, 1990b). In line with previous studies, the formation of the QFD technical decision team was undertaken to obtain the target ratings for each IR conducted a competitive technical assessment (Gharakhani & Eslami, 2012; İçtenbaş et al., 2012). The QFD team or cross-functional team (CFT), sometimes called a multidisciplinary team, consists of members from different functional areas and departments such as research and development (R&D), engineering, quality assurance, manufacturing, finance, sales, and marketing (see Table 5.1) (Shen et al., 2000a; Fitzpatrick & Askin, 2005), or from various research

disciplines such as chemistry, electronics or biomaterial. This is done in order to garner the wide-ranging expertise of people with various backgrounds and to break through functional barriers that may exist in an organisational structure (Shen et al., 2000a; Griffin and Hauser, 1993). Organisations are increasingly using CFTs to address new product development (Chen & Lin, 2004). Through the use of cross-functional teams, organisations attempt to improve coordination and integration (Table 5.1), which is a powerful use of resources, as results can be both fast and effective, breaking down organisational boundaries, improve the timing of technology developments, and reduce uncertainty levels (Feng et al., 2010; Zairi & Ginn, 2005).

Table 5.1: Members of the QFD technical decision team

Number of Members	Member 1	Member 2	Member 3	Member 4	Member 5	Member 6
Position	Research and development (R&D) manager	Design Manager	Engineering Manager	Planning Manager	Financial Manager	Marketing Manager

Source: Developed for this research.

In order to ensure the success of CFT, it is important to select team members carefully, with desirable qualifications, to avoid extra time and undesirable budget consumed (Chen & Lin, 2004). The CFT, composed of carefully selected members, should achieve optimal individual and collaborative performances. Table 5.2 shows the formation of a CFT, i.e. seven members were selected from amongst 22 candidates of three departments, consisting of four to seven persons who symbolised the relevant department at USQ. This approach is consistent with (Kuijt-Evers et al., 2009; Ohfuji et al., 1997). Team members included: an assistant professor from the department management, two professors, three research assistants, and one student in line with previous studies (Okur et al., 2008).

QFD is based on the development of teams that play an active role in all processes ranging from identification to delivery of customer requirements. It is essential that the composition of the team be done carefully (Armoun et al., 2012; Özgener, 2003). It is important to have representatives from different levels, from across the organisation, and with different perspectives of the customer (in this case students).

Teams must include representatives from different departments such as individuals associated with marketing, process development, service design, service planning and others. Moreover, the interpersonal dynamics or interaction between different team members must enable teams to perform efficiently. People assigned to QFD teams will represent a variety of personalities and styles. The different perspectives that the people bring to the team can enhance its vitality and creativity. Teamwork requires a basic orientation of the members around working collectively for a common goal and participating in group problem-solving. "The team leader should be skilled in coordinating and facilitating since QFD works well in a free environment. All members of the team should be working toward a shared goal of a customer-defined product completed by a specific date and at a specific cost" (Özgener, 2003, p. 976).

A decision panel team was comprised of a minimum of four members who were senior managers from different departments of the university. In this study, the decision team included the following individuals (Table 5.2):

Table 5.2: Members of the QFD technical decision team at USQ case

Member No.	Position
Member 1	Associate Dean (Research and Research Training)
Member 2	International Business Coordinator (International students)
Member 3	Director (Library Services)
Member 4	Director (Student Success and Wellbeing)
Member 5	Director (Student Services)
Member 6	Coordinator (USQ Global Learning Programmes)
Member 7	Director (Open Access College)

Source: Developed for this research.

A cross-functional team has representative members from various departments of the organisation responsible for various tasks like marketing, accounting, designing, manufacturing, etc. A cross-functional team includes members from different levels in departments like technicians or managers. All members of a team should be experienced, competent, and as open-minded as possible, and as a group provide a broad view of the knowledge base of the organisation. Their task is to bring a broad range of experience and expertise to the QFD process. Despite the significance of cross-functional teams in the field of education, the existing literature fails to highlight

the composition of cross-functional teams in this sector and mostly emphasises discussing such teams in other sectors. The cross-functional teams in the educational sector are expected to comprise people from different levels of management from classroom teachers to the principal. The team should also cover a range of departments within the university. The cross-functional team in the educational sector may include teachers as well as non-teaching staff (Tiede, 1995). Thus, it is clear that the use and realisation of CFTs in QFD could lead to a substantial impact on the process of developing creative products or services.

5.3.1. Responsibilities of the QFD team

The responsibilities of the QFD team consist of an interior organisational collaborative performance to develop the QFD matrix: (Baki et al., 2009; Cherif & Aouni, 2010; Mukaddes et al., 2010; Özgener, 2003), as follows:

- Determining the fulfillment levels of IRs.
- Converting expectations of the students to institutional requirements.
- Identifying institutional requirements that are most needed to fulfill student requirements and that need further improvement.
- Summarising the suggestions and combining different institutional requirements and reducing of the number of them that will affect one or more of the student requirements.
- Allowing the team to consider trade-offs among various IRs.
- Considering the imprecision in the relationships linking the IRs to each other.
- Developing the technical correlation matrix to identify any interrelationships or trade-offs between each of the IRs.
- Constituting and tracing the relationships matrix between SRs and IRs.
- Making the decision process is more orderly and based on facts and data rather than opinion.
- Using affinity and tree diagrams as the tool to interpret all the IRs.
- Defining a target technical value for every institutional requirement. The QFD team decides whether they want to keep their service unchanged, improve the service, or make the service better than competitors.

- Identifying institutional requirements that are most needed to fulfill student requirements and that need further improvement.

5.3.2. The role and responsibilities of the leader of the QFD team

The team leader is not the manager of the team, but can better be described as the chairman, facilitator, or coach (Özgener, 2003). The role and responsibilities of a team leader are (Crow, 2000, p. 1):

- Creating an environment oriented towards trust, open communication, creative thinking, and cohesive team effort.
- Providing the team with a vision of the project objectives.
- Motivating and inspiring team members.
- Leading by setting a good example (role model)—behaviour consistent with words.
- Facilitating problem solving and collaboration.
- Ensuring discussions and decisions that lead toward closure.
- Ensuring that the team members have the necessary education and training to participate effectively in the team.
- Encouraging creativity, risk-taking, and constant improvement.
- Familiarising the team with customer needs, specifications, design targets, the development process, design standards, techniques, and tools to support task performance.
- Coordinating meetings with the product committee, project manager, and functional management to discuss project impediments, required resources, or issues/delays in completing the task.

Teams are therefore multidisciplinary groupings of people from relevant disciplines including product/service planning, marketing, engineering, and production. In less difficult projects, the facilitator may occasionally complete the QFD-charts by consulting with the experts. The facilitator's primary contribution focuses on creating scenarios to explain the QFD results to others who are less familiar with the process (Govers, 1996). The project description and team selection procedures are followed by an organised QFD strategy, which is not limited to a single activity inside a single

department. Teams should be cross-functional, focus on expertise, and include six to eight members with similar peer levels (Govers, 1996). Each institutional requirement is a specified improvement direction for development by using symbols as below (Vorasaiharit & Thawesaengskulthai, 2016):

▲ = Objective is to maximise

♦ = Objective is to achieve a target

▼ = Objective is to minimise

The roof of the HOQ matrix is utilised in this section to illustrate the correlation between the institutional requirements. The QFD team identifies institutional requirements complement or conflict with each other, the direction of the improvement is also included in this matrix (maximise, minimise or achieve a target value) (Erdil & Arani, 2019).

5.4. Interviews

Guest et al. (2017) suggested that a minimum of six interviews are sufficient to provide the main institutional requirements from the viewpoint of the university. For this study, 17 interviews were conducted across the three Queensland universities. Each interviewee was considered to have appropriate expertise and experience in relation to the research topic due to their role within their respective university. The interviews allowed for a contextual understanding and exploration of key data, resulting in the development of the overarching themes found within the university policy and procedures.

Interview questions were first pre-tested with a non-participant who conformed to similar criteria as the targeted research participants. Pre-testing indicated that the interview questions and the interview structure were well understood and provided reliable information. This information was used to evaluate the competitive position of the requirements directly or indirectly contributing to the satisfaction of the identified students' requirements identified in the Kano instrument, i.e., the VOC

(Azizi & Aikhuele, 2015). From the evaluation of interviewee responses, goals were set for the satisfaction of each of the student requirements found within the HOQ.

A list of targeted participants was obtained with assistance from each of the universities' research offices. Twenty-three staff members from different levels of the participating universities were contacted via telephone calls using a purposive sampling method. Criteria for selection were:

- Direct experience working with international students;
- Experience in intercultural adjustment; and
- Involvement in recruitment activities or otherwise involved in the administration of academic programs interacting with or overseeing international students.

Once initial interest was established, a personal invitation was emailed together with a participant information sheet, consent form, and the interview questions. A complete set of interview questions, with protocol, is shown in Appendix H. Seventeen out of 23 participants recruited agreed to be interviewed. They were contacted again to set a date, time and place that was convenient to them for the interview. One participant postponed the interview session to a much later date, which was not feasible and thus was not interviewed. Table 5.3 provides a profile of the final 17 university experts and staff members interviewed.

Table 5. 3: Profile of the final 17 university experts and staff members interviewed

Participants Characteristics		Number of participants			
		RUN (USQ)	Indep. (QUT)	Go8 (UQ)	Total
Gender	Male	3	3	4	10
	Female	4	2	1	7
Industry experience	Yes	5	5	5	15
	No	2	0	0	2
Field of interest	Education	2	1	2	5
	Engineering	1	2	1	4
	Social Science	2	1	1	4
	International students	2	1	1	4
The average length of time in a job (years)		11	14	16	

All interviewees met the criteria mentioned above. They were or had been involved in the technical decision-making teams involved in shaping the institutional requirements at their universities. All interviews (the average duration was around 20 minutes) were in a semi-structured format, consisting of general questions regarding pertinent personal information (e.g., job title, length of working at university) and seven specific questions about their institution's policies, procedures and actual practices at their universities regarding international students at their campuses.

5.4.1. Interview process

A strategy of interviewing these individuals one-by-one was based on the recommendations found in the literature (e.g., Creswell & Poth, 2018). Interviewing is affected by a number of factors: finding suitable locations, opening the interview, considering cultural issues, obtaining cooperation from participants, paying attention to sensitive issues, and other issues (Bouma & Ling, 2004; Fontana & Frey, 2000; Glesne, 2006; Myers, 2009; Shah, 2004; Smith & Osborn, 2008). Six recommended stages were followed:

1) *Arrival stage:* the interviewer must ensure the give an impression of a successful, motivated, energetic, confident, and professional individual to allow both parties to reap the benefits of the interview. This helps participants feel more comfortable and builds confidence and trust between the interviewer and the interviewee (Sabbah, 2017). It includes the preparation of recording devices, personal introductions, settling down, and background noise checks (Doody & Noonan, 2013; Woods, 2011). Additionally, the interviewer must ensure that the interview is conducted in a private, calm and peaceful environment free from distractions (Brennen, 2017; Sabbah, 2017; Woods, 2011). In sum, interviewers are required to develop a positive and encouraging atmosphere (Myers, 2009).

2) *Introduction to the research:* The interviewer must communicate the details about the research to the interviewee, making the objectives of the research being conducted and the reasons why the person was selected and is being

interviewed clear (Brennen, 2017; Sabbah, 2017; Woods, 2011). This allows the interviewee to better comprehend the purpose of the interview and hopefully incentivises the interviewee to participate actively.

3) *Beginning the interview:* the interview starts with individual questions including questions related to career background. The questions should be ordered in a way that encourages the interviewee to give spontaneous quality answers (Sabbah, 2017; Woods, 2011).

4) *During the interview:* the interviewer should guide the interviewee towards major themes. This allows the interviewer to ask more dynamic questions relevant to the research topic and obtain more relevant responses from the interviewee. These questions normally extend beyond the predetermined questions developed for the interview.

5) *Concluding the interview:* The conclusion of an interview may take as long as 5 to 10 minutes. After asking all the relevant questions, the interviewer takes the discussion to a more general and informal level to indicate the termination of the interview.

6) *After the interview:* the aim of conducting one-to-one interviews is to obtain a thorough understanding of the topic under investigation. The interviewer needs to personally thank the interviewees for the time and effort they have invested by participating in the study. After the interview, the researcher should compile a document including any interview notes and full transcriptions of audio recordings (Doody & Noonan, 2013).

In short, the interviewer starts the interview with a general discussion gradually moving the interviewee towards more focussed discussion on the research topic in the first 3 stages, and then bringing the conversation to a close in the last 3 stages (Magnusson et al., 2015).

Interviews with each of the 17 participants from the three universities ranged from 15 to 22 minutes in length. Ten of the interviewees were men and seven were women. All participants held either managerial level (professional) roles or were upper-level academic staff (e.g., DVC, Dean, Associate Dean). The researcher concluded the interview when a point was reached where no new data was being gathered. Although

interviewees belonged to three different universities in Queensland, their responses were very similar in terms of educational processes, requirements, services offered, and challenges faced by their respective universities as well as similar strategic perspectives. This observation was not surprising given the legislative and regulatory framework Australia has regarding universities and international students as noted in Chapters 1 and 2.

Individual interviews were conducted face-to-face and via telephone. The researcher arrived half an hour prior to commencing the interview to prepare all required materials, such as writing materials, and recording devices when the meetings were face-to-face. For administrative staff, all interviews took place in their offices, in line with their preference. For all interview locations, a number of factors were considered, such as avoiding disturbing anyone, offering privacy, ensuring physical convenience, and allowing comfortable interaction and eye contact between the researcher and participants (Denscombe, 2007).

Because the researcher had emailed the research details to the participants to communicate to them the research objectives, interviewees were already aware of the purpose of the interview. Each interviewee needed to read the consent form and sign it before taking part in the interview. All participants were advised that they could withdraw at any time without consequence. The interview ended when sufficient information was obtained. Subsequently, the researcher compiled a document that included the interview notes and a full transcription of each interview; the researcher had auto-recorded the audio of each interview conducted by telephone or face-to-face upon permission from interviewees. Each interview was audio recorded in MP3 format, then transcribed, without eliminating the spontaneous character of the speech.

5.4.2. Rationale for using in-depth interviews

This study used in-depth interviews in two stages: focus groups to develop the Kano survey and interview of key university staff members with responsibilities for international students. The discussion in this section relates to the rationale for the use of in-depth interviews as part of identifying the institutional requirements for the HOQ matrix for each of the three participating universities. Alkharusi (2013) proposed that

qualitative-based research should focus on the participant's or respondent's dialogical engagement as part of the process of identifying lived experiences. This is important for a study such as this one because of the need to establish if there is a difference between published policies and procedures and how these are actually enacted and enforced. Performing in-depth interviews based on open-ended questions with university staff members with responsibilities for the recruitment, retention and management of international students' engagement within their university provided insights into the relationship each university establishes with their international students.

In-depth one-on-one interviews are a well-recognised qualitative research technique with a small number of participants (Patton, 2002). Probing questions, typically open-ended for the most part, are used to get participants to explain their understanding of what is important in terms of context, environment and actions that have been taken (Denscombe, 2007; Glesne, 2006). However, these are successful only to the extent that participants are comfortable sharing their ideas and perspectives (Creswell, 2008). "By establishing rapport and trust, the interviewer can often obtain data that respondents would not give on a questionnaire" (Gay et al., 2006, p. 173). These interviews can be done in various formats ranging from fully unstructured (no predetermined set of questions) to structured (a pre-determined set of questions) interviews. According to Lincoln and Guba (1985):

> … the structured interview is the mode of choice when the interviewer *knows what he or she does not know* and can therefore frame appropriate questions to find out, while the unstructured interview is the mode of choice when the interviewer *does not know what he or she doesn't know* and therefore must rely on the respondent to tell him or her (p. 269, italics in the original).

Semi-structured interviews are often preferred because of their flexibility (Bolderston, 2012; Denscombe, 2007), which is derived from the interviewer asking questions "prompted by the flow of the interview" (Gay et al., 2006, p. 418).

One key area that was covered in the interviews with staff was what each university saw as essential factors and requirements in attaining international student satisfaction. Valadez (2008) argued that examining the role of relevant academic and administrative staff, since they interact with students daily, would provide much needed information

about how students understand their experiences within a university environment. A number of interview questions were designed to explore how universities manage international students (especially from the AIS perspective) expectations and the requirements the interviewee's university has regarding academic performance and adaptation to their campus' environment. The effects of cultural differences and the implication these differences had on the IS ability to succeed as members of the university learning community had to be captured. It was therefore decided to ask the administrative staff working in International Offices about what they observed regarding cultural issues, and, by implication, the influence religion may have in their ability to become part of the university community in general. The interview questions were specifically aimed at obtaining the interviewee's university's perceptive about AIS studying there and to reveal any particular policies developed particularly for management, accommodation and expectations of the AISs.

5.4.3. Recording and transcribing

A digital recorder was used, with interviews transferred to the researcher's laptop in anticipation of sending these to a third-party transcription service and analysis using NVivo 12. The total time for the first round of interviews was six hours. The second round of interviews (ten individuals from two of the three universities) took slightly less than eight hours, for an overall total of approximately 14 hours. All interviews were transcribed by a third party in accordance with protocols when recordings are used (Smith & Osborn, 2008). Although it is recommended that the researcher transcribe the interviews himself, the researcher decided to use a third party to ensure the accuracy, quality and timeliness of the transcriptions because the researcher is a non-native English speaker. The tapes generated 97 double-spaced pages of transcripts. Accuracy of the transcriptions was confirmed through repeated listening of the original tapes and comparison with the third-party transcripts and personal notes as suggested by Braun and Clarke (2006).

5.4.4. Thematic analysis

University policies and procedures are the principal instruments through which institutional requirements can be identified. Interviews with relevant staff provide a means through policies and procedures to become actual 'lived' experiences. These reflect national laws and regulations providing the basis of these policies and procedures. Understanding what these requirements are and their application in real life looks at the normative elements at play that allow for some changes to occur (Padró et al., 2020). Chapter 2 discussed a number of issues influencing institutional policies and procedures from the external environment due to the convergence of policies based on norms resulting from the triple-helix between the Australian federal government, universities and the international student market. According to Llewellyn and Hoebel (1941), norms can be analysed as ideal patterns "in which real action is to be measured" (p. 21), as a description of actual practice or how these are applied when there is a dispute. The first two instances applied to this study while the third did not apply because this study was not an attempt at identifying 'problem' situations, only understanding AIS needs in context to their university education. Consequently, the analysis of institutional policies and procedures reflect Bardach's (2012) analysis rationale: assessing the nature of legislation and policies shaping university policies and procedures, assessing the concrete features of the policies and procedures, and assessing how effective they are in practice.

To provide a deeper understanding of institutional practices, the researcher also looked at additional information publicly available through each university's website. Whenever available, documents targeting AIS were analysed to determine how these documents related to applicable policies and regulations. Additional documents reviewed included the following:

- Student handbooks for international students (if these existed).
- Visa procedures and deadlines.
- Other guidance notes are specific to requirements imposed on international students by the government or other agencies.
- University calendars.

Policy research is beset with many challenges (cf. Dror, 1971) and this study was not designed to provide policy analysis. The focus of attention was descriptive to identify applicable institutional requirements the three universities placed on their international students, including AIS. The intent was to identify all pertinent policies and procedures at the three universities and distil similarities or establish differences that could exist between the three universities. The approach taken in this study was to analyse policies and procedures, in particular those found in the publicly available webpages through the methods of performing word searches of key terms (Padró et al., 2020) and a thematic analysis of all available documents to identify, analyse and establish patterns (themes) within these documents (Braun & Clarke, 2006). The description provides a mechanism for interpretation based on experience and understanding of the researcher regarding the matters under review, with coding performed by the researcher and his supervisors to enhance the reliability of the emergent themes (Braun & Clarke, 2021).

5.5. University policy and procedures

Policies represent normative references within organisations about how things are done (Brown et al., 2010). They provide a codified consistent organisation-based procedural response to the different internal performance activities, often framed in terms of adherence to different applicable government policies, legal principles, and regulatory requirements (Padró & Green, 2018). Policies help establish institutional operational efficiency, attain strategic goals and reduce risks, especially of a legal nature (Padró, 2022). These are updated on a period basis to ensure alignment with changes in accreditation or standards requirements (when applicable), legislation, regulation or internal restructuring of organisational units.

Policies provide the rules or rationale behind actions. Procedures give staff and units the parameters and steps on how to enact the different performance activities falling under the oversight of a policy. “They establish a required method of handling future situations by defining specific actions” (Strasser & Randolph, 2006, p. 502). Together, policies and procedures (P&Ps) provide process guidelines (Paige, 2003) which, when well-written and used provide the capacity to reduce legal liability (Padró, 2022).

As discussed in Chapter 1, the Australian higher education international student recruitment and retention strategies are regulated through the ESOS Act from 2002 and its subsequent amendments and overseen by TEQSA. Adherence to the Higher Education Standards Framework (HESF) and their Risk Assessment Framework (RAF) provide the operational parameters that all Australian universities must follow. Furthermore, as also discussed in Chapters 1 and 2, there are other regulatory frameworks from the Department of Education and Training and other related organisations specific to international students complete the framework that is embodied in the policies and procedures at the three Queensland universities in this study. Consequently, as will be noted below in the findings, policies and procedures at the three universities are very similar, with the differences occurring due to their organisational cultural differences given the characteristics of the university type (also described in Chapter 1).

Using institutional policies and procedures (and to a lesser extent, other relevant public documents available to the researcher) allowed the researcher, his supervisors and interviewees to establish the institutional requirements used in each university's HOQ. Policy and procedures documents are the ones currently approved for regulating and monitoring the performance of the university. By analysing these source documents, the technical decision team can determine the institutional requirements for meeting the students' requirements. In addition, these sources revealed the university's voice through its policies and procedures based on their organisational culture and missions.

The main objective of these interviews was to explore the characteristics of the three universities in relation to its effectiveness in meeting students' needs. Interview questions were pre-tested with a non-participant with a similar background to interviewed university staff. Then a list of targeted participants was obtained with assistance from each of the universities' research and innovation management offices to identify key staffers with administrative and/or decision-making roles pertaining the recruitment, retainment and support of international students. By using a purposive sampling method, the researcher initially recruited about thirty targeted participants by personal approach through phone calls.

5.6. Findings

Responses from the service QFD team were categorised by the researcher into service quality institutional requirements (IRs) as required to complete the HOQ for each of the three Queensland universities. IRs provide context for the 14 identified student requirements in Chapter 4 by distinguishing the various organisational expectations and engagement that each university pursues in its interactions with AIS and IS in general. Tables 5.4, 5.5, and 5.6 identify the university requirements at each of the three universities in this study used to analyse student satisfaction within the HOQ.

5.6.1. Institutional requirements results: UQ

After discussions with the UQ QFD team (see Section 5.3 above), 20 IRs were identified. These are found in Table 5.4 below.

Table 5. 4: List of IRs - UQ

Classification	No.	Institutional Requirements
Enrolment Policies	IR1	Adhere to the university's enrolment policies and procedures
	IR2	Have English proficiency to successfully complete university study
	IR3	Have the capacity to pay university fees
	IR4	Maintain/uphold the reputation of the university
Student Conduct	IR5	Students shall not collude or plagiarize
	IR6	Follow the student code of conduct
	IR7	Do not discriminate, bully or harass when interacting with other students, staff or other individuals visiting the university
	IR8	Not undertake unlawful activities of any kind
	IR9	Follow the university's international student's policy (only for students under 18)
Academic Conduct	IR10	Comply with examination or assessment instruction
	IR11	Comply with rules of the academic misconduct
Course-related Conduct	IR12	Maintain and enhance the trust that exists between academic staff and students through feedback and consultation
	IR13	Comply with the course, program requirements, research integrity, and honesty
Research-related Conduct	IR14	Maintain satisfactory progress through their HDR program and undergraduate course
	IR15	Attempt to resolve issues through informal discussion before taking a formal action
Use of University Resources	IR16	Follow university requirements in the use of university-provided ICT, other resources and infrastructure
	IR17	The ability to work and learn independently and effectively
	IR18	Comply with requirements of intellectual property rights
	IR19	The ability to engage effectively and appropriately with ICT
	IR20	Ensure safety and the respect of the property (University's and of others)

Source: Developed for this research.

5.6.2. Institutional requirements results: QUT

After discussions with the QUT QFD team (see Section 5.3 above), 20 IRs were identified. These are found in Table 5.5 below.

Table 5. 5: List of IRs – QUT

Classification	No.	Institutional Requirements
Enrolment Policies	IR1	Adhere to the university's enrolment policies and procedures
	IR2	Have English proficiency to successfully complete university study
	IR3	Have the capacity to pay university fees
	IR4	Maintain/uphold the reputation of the university
Student Conduct	IR5	Students shall not collude or plagiarize
	IR6	Follow the student code of conduct
	IR7	Do not discriminate, bully or harass when interacting with other students, staff or other individuals visiting the university
	IR8	Not undertake unlawful activities of any kind
	IR9	Follow the university's international student's policy (only for students under 18)
Academic Conduct	IR10	Comply with examination or assessment instruction
	IR11	Comply with rules of the academic misconduct
Course-related Conduct	IR12	Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities
	IR13	Comply with the course and program requirements
Research-related Conduct	IR14	Maintain principles of academic research integrity and honesty (ethics)
	IR15	Attempt to resolve issues through informal discussion before taking a formal action
Use of University Resources	IR16	Follow university requirements in the use of university-provided ICT, other resources and infrastructure
	IR17	Students and staff web pages and servers should be aligned to university functions or activities
	IR18	Comply with requirements of intellectual property rights
	IR19	Have access to a computer with minimum technical specifications for university study
	IR20	Ensure safety and respect of the property (University's and of others)

Source: Developed for this research.

5.6.3. Institutional requirements results: USQ

Eighteen IRs were identified by the USQ QFD team as identified in Section 5.3 above. The IRs are identified in Table 5.6 below.

Table 5. 6: List of IRs – USQ

Classification	No.	Institutional Requirements
Enrolment Policies	IR1	Adhere to the university's enrolment policies and procedures
	IR2	Have English proficiency to successfully complete university study
	IR3	Have the capacity to pay university fees
	IR4	Maintain/uphold the reputation of the university
Student Conduct	IR5	Students shall not collude or plagiarize
	IR6	Follow the student code of conduct
	IR7	Do not discriminate, bully or harass when interacting with other students, staff or other individuals visiting the university
	IR8	Not undertake unlawful activities of any kind
	IR9	Follow the university's international student's policy (only for students under 18)
Academic Conduct	IR10	Comply with examination or assessment instruction
	IR11	Comply with rules of the academic misconduct
Course-related Conduct	IR12	Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities
	IR13	Comply with the course and program requirements
Research-related Conduct	IR14	Maintain principles of academic research integrity and honesty (ethics)
	IR15	Attempt to resolve issues through informal discussion before taking a formal action
Use of University Resources	IR16	Follow university requirements in the use of university-provided ICT, other resources and infrastructure
	IR17	Have access to a computer with minimum technical specifications
	IR18	Ensure safety and respect of the property (University's and of others)

Source: Developed for this research.

5.7. Summary

After the development of the Kano survey instrument and capturing the student requirements, this chapter has reported on the findings on institutional requirements for the purpose of developing the matrix of the Kano-QFD model. This chapter determined the results of institutional requirements collected from the interviews with staff members, experts, and policy and procedures of the university using the Nvivo package. In addition, these results were developed by setting up technical QFD cross-functional teams in three types of Queensland universities, along with TESQA for references to industry standards. In keeping with the main aim of the study to develop the Kano-QFD matrix at three Queensland universities, and find the priority for improvement of institutional requirements corresponding to the student requirements, in order to increase their satisfaction and better academic success.

The next chapter (Chapter 6) will discuss the findings of the study of both (surveys and interviews) for this research in order to make recommendations to both AIS and the Australian universities and the Australian policymakers in order to better help AIS to achieve their academic success.

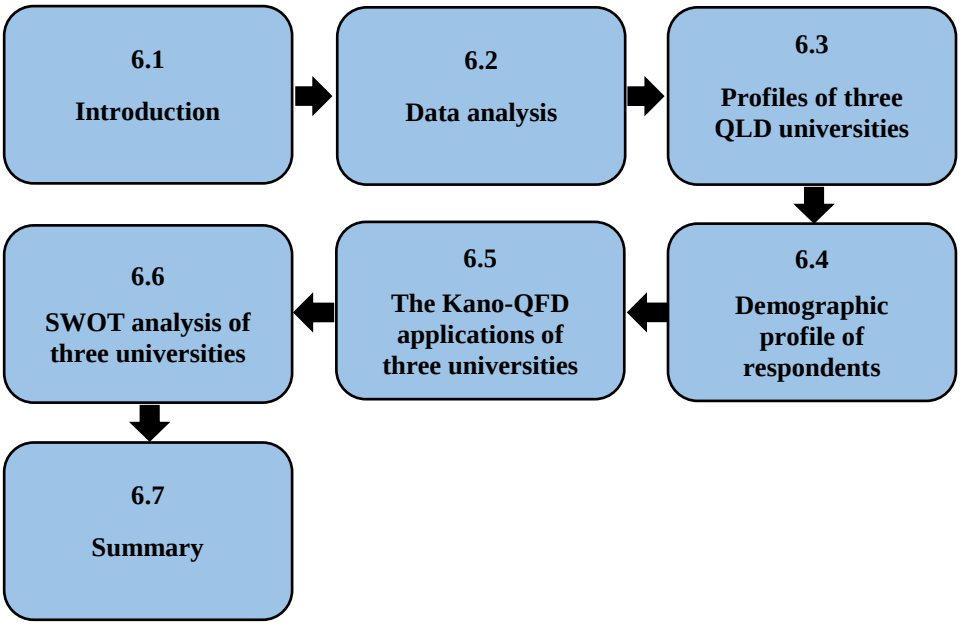
CHAPTER 6: DATA ANALYSIS AND RESULTS

6.1. Introduction

The previous chapters three, four, and five presented the research methodology used in this study and the formulation of the Kano-QFD analysis framework used in the data collection. This chapter contains the data analysis of the findings of the Kano-QFD approach stage of the research. Specifically, in this chapter, the researcher presents the profiles of the three different types of Queensland universities and the demographic profiles of the respondents' sample. Also, it completes the remaining necessary steps and processes in developing the Kano-QFD matrix for each of the three case universities. In addition, a more rational post-matrix SWOT analysis was conducted to allow for a better interpretation of results and enhanced information for effective decision making. The main purpose of this chapter is to analyse the numerical data collected from a questionnaire, using a series of statistical procedures. Furthermore, the various steps taken to develop the final Kano-QFD model to answer the research objectives are discussed. This chapter explains the data analyses ranging from data quality assessment, as well as descriptive, factorial, inferential, and content analysis procedures.

This chapter consists of seven sections, as shown in Figure 6.1, which illustrates the structure of chapter 6. Section 6.1 is the introduction to the chapter. Section 6.2 describes the data analysis processes of this study. Section 6.3 explains the profiles of the three types of Queensland universities that form the cases in the study. Section 6.4 presents the profiles of those three types of Queensland universities and the demographics of the participants of the survey questionnaire. Section 6.5 provides details of the major field applications conducted on the Kano-QFD matrix in three Queensland universities (UQ, QUT, and USQ). Section 6.6 then presents the major findings by using a post-matrix SWOT analysis to perform internal and external assessments of the three types of Queensland universities. Finally, section 6.7 summarises the chapter.

Figure 6. 1: Outline of Chapter 6: data analysis and results



Source: Developed for this research.

6.2. Data analysis

In this research, QFD and the Kano model were combined due to their complementarity in providing a suitable tool to improve the quality of services (Priyono & Yulita, 2017). After the primary data were collected, the research used both qualitative and quantitative data analysis procedures to develop the Kano-QFD analysis. Results from the preceding chapter's qualitative study (i.e. expert interview and university policies and procedures) were used to inform the subsequent quantitative study, i.e. the field Kano survey in chapter 4. The data in this chapter describe the academic and social experiences of AIS while they were studying in Australian universities, in both postgraduate and undergraduate programs, through applying the Kano-QFD approach and the SWOT analysis. Throughout this research, a number of data analysis techniques were used, including descriptive statistics and observing the percentages for the main quality factors, along with the interpretation HOQ built and the relationships obtained. The parallel Kano survey was trialled prior to this with small samples of students. The methodology indicated that in order to

enhance survey validity, the survey was developed after referring to two reference groups for opinion. This also allowed ensuring easy comprehension of the survey language by the participants. The researchers also ensured that the questions contained simple terms that correspond to ethical standards. The survey was electronically distributed to students, providing time for the snowball technique to be exhausted during the period January to November 2019. The survey questions helped the researcher to collect basic data about the experiences of Arab students studying in Australian universities.

The recorded data from the interviews were transcribed verbatim using 'f4' version 2012, a transcription software. The transcripts consisting of textual data were then analysed using NVivo version 12, a qualitative data analysis software. A content analysis method was employed by using themes or constructs discovered in the interviews, which were categorised systematically. The survey instrument was structured as comparative data collection in order to compare the opinion of AIS on a range of common areas and issues. The survey distribution started through the snowball technique, began with personal contacts, and then respondents were asked to distribute the survey instrument link to their friends. There was no compromise on data confidentiality since participants were not asked to provide data about their personal identification. The survey comprised of main questions; each of these main questions further entailed more items or questions. The next sections detail the results of the surveys of the three groups of participants at the Queensland universities, and students.

6.3. Profiles of the three universities in the study

Australian universities are highly regarded internationally for their innovative approaches to learning and teaching, the quality of the student experience, and strong graduate employment. Queensland is home to some of Australia's top universities and offers study and research opportunities across a wide range of industries. The universities offer high quality education programs for undergraduate, postgraduate, and research studies. Universities that share common features have formed groups and networks that to some extent illustrate differences in focus and objectives between groups of universities and the commonalities of those within the group, for example

the Australian Technology Network of Universities (ATN). In contrast, the Regional Universities Network ((RUN) is a formal network. do not constitute a formal network, but their major campuses are situated in a regional centre.

This profile tool intends to make it possible for stakeholders, including as institution leaders, decision-makers in government policy, students, and the business community, to "read" an institution and determine whether it meets their requirements and objectives. (Coates et al., 2013). This section focuses on the key features of one example case of each of the three types of Queensland universities (UQ, QUT, and USQ), indicating their affiliation to organisational groups and the importance of key focus areas for each institution.

6.3.1. UQ profile

The University of Queensland (UQ), located in Brisbane, Australia, ranks consistently among the world's top universities. For more than a century, UQ has maintained a global reputation for creating positive change by delivering knowledge leadership for a better world. The University of Queensland (UQ) is one of Australia's leading research and teaching institutions. It is one of only three Australian universities that is a member of the (U21) global universities ranking since 1997, and a founding member of the Group of Eight (Go8) universities. (Group of eight Australia, 2020). UQ ranks among the world's top universities, as measured by several key independent rankings, including the CWTS Leiden Ranking (31)[3], the Performance Ranking of Scientific Papers for World Universities (40), *U.S. News* Best Global Universities Rankings (36), QS World University Rankings (46), Academic Ranking of World Universities (54), and Times Higher Education World University Rankings (62).

About 55,300 students were registered in the University in 2019. This student population included 16,000 international students belonging to 134 countries. The UQ has been imparting postgraduate education to over 18,600 students. UQ is among the top PhD cohorts in Australia that was accredited with completion of 15,400th PhD

[3] This ranking is measured by the Impact indicator P, P (top 10 per cent), and PP (top 10 per cent) with fractional counting.

graduation in the year 2020. UQ is committed to implementing innovative practices for providing its students with the best education and employment services. “We work towards achieving our strategic objectives by partnering with students to develop new initiatives to enhance the student experience” (UQ, 2019). With operating revenue of $2.19 billion AUD in 2019, including more than $452 million AUD in research investment, UQ’s six faculties and eight recognised research institutes cover a remarkable breadth of teaching and research. The research by UQ conducted in 93 expert domains were rated as above-world-standard in the Excellence in Research for Australia conducted in 2018. None of the Australian universities was able to make such an achievement.

6.3.2. QUT profile

QUT is a public research university located on two campuses in the Brisbane area: Gardens Point and Kelvin Grove. The university in its current form was founded in 1989, when the Queensland Institute of Technology (QIT) was made a university through the Queensland University of Technology Act 1988, with the resulting Queensland University of Technology beginning its operations from January 1989. In 1990, the Brisbane College of Advanced Education merged with QUT. The Australian university known as QUT enjoys worldwide recognition. It is attributed with real-life focus and prepares its students such that they acquire the expertise essential for present and future times. It is an ambitious institution, with a rapidly growing research output focused on technology and innovation. The Times Higher Education 2020 ranked QUT in the top 180 universities in the world and the best young university in Australia. QUT is currently imparting educational services to 50,000 students. The institute is committed towards the accreditation of both national and international degrees. QUT aims to transform the learning experience and embed work-integrated learning in courses, and it has a strong focus on developing entrepreneurial skills. QUT offers academic programs in fields spanning business, creative industries, education, engineering, health, law, science, and social justice, across five faculties.

The QUT Business School and MIT Sloan School of Management signed an agreement to collaborate with each other in offering various benefits to the students

and teaching staff. These benefits included academic exchange, immersion programs in two languages for students in pursuit of MBA and EMBA degrees. Moreover, the entrepreneurship program allows accessing MIT's global entrepreneurial networks. QUTeX provides executive education and professional development to both individuals and organisations, and QUT Online lets students learn when it suits, through courses delivered entirely online. QUT College provides pathways for all students into undergraduate programs. QUT promotional materials indicate that it aims to be known for "strong links to industry government. "Our research on the topic of multidisciplinary teams proved to be significantly useful and was applied in diverse fields like reduction of adverse effects of climatic changes, digital media and biomedical innovation, etc". (QUT, 2019: p14). QUT has been named one of the fastest rising universities in the world, and top in Australia, for scientific research in the 2019's Nature Index of high-quality research outputs.

6.3.3. USQ profile

The University of Southern Queensland (USQ) is among the known universities committed to offering quality education to both local and international students through blended learning and online learning programs. In just over 50 years, USQ has become a prominent teaching and research institution providing education worldwide from three regional locations – Toowoomba, Springfield, and Ipswich.

USQ responsibly extended its operations to cater to the growing educational needs of students in Australia and all across the world. It has achieved the status of leading universities of Australia that offer both on-campus and online programs for local and international students. USQ is committed to excellence in education, research, and student experience. By offering a mix of open and flexible programs in business, education, law and arts (including creative arts), health, engineering and surveying, and the sciences (including para-medicine and aviation), USQ caters to the educational needs of students and businesses both locally and internationally. The 2021 university ranking of universities placed USQ at the top position among all universities in Queensland for the highest median starting salary being offered to USQ graduates (Good Universities Guide, 2021). The university's research focuses on solving

regional and global problems, with 18 fields of research receiving "well above world standard" (ERA Results, 2019). Significant information associated with three Queensland universities is given in Table 6.1.

Table 6. 1: Key facts for three Queensland universities

Key Statistics (2019)	QUT	UQ	USQ
Type	Public	Public	Public
Location/ State	Brisbane – QLD	Brisbane – QLD	Toowoomba - QLD
Year established	1989	1909	1967
Affiliations	ATN*[4]	Go8*	RUN*
Total staff	4816	7208	1768
Total student Enrolments	52511	55305	26064
International students	9769	20213	2797
Total university revenue	$1.16 Billion	$2.19 Billion	$327.359

Source: Developed for this research.

6.3.4. Groups of Queensland universities

There are three main different categorical groups of Queensland universities. The first group is (Go8), the second group is (ATN), and the third group is (RUN).

(1) **Group of Eight (Go8) Australian universities:** The Group of Eight (Go8) is generally regarded as a grouping of the top-ranking Australian universities with most of them sharing a long history and well-developed research focus (Biswas et al., 2022). The Group of Eight (Go8) comprises Australia's leading research-intensive universities:

- University of Adelaide
- Australian National University
- University of Melbourne
- Monash University
- University of New South Wales

[4] Go8 = Group of 8 Universities, ATN = Australian Technology Network, RUN = Regional University Network

- University of Queensland
- University of Sydney
- University of Western Australia

In addition to being the universities with the most research income, the Group of Eight includes the oldest universities in the Australian mainland capital cities: The University of Sydney (founded in 1850), the University of Melbourne (1852), The University of Adelaide (1874), the University of Queensland (1909), the University of Western Australia (1913), the Australian National University (1946); and the second university established in each of Australia's 2 biggest cities, the University of NSW (1949) and Monash University (1958). These universities also have the biggest accumulation of academic and socio-economic capital. This group of Australia's leading universities started meeting informally in 1994 and was incorporated in 1999 to lobby the Commonwealth to further concentrate resources in its member institutions.

(2) The Australian Technology Network of Universities (ATN) is a network of five Australian universities, with a strong history of innovation and enterprise, working closely with industry (Kiley, 2011), and includes:

A. Curtin University
B. The Queensland University of Technology (until 2018)
C. RMIT University
D. University of South Australia
E. University of Technology Sydney

ATN traces its origins back to 1975 as the Directors of Central Institutes of Technology (DOCIT) and was revived in 1999 in its present form with major changes to its membership announced in 2018 and 2020. The ATN directorate is one of Australia's leading university peak bodies with a track record of advocating and shaping positive policy outcomes with all levels of government and is based in Canberra.

Each ATN member university was granted public university status between 1986 and 1992, however, their antecedents make them some of the oldest tertiary institutions in Australia. QUT withdrew participation in the ATN on 28 September 2018.

(3) Regional universities network (RUN) is a network of seven universities with headquarters in regional Australia and a shared commitment to playing a transformative role in their regions. In 2011 six universities which have their headquarters in a regional centre formed the Regional Universities Network (Woodward, 2011). The founding members were CQUniversity which has its main campus in Rockhampton, Southern Cross University (Lismore), University of Ballarat (Ballarat), University of New England (Armidale), University of Southern Queensland (Toowoomba) and University of the Sunshine Coast (Sippy Downs). The universities involved are:

- University of Southern Queensland
- Central Queensland University
- Southern Cross University
- Federation University Australia
- University of New England
- University of the Sunshine Coast
- Charles Sturt University

Regional universities play a vitally important role in sustaining and fostering the economic prosperity of rural regions that hold some of the country's most valuable resources and commodities (Evans et al., 2013). Through their educational and research contributions to regional economic, social, cultural, and environmental development, the RUN member universities play an important and distinctive role in advancing Australia's national prosperity, productivity, and identity.

6.4. Demographic profile of Kano survey respondents

Table 6.1 shows the demographic profile details of the samples of students from the three Queensland universities that participated through the Kano survey. The Kano

survey questionnaires were sent electronically to AIS studying at the three Queensland universities. The social-demographic information from the survey participants helped the researcher to assess the basic features and distributions of the data across all variables. This analysis was used: [1] to summarise the demographic characteristics of the respondents, and [2] to describe scores and percentages of a single variable or item (also termed univariate analysis). The descriptive statistics were reported using frequency distribution (for categorical or nominal data) and central tendency (for scale or interval data) to enable the impact of certain environmental variables and some socio-demographic factors to be explored (Basfirinci & Mitra, 2015). In this regard, a detailed comparative evaluation of the respondents' cultural orientations, environmental variables, and socio-demographic characteristics for three different types of universities were considered for more robust predictions (Basfirinci & Mitra, 2015).

The demographic variables of respondents included in this study were gender, age, marital status, prior qualifications, country of origin, accommodation, length of stay in Australia, and level of study. Through a convenience sampling method, a total of 401 questionnaires of the Kano survey were distributed online to the participants. A total of 252 valid questionnaires were returned and utilised for the final analysis indicating a usable response rate of 62.8%, and 149 were rejected because they were incomplete. Among the valid questionnaires, more than two-thirds of them (70.25%) were from a rural region. The numbers of respondents in each of the three university cases were (78 UQ, 89 QUT, and 85 USQ). Table 6.2 shows a summary of the demographics of the Kano survey respondents' statistics at the three Queensland universities.

Table 6. 2: Summary of respondent demographics distribution of Kano questionnaires

Name of the university	Prospective population	Numbers of respondents	Institutional response rate %
University of Queensland (UQ)	138	78	56.521
Queensland University of Technology (QUT)	142	89	62.676
University of Southern Queensland (USQ)	121	85	70.25
Total	**401**	**252**	**62.842**

Source: Developed for this research.

The process of survey instrument development was guided by a set of procedures described in chapter four. The survey instrument forms were initially distributed to 401 respondents from three Queensland universities. In total, 252 individuals consisting of university students on campus responded to the survey, which presented a response rate of 62.8% percent.

6.4.1. Demographic profile of UQ

The demographic statistics for the UQ case are shown in Table 6.3. The outcomes of the Kano survey revealed that out of the (78) respondents, (47.44%) were male and (52.56%) were female. Their age distribution was as follows: 20-24 (10, 26%), 25-29 (30.77%), 30-34 (34.62%), 35-39 (19.23%), 40-44 (3.85%), and 45-49 (1.28%). In terms of marital status, a larger percentage of respondents were married (71.79), and singles were only (28.21%). Also, out of the married respondents, 82.14% had children. The highest proportion of respondents were from Saudi Arabia (82.05%), followed by Iraq (7.69%), Kuwait (2.56%), Oman (2, 56%), and Libya, Sudan, and Yemen (1.28%). Regarding the prior qualification of respondents, there were more Master's degree holders (68.23%), followed by Doctorate holders (16.47%), and those with a Diploma (5.88%), an Advanced Diploma (1.18%), and other qualifications (3.53%). About one-third of the respondents were living with children (30.59%), followed by extended family (25.88%), alone (24.71%), with a partner (21.17%), and other (5.88%). Concerning accommodation type, the majority of the respondents stayed at an apartment/flat (69.23%), followed by a house (20.51%), homestay (6.41%), residential hall/ college (2.56%), or hostel (1.28%). Their distribution of length of stay to date in Australia was as follows: below a year (47.44%), 1-4 years (38.46%), 4-7 years (10.26%), and 7-10 years (3.85%). The distribution for their duration of study to date was as follows: below a year (61.54%), 2-4 years (29.49%), and 5-7 years (8.97%). Finally, regarding their study level, most of the respondents studied in other levels (33.33%), followed by PhD/Doctorate level (30.77%), while postgraduate level was (20.51%), and undergraduate level was (15.38%). The structure of the sample is presented in detail in Table 6.3.

Table 6. 3: Demographic profile of UQ respondents' statistics

Variables	Frequency (*n*= 78)	Percentage (%)	Variables	Frequency (*n* = 78)	Percentage (%)
1. Gender			Syria	0	0.00
Male	37	47.44	Tunisia	0	0.00
Female	41	52.56	UAE	0	0.00
2. Age			Yemen	1	1.28
15-19	0	0.00	Other	1	1.28
20-24	8	10,26	**6. Prior qualification(s)**		
25-29	24	30.77	Diploma	3	5.88
30-34	27	34.62	Advanced Diploma	3	1.18
35-39	15	19.23	Bachelor's Degree	40	4.71
40-44	3	3.85	Master's Degree	25	68.23
45-49	1	1.28	Doctoral Degree	4	16.47
50-54	0	0.00	Other	3	3.53
55-59	0	0.00	**7. Living with family**		
60-64	0	0.00	Alone	18	24.71
65 and over	0	0.00	With partner	30	21.17
3. Marital status			With children	30	30.59
Single	22	28.21	With extended family	19	25.88
Married	56	71.79	Other	5	5.88
Divorced/Separated/Widowed	0	0.00	**8. Accommodation type**		
4. Have children			Hostel	1	1.28
Yes	46	82.14	Homestay	5	6.41
No	10	17.86	Residential hall/ college	2	2.56
5. Country of origin			Apartment/Flat	54	69.23
Algeria	0	0.00	House	16	20.51
Bahrain	0	0.00	**9. Length of stay to date in Australia**		
Comoros	0	0.00	0-1	37	47.44
Djibouti	0	0.00	1-4	30	38.46
Egypt	0	0.00	4-7	8	10.26
Iraq	6	7.69	7-10	3	3.85
Jordan	0	0.00	More than 10 Years	0	0.00
Kuwait	2	2.56	**10. Duration of study to date**		
Lebanon	0	0.00	0-1	48	61.54
Libya	1	1.28	2-4	23	29.49
Mauritania	0	0.00	5-7	7	8.97
Morocco	0	0.00	8-10	0	0.00
Oman	2	2.56	More than 10 Years	0	0.00
Palestine	0	0.00	**11. Level of study**		
Qatar	0	0.00	Undergraduate	12	15.38
Saudi Arabia	64	82.05	Postgraduate	16	20.51
Somalia	0	0.00	PhD/ Doctorate	24	30.77
Sudan	1	1.28	Other	26	33.33

Source: Developed for this research.

6.4.2. Demographic profile of QUT

The analysis of the demographic summary for the QUT case, Table 6.4 showed the following: out of the (89) respondents, (48.31%) were male students, and (51.69%) were female students. Their age distribution was as follows: 15-19 (6.74%), 20-24 (22.47%), 25-29 (20.22%), 30-34 (30.34%), 35-39 (14.61%), and 40-44 (5.62%). Their marital status was: married (64.04%), single (32.585%), and divorced/separated/widowed (3.37%). The spread of the countries of origin of participants was: Saudi Arabia (56.18%), Iraq (13.48%), Jordan (6.74%), Egypt (5.62%), Syria, Sudan (3.37%), and Kuwait, Lebanon, and Oman (2.25%). In regard to prior qualifications of participants, there were more Bachelor's degree holders (44.94%), followed by Master's degree holders (22.47%), other qualifications (17.98%), Diploma (8.99%), Advanced Diploma (4.49%), and Doctoral degree holders (1.12%). Most participants were living with family (61.90%), with children (69.05%), with a partner (76.19%), or living alone (30.95%). With respect to their accommodation type, the majority of respondents stayed at an apartment/flat (64.04%), while the other respondents stayed at a house (26.97%), homestay (4.49%), residential hall/college (3.37%), or hostel (1.12%). The participants with the highest length of stay to date in Australia were: 1-4 years (40.45%), followed by below a year (22.47%), above 10 years (16.85%), 4-7 years (13.48%), and 7-10 years (6.74%). The largest percentage of respondents had a duration of study to date of 2-4 years (44.94%), followed by: below a year (39.33%), 2-4 years (60.00%), 5-7 years (12.36%), above 10 years (2.25%), and 8-10 years (1.12%), respectively. In terms of their study level, the majority of the respondents were undergraduate (33.71%), followed by postgraduate (29.21%), PhD/Doctorate (26.97%), and other levels (10.11%).

Table 6. 4: Demographic profile of QUT respondents' statistics

Variables	Frequency (*n* = 89)	Percentage (%)	Variables	Frequency (*n* = 89)	Percentage (%)
1. Gender			Syria	3	3.37
Male	43	48.31	Tunisia	0	0.00
Female	46	51.69	UAE	1	1.12
2. Age			Yemen	0	0.00
15-19	6	6.74	Other	1	1.12
20-24	20	22.47	**6. Prior qualification(s)**		
25-29	18	20.22	Diploma	8	8.99
30-34	27	30.34	Advanced Diploma	4	4.49
35-39	13	14.61	Bachelor's degree	40	44.94
40-44	5	5.62	Master's Degree	20	22.47
45-49	0	0.00	Doctoral Degree	1	1.12
50-54	0	0.00	Other	16	17.98
55-59	0	0.00	**7. Living with family**		
60-64	0	0.00	Alone	13	30.95
65 and over	0	0.00	With partner	32	76.19
3. Marital status			With children	29	69.05
Single	29	32.58	With extended family	26	61.90
Married	57	64.04	Other	10	23.81
Divorced/Separated/Widowed	3	3.37	**8. Accommodation type**		
4. Have children			Hostel	1	1.12
Yes	44	73.33	Homestay	4	4.49
No	16	26.67	Residential hall/ college	3	3.37
5. Country of origin			Apartment/Flat	57	64.04
Algeria	0	0.00	House	24	26.97
Bahrain	0	0.00	**9. Length of stay to date in Australia**		
Comoros	0	0.00	0-1	20	22.47
Djibouti	0	0.00	1-4	36	40.45
Egypt	5	5.62	4-7	12	13.48
Iraq	12	13.48	7-10	6	6.74
Jordan	6	6.74	More than 10 Years	15	16.85
Kuwait	2	2.25	**10. Duration of study to date**		
Lebanon	2	2.25	0-1	35	39.33
Libya	1	1.12	2-4	40	44.94
Mauritania	0	0.00	5-7	11	12.36
Morocco	0	0.00	8-10	1	1.12
Oman	2	2.25	More than 10 Years	2	2.25
Palestine	1	1.12	**11. Level of study**		
Qatar	0	0.00	Undergraduate	30	33.71
Saudi Arabia	50	56.18	Postgraduate	26	29.21
Somalia	0	0.00	PhD/ Doctorate	24	26.97
Sudan	3	3.37	Other	9	10.11

Source: Developed for this research.

6.4.3. Demographic profile of USQ

The sample demographics of USQ, shown in Table 6.5, reveal the characteristics of gender, age, marital status, accommodation type, length of stay in Australia, and level of study. Male students accounted for (85.88%) and female students for (14.12%) of the sample. In terms of age, the sample primarily comprised those aged 35-39 and 40-44 years old (45.88%), followed by individuals aged 45-49 years old (16.47%). In terms of marital status, the sample indicated that (67.06%) were married and most of them had children (91.53%). Slightly more than three-quarters of respondents were of Iraqi origin, followed by the other Arab countries including Jordan (9.41%), Libya (7.06%), and Saudi Arabia (4.71%) respectively. In terms of prior qualifications, the majority of respondents had a university degree or higher (88.87%), and the remaining (10.59%) had a high school diploma or less. Concerning living with family, the highest percentage of respondents were living with a family, and most of them had children (77.64%), while the rest of the respondents were living alone (24.71%). Among the 85 Arabic student respondents at USQ, nearly half stayed at a house (49.41%), while the other respondents stayed at an apartment/flat, residential hall/college, hostel, or homestay. Their distribution of length of stay to date in Australia was as follows: below a year (5.88%), 1-4 years (51.76%), 4-7 years (32.94%), and 7-10 years (7.06%), or above 10 years (2.35%). The respondents' duration of study to date was distributed as follows: 2-4 years (60.00%), 5-7 years (30.59%), less than a year (5.88%), 8-10 years (2.35%), and above 10 years (1.18%) respectively. Finally, in terms of the respondents' level of study, for the majority of students their study level was PhD/Doctorate (76.47%), followed by other postgraduate (14.12%), undergraduate (8.23%), and other (1.18%).

Table 6. 5: Demographic profile of USQ respondents' statistics

Variables	Frequency (*n* = 85)	Percentage (%)	Variables	Frequency (*n* = 85)	Percentage (%)
1. Gender			Syria	0	0.00
Male	73	85.88	Tunisia	2	2.35
Female	12	14.12	UAE	2	2.35
2. Age			Yemen	0	0.00
15-19	3	3.53	Other	0	0.00
20-24	4	4.71	**6. Prior qualification(s)**		
25-29	6	7.06	Diploma	5	5.88
30-34	13	15.29	Advanced Diploma	1	1.18
35-39	16	18.82	Bachelor's degree	4	4.71
40-44	23	27.06	Master's Degree	58	68.23
45-49	14	16.47	Doctoral Degree	14	16.47
50-54	4	4.71	Other	3	3.53
55-59	1	1.18	**7. Living with family**		
60-64	1	1.18	Alone	21	24.71
65 and over	0	0.00	With partner	18	21.17
3. Marital status			With children	26	30.59
Single	26	30.59	With extended family	22	25.88
Married	57	67.06	Other	5	5.88
Divorced/Separated/Widowed	2	2.35	**8. Accommodation type**		
4. Have children			Hostel	5	5.88
Yes	54	91.53	Homestay	3	3.53
No	5	8.47	Residential hall/ college	7	8.23
5. Country of origin			Apartment/Flat	28	32.94
Algeria	0	0.00	House	42	49.41
Bahrain	0	0.00	**9. Length of stay to date in Australia**		
Comoros	0	0.00	0-1	5	5.88
Djibouti	1	1.18	1-4	44	51.76
Egypt	0	0.00	4-7	28	32.94
Iraq	59	69.41	7-10	6	7.06
Jordan	8	9.41	More than 10 Years	2	2.35
Kuwait	1	1.18	**10. Duration of study to date**		
Lebanon	0	0.00	0-1	5	5.88
Libya	6	7.06	2-4	51	60.00
Mauritania	0	0.00	5-7	26	30.59
Morocco	0	0.00	8-10	2	2.35
Oman	1	1.18	More than 10 Years	1	1.18
Palestine	2	2.35	**11. Level of study**		
Qatar	0	0.00	Undergraduate	7	8.23
Saudi Arabia	3	4.71	Postgraduate	12	14.12
Somalia	0	0.00	PhD/ Doctorate	65	76.47
Sudan	0	0.00	Other	1	1.18

Source: Developed for this research.

6.5. The Kano-QFD application in three university cases

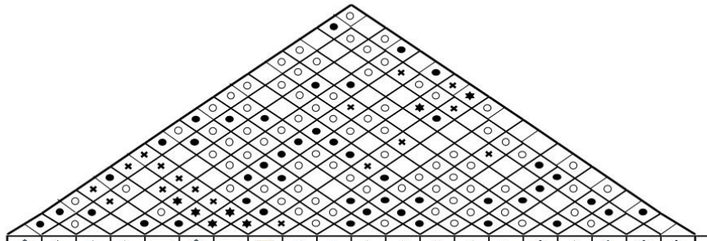
This section discusses the Kano-QFD matrices application adopted to investigate the issues related to the social and academic experiences of AIS in three Queensland university cases. Kano-QFD analysis provides a technique that systematically analyses the voice of the customer (VOC) and processes this to find solutions, through the voice of the student (VOS), to improve the phenomenon under investigation (Iqbal & Grigg, 2020; Iqbal et al., 2021). In other words, QFD integrated with Kano allocation allows IRs and universities to clearly understand what students want and what their expectations are of existing services. HOQ is the main tool required in the first phase of the comprehensive QFD approach (Rianmora & Werawatganon, 2021).

This study aims to contribute to the education system by taking the Kano-QFD approach, which is a systematic quality improvement tool used for identifying and addressing issues of importance to improve the quality of education and experiences of AIS in three Queensland universities. In achieving this goal, the construction of the matrices of the HOQ is the most cumbersome process involving calculations and iterations. The steps provided in the Kano-QFD analysis process, outlined in chapter three, were followed for the construction of the three HOQ cases. For this section, the HOQ matrix was developed to identify student requirements and institutional requirements needed to satisfy the identified student requirements. The findings from the application of QFD to the three Queensland university cases are depicted by the HOQ matrix, which is used for defining the relationships between student needs and university capabilities (shown in Figures 6.2, 6.10, and 6.18). As mentioned, the present study focused on the first phase matrix, HOQ. This is the part of QFD that represents a correlation matrix to relate student expectations to a description of how a university is going to meet those expectations (Camgöz-Akdağ et al., 2016). Applications of the Kano-QFD are described step by step for the three universities matrix cases in the following sections.

6.5.1. UQ matrix case application

The most important phase in QFD is the development of the HOQ. The final Kano-QFD matrix of UQ obtained in this case is given in Figure 6.2. The major components in the creation of the final Kano-QFD matrix are as follows:

Figure 6. 2: The Kano-QFD matrix of UQ case



Correlation among IRs	Symbols
Strong Positive Impact	●
Moderate Positive Impact	○
Moderate Negative Impact	✖
Strong Negative Impact	✱
Blank - No Impact	

Direction of Improvement	Symbols
Maximize	△
Target	◇
Minimize	▽
Not Applicable	N/A

Relationships Matrix	Symbols
Strong Relationship	● = 9
Moderate Relationship	○ = 3
Weak Relationship	Δ = 1
Blank - No Relationship	

Item No. of Student Requirements (SRs) & Institutional Requirements (IRs)				Enrolment Policies				Student Conduct					Academic Conduct		Course-related Conduct		Research-related conduct		Use of University Resources				Kano Classification with *CI*				Competition Analysis				Final Importance = *CI* * SP * IR*adj*				Priority of SRs		
				Adhere to the university's enrolment policies and procedures	Have English proficiency to successfully complete university study	Have the capacity to pay university fees	Maintain/uphold the reputation of the university	Students shall not collude or plagiarize	Follow the student code of conduct	Do not discriminate, bully or harass when interacting with other students, staff or other individuals visiting the university	Not undertake unlawful activities of any kind	Follow the university's international student's policy (only for students under 18)	Comply with examination or assessment instruction	Comply with rules of the academic misconduct	Maintain and enhance the trust that exists between academic staff and students through feedback and consultation	Comply with the course, program requirements, research integrity, and honesty	Maintain satisfactory progress through their HDR program and the undergraduate course	Attempt to resolve issues through informal discussion before taking a formal action	Follow university requirements in the use of university-provided ICT, other resources and infrastructure	The ability to work and learn independently and effectively	Comply with requirements of intellectual property rights	The ability to engage effectively and appropriately with ICT.	Ensure safety and the respect of property (University's and of others)	KANO Category	Kano Weight (KW)	m = max (SS,SD)	Student Importance Rate (CI)	Current Position (C) UQ	USQ Position *	QUT Position *	Quality Plan Target Level (P)	Original Improvement Ratio (IRo) = P/C	Adjusted improvement ratio (IR*adj*)	Sale Point Score (SP) (1, 1.25, 1.5)	Adjusted Importance (ACI) = CI* SP * IR*adj*	Relative Importance Weight (%RIW)	Student's Main Requirements (SMR)	Rank of Each SRs (R-SRs)	Rank of Both SRs (RBSRs)
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20																
Student's Requirements (SRs)	Academic Requirements (ARs)	Courses Content	Courses are delivered effectively at my university	1	45.08	45.08	45.08	15.03	45.08	45.08	45.08	45.08	15.03	45.08	45.08	45.08	45.08	45.08	45.08	45.08	45.08	15.03	45.08	15.03	I	0	0.49	3.75	4	3	4	4	1	1.000	1.50	5.625	5.009	7.350	7	1
			The learning is conducive to my learning and research	2	77.91	77.91	25.97	25.97	77.91	25.97	77.91	77.91	25.97	25.97	77.91	25.97	77.91	77.91	77.91	77.91	77.91	25.97	77.91	77.91	O	1	0.70	4.06	4	3	4	4.5	1.125	1.916	1.25	9.721	8.657		3	
		University Reputation	My university degree provides me with more job opportunities	3	94.15	94.15	10.46	94.15	10.46	10.46	51.38	94.15	51.38	51.38	10.46	51.38	31.38	51.38	31.38	10.46	51.38	51.38	10.46	31.38	O	1	0.66	4.2	4	3	4	4.5	1.125	1.865	1.50	11.748	10.461		1	
			The academic staff in my area of study at university have a good reputation	4	84.92	84.92	9.44	84.92	84.92	28.31	84.92	84.92	9.44	28.31	28.31	84.92	28.31	84.92	28.31	28.31	84.92	25.07	28.31	9.44	O	1	0.66	4.25	4	3.5	4	4	1	1.662	1.50	10.596	9.436		2	
		Available Resources	Able to meet with supervisor and lecturer, and receive feedback	5	23.21	69.63	7.74	23.21	23.21	23.21	23.21	23.21	23.21	69.63	23.21	69.63	23.21	69.63	69.63	23.21	69.63	69.63	23.21	7.74	O	1	0.64	3.77	4	4	4	4.5	1.125	1.844	1.25	8.688	7.737		4	
			Provides sufficient access to the library resources and online database	6	15.19	45.58	15.19	5.06	5.06	5.06	15.19	15.19	5.06	15.19	15.19	15.19	15.19	15.19	15.19	15.19	45.58	45.58	15.19	45.58	45.58	I	0	0.45	3.64	4	3	3	5	1.25	1.250	1.25	5.688	5.065		6	
		Educational Facilities	Student services adequately enhance my learning experiences	7	4.78	4.78	14.35	14.35	14.35	14.35	14.35	14.35	14.35	4.78	14.35	43.05	14.35	14.35	4.78	14.35	14.35	14.35	43.05	14.35	I	0	0.55	3.82	4	4	4	4.5	1.125	1.125	1.25	5.372	4.784		8	
			Logistics and facilities support my learning experiences	8	22.95	22.95	68.84	22.95	7.65	22.95	22.95	22.95	22.95	22.95	68.84	22.95	22.95	22.95	22.95	68.84	68.84	7.65	68.84	68.84	M	0.5	0.64	3.97	4	4	4	4.5	1.125	1.442	1.50	8.589	7.649		5	
	Personal Requirements (PRs)	Cultural Activities	I feel welcomed and integrated into the university community	9	8.68	78.09	8.68	8.68	78.09	78.09	78.09	78.09	26.03	26.03	26.03	26.03	8.68	8.68	26.03	26.03	26.03	8.68	26.03	78.09	I	1	0.55	3.73	4	4	4	4.5	1.125	1.741	1.50	9.743	8.676		2	
			I feel welcomed and integrated into the wider community	10		12.36			4.12	37.07	12.36	4.12			4.12	4.12	4.12	4.12	4.12	4.12		4.12		12.36	M	0	0.67	3.7	4	3	4	4	1	1.000	1.25	4.625	4.119		6	
		Student Services	Student support services made immigration regulations easy to understand and manage	11	13.78	4.59	4.59			13.78	13.78	13.78		4.59	4.59		13.78	4.59	13.78	4.59	4.59		4.59	13.78	M	0.5	0.58	3.28	4	3	3	4	1	1.258	1.25	5.157	4.592	6.867	5	2
			I usually have no difficulty paying for education and living expenses	12	5.13		46.16		5.13	5.13	5.13					5.13	15.39		15.39	5.13	5.13		15.39	15.39	I	0	0.42	2.88	3	3	3	4	1.333	1.333	1.50	5.760	5.129		4	
		Other Supports	Support is available for students who have a financial hardship	13	202.99		202.99	34.33	34.33	11.44	11.44	34.33		11.44	34.33	34.33	11.44	34.33	34.33	34.33	34.33	11.44	11.44	A	2	0.60	4.03	4	4	4	4	1	2.551	1.25	12.851	11.444		1	
			Support is available for my family if required	14			21.73	7.24		7.24	21.73	7.24				7.24	7.24	7.24	7.24		21.73		7.24	21.73	A	2	0.49	3.65	4	3	4	4	1	2.229	1.00	8.135	7.244		3	
Institutional Absolute Importance Weight (IAIW)				498.77	540.04	381.22	335.89	316.78	295.19	482.23	523.56	177.54	285.35	309.65	460.91	319.03	420.37	396.12	360.93	533.62	212.95	407.13	425.06	7680.34					Total (100%)								100		
Institutional Relative Importance Weight (%IRIW)				6.494	7.031	4.964	4.373	4.125	3.843	6.279	6.817	2.312	3.715	4.032	6.001	4.154	5.473	5.158	4.699	6.948	2.773	5.301	5.508	100															
Institutional Priority Rating																																							
Technical Difficulty (TD) (1=Easy to Accomplish, 10=Extremely Difficult)				3	6	3	8	7	5	4	4	2	4	6	7	3	2	5	4	3	3	3	4															
Institutional Competitiveness Assessment	Current University (UQ)			9.5	9.5	9	10	9	10	9.5	9.5	9.5	10	9.5	9.5	9.5	10	10	9.5	9	9	9	9															
	QUT Performance *			10	9	10	9	9	10	9.5	9	9.5	9.5	10	9	9.5	10	10	9	9	9	9.5	10															
	USQ Performance *			8	7	8	6	7	8	8	9	9	8	7	8	8	9	8	9	8.5	9	8	9															
10 5 1 High ← Average → Low	Target Values			10 per term	9.5 course/ IELTS score	10 $ per semester	10 Ranking	9 ratio of upheld over reported	10 # of reported incidents	9.5 disciplinary action	9.5 ratio of action over reported	10 # of student under 18	10 course engagement data	9.5 ratio of upheld over reported	10 course engagement data (inc. QILT)	9.5 progression & graduation rates	10 ratio of upheld over reported	10 # of reported complaints	9.5 reported incidents	9.5 GPA	9 # of reported breaches	9.5 anecdotal	10 # of reported incidents																
Ranking of Institutional Priorities				4	1	11	13	15	17	5	3	20	18	16	6	14	8	10	12	2	19	9	7															

112.29745

Kano Category	& Values
Attractive	A = 2.0
One-dimensional	O = 1.0
Must-be	M = 0.5
Indifferent	I = 0

House of Quality (HOQ) Matrix for UQ

6.5.1.1. Generating the planning matrix

The planning matrix is one of the subsidiary matrices of the Kano-QFD. The primary prioritisation and re-prioritisation of customers' requirements are done using this matrix, which is a practical tool (Pourhasomi et al., 2013). The main purpose of this matrix is to provide information about what advantages the university has over other competitors and information about what the university's weaknesses are compared to other competitors so that it can be a reference for improvement (Gangurde & Patil, 2018; Prasetyo & Harsanto, 2019). The planning matrix shows the weighted importance of each requirement that all universities are attempting to fulfill. The planning matrix uses a scale of 0 through 5 to analyse how each university is being rated. Students' ratings, ranging from 0 to 5, were given to each requirement (Chan & Wu, 2005; Shrivastava, 2016). In this case, 0 is the worst rating, and 5 is the best. The student ratings are combined with the weighted importance of each requirement to calculate an overall performance (Kang & Qu, 2021). The planning matrix is located next to the competitive matrix on the right side of the Kano-QFD matrix. This matrix consists of four main groups of variables as follows:

(1) Kano classification with a raw student importance rating of the student requirements: The matrix of the Kano-QFD starts with the student and their individual qualitative requirements. All relevant quality requirements were included in this section including the raw value degree.

(2) Competition analysis: Evaluation of the university by the student and competitors' universities offers the opportunity to benchmark. A general survey method is used to perform a competitive comparison. Survey methods generally use a 5-point scale. On this scale, 5 reflects strictly meeting the needs of the case, 3 is the middle level, and 1 is certainly not met. Analysing offers of service is a complex process due to the ambiguities of determining the quality target level, and sale point (Pourhasomi et al., 2013). The HEIs that seek competition and effective presence in the market need to ask the student about how well the service rates against the competition and about its qualitative features.

(3) Final importance weight for requirements: This involves deciding on the absolute weight and final weight of each requirement. The value of the importance that the

students attach to expectations is in the column of the final importance rating for the customer.

(4) The priority of student requirements (SRs): After calculating the student's final importance weight for each requirement, the next task was to calculate the mean of SRs (MSRs) (Iqbal et al., 2021; Singh & Rawani, 2019). The MSRs rating is simply the mean of all calculated sub-requirement ratings for each main requirement, including the groups of academic requirements (ARs) and personal requirements (PRs).

The quality planning matrix is prepared according to the Kano model, which is adapted to the Kano model of the UQ case, presented in Table 6.6. The data collected were developed for competition analysis and collected by the competitive benchmarking questionnaire in the Kano questionnaire (Kelesbayev et al., 2020).

Table 6. 6: Planning matrix according to Kano categories of UQ.

Student Requirements (SRs)	Planning Matrix (1=Less important, 5= Most important)													Ranking of SRs
	Kano Classification with CI				Competition Analysis				Final Importance = CI * SP * IR *adj*					
	Kano Category	Kano weight	m = max (SS, SD)	Importance Rate (CI)	Current Position (C) UQ	USQ Position	QUT Position	Quality Plan Target (P)	Improvement Ratio (IRo)	Adjusted Improvement (IR adj)	Sales Point (SP)	Adjusted Importance (ACI)	Relative Importance Weight (RIW)	
SR1	I	0	0.49	3.75	4	3	4	4	1	1.000	1.50	5.625	5.009	11
SR2	O	1	0.70	4.06	4	3	4	4.5	1.125	1.916	1.25	9.721	8.657	5
SR3	O	1	0.66	4.2	4	3	4	4.5	1.125	1.865	1.50	11.748	10.461	2
SR4	O	1	0.66	4.25	4	3.5	4	4	1	1.662	1.50	10.596	9.436	3
SR5	O	1	0.64	3.77	4	4	4	4.5	1.125	1.844	1.25	8.688	7.737	6
SR6	I	0	0.45	3.64	4	3	3	5	1.25	1.250	1.25	5.688	5.065	10
SR7	I	0	0.55	3.82	4	4	4	4.5	1.125	1.125	1.25	5.372	4.784	12
SR8	M	0.5	0.64	3.97	4	4	4	4.5	1.125	1.442	1.50	8.589	7.649	7
SR9	I	1	0.55	3.73	4	4	4	4.5	1.125	1.741	1.50	9.743	8.676	4
SR10	M	0	0.67	3.7	4	3	4	4	1	1.000	1.25	4.625	4.119	14
SR11	M	0.5	0.58	3.28	4	3	3	4	1	1.258	1.25	5.157	4.592	13
SR12	I	0	0.42	2.88	3	3	3	4	1.333	1.333	1.50	5.760	5.129	9
SR13	A	2	0.60	4.03	4	4	4	4	1	2.551	1.25	12.851	11.444	1
SR14	A	2	0.49	3.65	4	3	4	4	1	2.229	1.00	8.135	7.244	8

Source: Developed for this research.

Specifically, Table 6.6 shows the list of elements in the planning matrix based on the sequence of the steps above. For student requirements (SRs) steps, this starts with the list of desirable qualities. These were already achieved through focus group discussions and the Kano model approach described previously. All relevant qualities were included in this section which is called the SRs list. The results from the questionnaire provide real information about the SRs of all three university cases. As mentioned in the research methodology chapter, the aim of the Kano model is to re-prioritise SRs in order to show which SRs should be tackled first (Garibay et al., 2010). Opinions from the expert team were essential in defining such priorities. Table 6.6 shows the planning matrix columns on the right side of the Kano-QFD matrix case as follows:

The [1] column in Table 6.6 is the Kano categories (KC). Results obtained from the Kano model method were integrated into the QFD matrix (provided in Appendix F). The categories of the requirements are evaluated with the help of the frequency of the student's responses.

After the determination of student requirements, each requirement is classified by the phase of the Kano category it belongs to. As stated previously in chapter three, SRs for each of the participants in the questionnaire, two questions/statements of the Kano type (positive and negative), based on their responses, are classified according to Kano Evaluation Table (KET) (refer to Table 3.6 in chapter three). Answers to functional and dysfunctional questions were compared for every respondent, enabling every service requirement to be assigned to one of the six quality service categories according to KET.

The results were interpreted according to the frequency of the answers. The maximum value of O, A, M, I, R, and Q must be adopted. However, if two of the results have the same frequency, the following priorities must be considered M> O >A> I rule (Gupta & Shri, 2018; Kohli & Singh, 2020; Ma et al., 2019; Mustafa & Kelesbayev, 2018). In other words, during service development, quality requirements in the 'Must-be' construct must first be satisfied to prevent a sharp increase in dissatisfaction. Then, attractive requirements should be introduced to increase student satisfaction. As mentioned previously in chapter 3, after identifying the categories of each requirement, the student satisfaction (SS) coefficient was calculated to determine the positive or negative value of the requirement. The coefficient of satisfaction highlights if, by accomplishing a requirement, the level of SS can be increased or if it will just stop the student from being dissatisfied (Gupta & Shri, 2018). The student satisfaction index (SSI) was determined by adding the response quality requirement "attractive" and "one-dimensional", then dividing it by the total number of responses "attractive", "one-dimensional,"

"must-be," and "indifferent", as provided in equation (1). By contrast, the student dissatisfaction index (SDI) was calculated by adding the quality requirement response "must-be" and "one-dimensional", and then dividing it by the total number of responses related to quality requirements "attractive, "one- dimensional, "must-be" and "indifferent", before putting a minus sign in front of a calculated value, as given in equation (2). The closer the value to 1 of SSI, the greater the possibility of meeting the student requirement, whereas the closer the value to −1 of SDI, the greater the chances of not meeting the student requirement. The closer the value is to zero, the lesser the influence (Chaudha et al., 2011; Gangurde & Patil, 2018; Gupta & Shri, 2018; Kelesbayev et al., 2020; Kohli & Singh, 2020; Lo, 2021; Min & Park, 2019; Mkpojiogu & Hashim, 2016; Roy et al., 2020); SS and SD coefficients are calculated by equations (1) and (2), respectively:

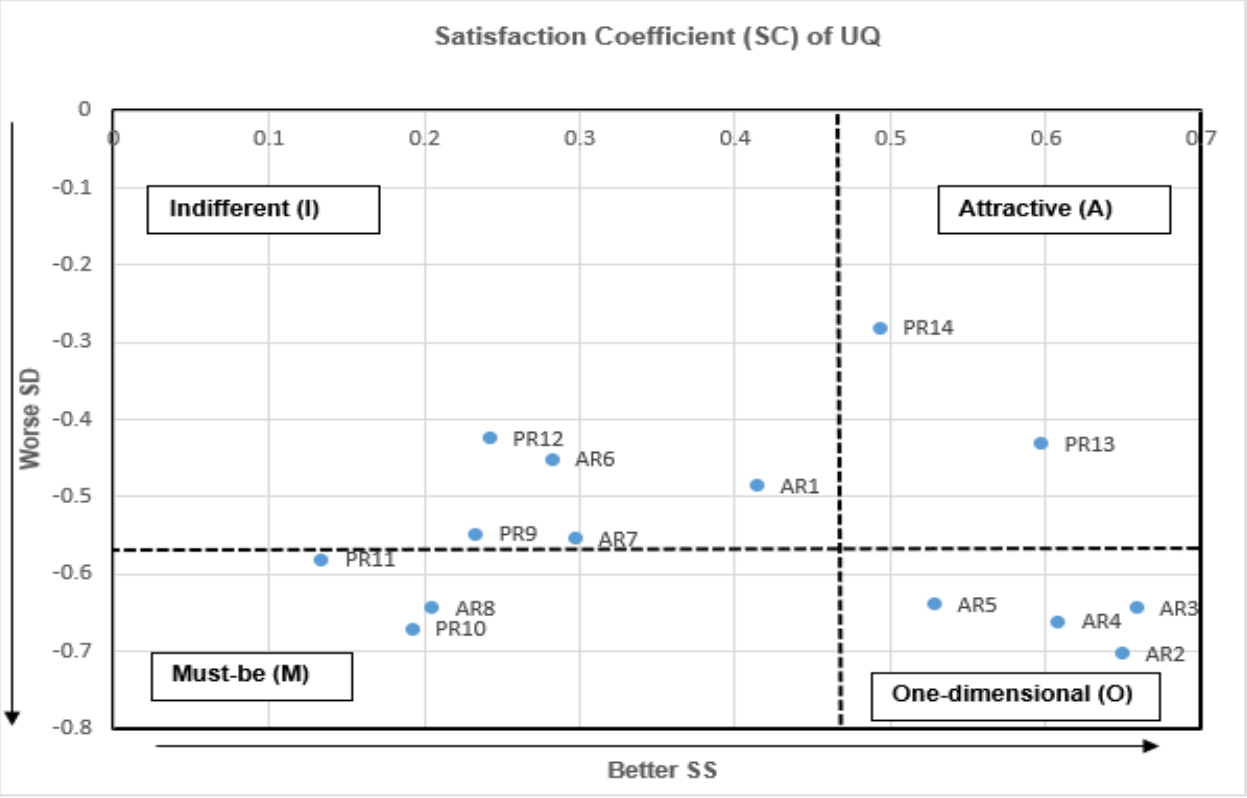
$$\text{Student satisfaction index (SSI)} = (A + O)/(A + O + M + I) \quad (1)$$

$$\text{Student dissatisfaction index (SDI)} = (O + M)/(A + O + M + I)\ (-1) \quad (2)$$

The better or positive value of SSI and the worse value of DSI between zero and one were plotted on the student satisfaction coefficient diagram (Mote et al., 2016). A value of zero shows that this requirement does not cause dissatisfaction if it is not met. In this way, all the SRs, which are academic requirements (ARs) and personal requirements (PRs), are visually presented in Figure 6.3. The diagram is divided into four quadrants according to the four types of requirements. The four types are attractive, must-be, indifferent, and one-dimensional. Pairs of SS and DS coefficients for each requirement are plotted in the student satisfaction coefficient diagram. The quality requirements plotted in the first quadrant (high extent of satisfaction, low extent of dissatisfaction) are the key attractive personal student requirements (PSRs). It is clear from the evaluation diagram that there are some requirements which, if provided, will make students highly satisfied. Those are PR14 "Support is available for my family if required" and PR13 "Support is available for students who have a financial hardship". This diagram shows that the university must focus on requirements placed in attractive and one-dimensional categories to achieve positive results. In the second quadrant (high extent of satisfaction with high extent of dissatisfaction), four requirements that come under the one-dimensional category, namely AR3 "My university degree provides me with more job opportunities", AR2 "The learning is conducive to my learning and research", AR4 "The academic staff in my area

of study at university have a good reputation", and AR5 "Able to meet with supervisor and lecturer, and receive feedback", were in the effective improving area. The requirements nearer to the one-dimensional and attractive category must be focused and accomplished in order to have a major impact on the satisfaction of students. Requirements such as AR8 "Logistics and facilities support my learning experiences", PR11 "Student support services made immigration regulations easy to understand and manage", and PR10 "Student support services made immigration regulations easy to understand and manage" came under the must-be category, and they are plotted in the third quadrant (low extent of satisfaction with high extent of dissatisfaction). They lead to student dissatisfaction when the university is less functional in relation to these quality requirements than students expect, but they have no effect on satisfaction when they are fully functional. The fourth quadrant includes the rest of the requirements that came under the indifferent category (low extent of satisfaction with low extent of dissatisfaction) (PR9, AR6, AR7, PR12, and AR1), which does not provide a strong view on satisfaction or dissatisfaction, and it is therefore less important for the university to pay as much attention to these requirements.

Figure 6. 3: Student satisfaction coefficient diagram for UQ case



Source: Developed for this research

The [2] column in Table 6.6 comprises Kano weight or (*K* value), and they are listed in this column in UQ's matrix according to Kano's categories. The K value is decided according to extended options by Chaudha et al. (2011) in which the value of *K* is defined as 0, 0.5, 1, and 2 for Indifferent (I), Must-be (M), One-dimensional (O), and Attractive (A) requirements, respectively (Gangurde & Patil, 2018; Hashim & Dawal, 2012; Nahm, 2013; Nahm et al., 2013; Tontini, 2007). This approach increases the weight of must-be requirements (*K* = 0.5) and decreases the weight of attractive requirements (*K* = 2). In this case, the QFD team will put extra effort into improving must-be requirements and may lose the opportunity of paying attention to attractive requirements (Nahm, 2013).

The [3] column is the adjustment factor or (m=max value), which Tontini (2007) proposed to be used directly in the Kano-QFD matrix, and it is provided in equation (3) (Bhardwaj et al., 2021; Gangurde & Patil, 2018; Hashim & Dawal, 2012) (see Table 6.7).

Adjusted factor (m) = max $([SSI], [SDI])$ (3)

Table 6. 7: Kano questionnaire results and calculations of SS and SD coefficient of UQ case

Student Main Requirements	SRs	Categories						Total	KC	Satisfaction Coefficient (SC)		Max *(m)*
										Student Satisfaction	Student Dissatisfaction	
		A	O	M	R	Q	I			Better SS	Worse SD	
Academic Student Requirements (ASR)	ASR1	6	23	11	2	2	**30**	74	I	0.414	-0.486	0.486
	ASR2	7	**41**	11	0	0	15	74	O	0.649	-0.703	0.703
	ASR3	9	**39**	8	1	0	17	74	O	0.658	-0.644	0.658
	ASR4	6	**39**	10	0	0	19	74	O	0.608	-0.662	0.662
	ASR5	4	**34**	12	2	0	22	74	O	0.528	-0.639	0.639
	ASR6	7	13	19	3	0	**32**	74	I	0.282	-0.451	0.451
	ASR7	4	18	23	0	0	**29**	74	I	0.297	-0.554	0.554
	ASR8	3	12	**35**	1	0	23	74	M	0.205	-0.644	0.644
Personal Student Requirements (PSR)	PSR9	3	14	26	1	0	**30**	74	I	0.233	-0.548	0.548
	PSR10	3	11	**38**	1	0	21	74	M	0.192	-0.671	0.671
	PSR11	3	6	**33**	7	0	25	74	M	0.134	-0.582	0.582
	PSR12	11	5	23	7	1	**27**	74	I	0.242	-0.424	0.424
	PSR13	**25**	18	13	2	0	16	74	A	0.597	-0.431	0.597
	PSR14	**29**	6	14	2	1	22	74	A	0.493	-0.282	0.493

Source: Developed for this research.

The adjustment factor (m) is the higher absolute value of SS or SD, putting more weight on the requirements that bring more satisfaction when present, or that bring more dissatisfaction when absent. The factors of performance, excitement and basic requirements and the corresponding

student satisfaction or dissatisfaction brought about by these factors will be considered. The impact of the past experience on the Kano-QFD approach based on the use of adjustment factor (equation (3) is lower than the impact on Tan and Shen (2000) approach because the Kano-QFD approach does not use the stated importance to calculate finals weights. The Kano model questionnaire asks students to state their satisfaction or dissatisfaction with a hypothetical situation. Moreover, the Kano-QFD approach is different from Tan and Shen (2000) in that the latter uses predefined values while the Kano-QFD approach empirically establishes the values for parameters of Kano categories (see Table 6.8).

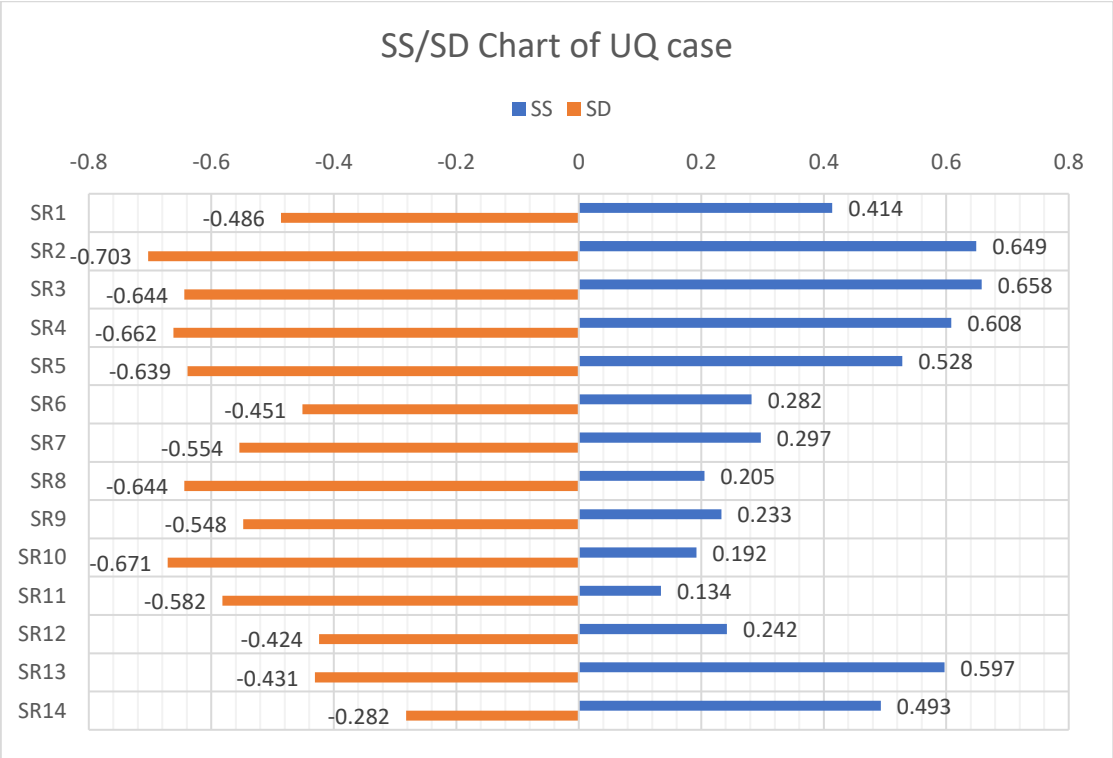
Table 6. 8: Kano results with the current student satisfaction level for the UQ case

Questions / Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N	sum	Weighted Average	Mean	Median P50
	1	2	3	4	5					
1. Functional	5	3	10	37	14	69	259	3.75	3.754	4
1. Dysfunctional	14	28	15	10	2	69	165	2.39	2.391	
2. Functional	3	0	10	30	23	66	268	4.06	4.061	4
2. Dysfunctional	25	21	10	3	2	61	119	1.95	1.951	
3. Functional	2	0	9	27	28	66	277	4.20	4.197	4
3. Dysfunctional	26	21	13	4	2	66	133	2.02	2.015	
4. Functional	1	0	7	30	26	64	272	4.25	4.656	4
4. Dysfunctional	30	24	6	4	1	65	117	1.80	1.815	
5. Functional	3	2	20	22	18	65	245	3.77	3.769	4
5. Dysfunctional	19	22	18	4	2	65	143	2.20	2.200	
6. Functional	3	5	19	22	15	64	233	3.64	3.641	4
6. Dysfunctional	14	15	23	10	2	64	163	2.55	2.547	
7. Functional	0	4	18	25	15	62	237	3.82	3.823	4
7. Dysfunctional	18	20	17	6	1	62	138	2.23	2.226	
8. Functional	0	3	12	31	16	62	246	3.97	3.968	4
8. Dysfunctional	19	25	12	6	0	62	129	2.08	2.081	
9. Functional	1	4	17	29	11	62	231	3.73	3.726	4
9. Dysfunctional	10	28	17	6	1	62	146	2.35	2.355	
10. Functional	2	2	19	26	11	60	222	3.70	3.700	3
10. Dysfunctional	11	21	22	5	1	60	144	2.40	2.400	
11. Functional	7	7	15	24	7	60	197	3.28	3.283	3
11. Dysfunctional	8	19	17	11	5	60	166	2.77	2.767	
12. Functional	10	8	28	7	7	60	173	2.88	2.883	3
12. Dysfunctional	6	9	27	11	7	60	184	3.07	3.067	
13. Functional	1	0	13	28	18	60	242	4.03	4.033	4
13. Dysfunctional	16	25	14	4	1	60	129	2.15	2.150	
14. Functional	3	1	20	26	10	60	219	3.65	3.650	4
14. Dysfunctional	10	25	17	7	1	60	144	2.40	2.400	

Source: Developed for this research.

In Figure 6.4, SD is shown as a negative value to emphasise the negative impact of the feature functionality on the student. The SSI and SDI coefficients are illustrated in graphical form in Figure 6.4. These coefficients show how a particular feature may affect student satisfaction and eventually play a role in affecting the decision of a student. The knowledge of these success/risk factors of student satisfaction will help developers as they design and develop educational services for the university.

Figure 6. 4: Satisfaction and dissatisfaction coefficients chart for the UQ case



Source: Developed for this research.

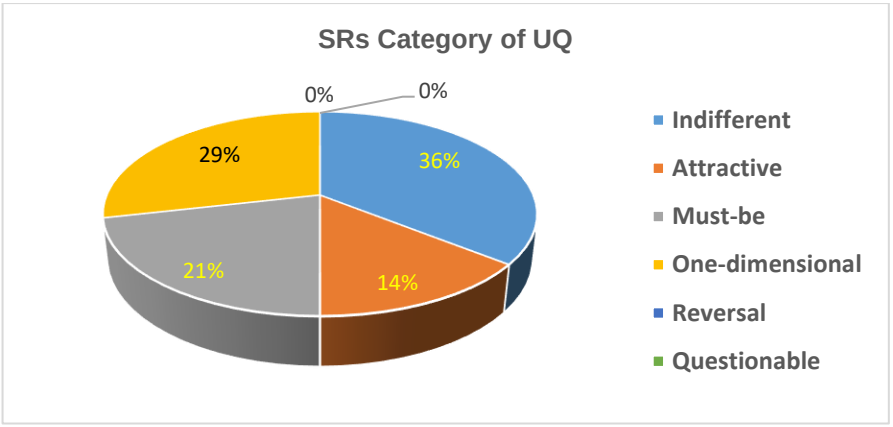
Figure 6.5 illustrates that indifferent requirements were 36%, 29% for one-dimensional requirements, 21% for must-be requirements, and 14% for the attractive requirements. In designing the quality of educational services at UQ, requirements for must-be, attractive, and one-dimensional should be seriously considered, without ignoring completely all requirements followed under indifferent requirements. As can be seen in Figure 6.5, among the total 14 quality SRs, most of the SRs (*n*=5) were classified as "Indifferent" needs. This was followed by a number of SRs (*n*=4) that were classified as "One-dimensional" needs. Relatively few SRs (*n*=3) were categorised as "Must-be" requirements, and the rest (*n*=2) fell into the Kano category of "Attractive" quality requirements.

The [4] column in Table 6.6 consists of importance ratings (IC) of the student, which were obtained from a survey conducted with (85) students studying at UQ at the time. In order to evaluate the student requirements, a degree of importance was assigned by the student to each quality requirement in Likert scales using a range of one-to-five-points: (1) of no importance, (3) important, and (5) most important (Dias Júnior et al., 2020; Hashim & Dawal, 2012;

Shrivastava, 2016). This number is used later to determine the final adjusted importance rating of the student (ACI) in the next column (12).

The [5, 6, 7, and 8] columns (Table 6.6) are the competition analysis elements. It can be seen in column [5] in Table 6.6 how students regard the current service of UQ's position or performance, namely the level of current student satisfaction (C), along with the levels of competitor universities' positions in columns [6 and 7] in Table 6.6. Such figures correspond to the weighted average values of the (89) questionnaires for the specific functional and dysfunctional items shown in Table 6.8. Meanwhile, the [8] column in Table 6.6 refers to the student satisfaction target or the quality plan (P). Like the prioritising of the Kano categories, the expert team defined these values by calculating the mean and median P50 of each functional statement to represent the ratings of student importance (CI) and current satisfaction (C) (Koç, 2015), Table 6.8 shown the Kano results with the current student satisfaction level for the UQ case.

Figure 6. 5: Categorisation of requirements based on Kano analysis – UQ case



Indifferent	• I feel welcomed and integrated into the university community. • Provides sufficient access to the library resources and online database. • Student services adequately enhance my learning experiences. • I usually have no difficulty paying for education and living expenses. • Courses are delivered effectively at my university.
One-dimensional	• My university degree provides me with more job opportunities. • The learning is conducive to my learning and research. • The academic staff in my area of study at university have a good reputation. • Able to meet with supervisor and lecturer and receive feedback.
Must-be	• Logistics and facilities support my learning experiences. • Student support services made immigration regulations easy to understand and manage. • I feel welcomed and integrated into the wider community.
Attractive	• Support is available for students who have a financial hardship. • Support is available for my family if required.
Reversal	• NONE
Questionable	• NONE

Source: Developed for this research.

The next element presented in column [9] (Table 6.6) is the original improvement ratio (IRo). The values were computed by dividing the value of the planned level by the value of the current

position rating for the UQ case. Then the improvement ratio (IRo) was estimated with the following formula, equation (4) (Iqbal & Grigg, 2020; Ömürgönülşen et al., 2020; Sharma, 2020):

Improvement Ratio (IRo) = P/C (4)

Where; P = quality plan target level of satisfaction, C = the current position of the university.

Results show that all the student requirements have IRo values between 1 and 1.333, which are good indicators of bad processes which highlight student requirements that should receive priority attention in order to improve the process. Student requirements with the highest value should be considered first, and the lowest last. In this case, the one top student requirement, "The academic staff in my area of study at university have a good reputation" (SR12) (1.333) should first receive attention. However, the student requirement is followed by SR6, which has the same value of (1.333). Therefore, IRo indicates the effort level; the larger the ratio, the greater the effort because of the gap between actual and projected quality (Chaudha et al., 2011). . The function of each of these improvement factors is raw and they have not yet been considered combined with Kano values. Gangurde and Patil (2018) indicated the adjustment of the improvement ratio according to the equation (5):

Adjusted improvement Ratio, IR$adj = (1 + m)^k \times IR_o$ (5)

Where, *m* = Adjusted factor, *K* = Kano weight or value, IR_o = Improvement ratio.

The adjusted improvement ratio utilised important parameters from the Kano method that contributed to the QFD matrix noted previously. It adjusts the improvement factors for each student requirement's Kano category, where *K* = Kano value is defined as 0, 0.5, 1, and 2 for Indifferent (I), Must-be (M), One-dimensional (O), and Attractive (A) respectively. The combination of the value of (*m*) and respective Kano category will give an adjustment factor which is applied to the original improvement ratio, multiplied by the adjusted improvement ratio of self-stated importance results, to give the final importance of customer requirements (Chaudha et al., 2011). The adjusted improvement factor (IR *adj*) appears in the [10] column (Table 6.6).

An adjusted improvement ratio (IR *adj*) larger than one indicates student requirements that should be improved. In this case, four student requirements, indicated in Table 6.6, showed the highest importance, SR14, SR13, SR6, and SR9 respectively, which means they should be the first priority to be addressed.

The [11] column (Table 6.6) is the sale point (SP) score: Selling point scores represent the contribution of a student's need to the selling power of the service (Kelesbayev et al., 2016; Sharma & Rawani, 2009). Numerically, 1.5, 1.25, and 1 are assigned to strong, moderate, and no sales points respectively (Chan & Wu, 2002b, 2005; Kelesbayev et al., 2020; Koç, 2015). Usually, a "strong" sales point is reserved for an important requirement where each comparing university is rated poorly; a "moderate" sales point means the importance rating provides a competitive opportunity (Chan & Wu, 2002a). These ratings were determined by the QFD team as a result of discussions of how the development on these expectations will affect the sales point (Koç, 2015). For example, in the case of UQ, the developing requirement of "My university degree provides me with more job opportunities" has an effect on students preferring UQ.

The sales point score was determined as 1.5 for this forecast. The selling point was determined based on the extent of the influence on the market competition, whether it could improve the quality of the student's experience, and the selling/competitiveness and success of the university (Kelesbayev et al., 2016; Sugiarti et al., 2018).

The [12] column (Table 6.6) is the adjusted importance (ACI) of the required quality, which was obtained by multiplying the degree of importance (CI) for each student's requirements to the adjusted improvement ratio (IR *adj*), and the sales point score (SP), using equation (6) as follows (Dias Júnior et al., 2020; Gangurde & Patil, 2018; Sharma, 2020; Taifa et al., 2021):

Adjusted importance to student requirement $ACI_i = CI_i \times IR_{adj} \times SP_i$ (6)

This element was calculated to provide a clearer view of what student requirements should be tackled first. This adjusted importance (ACI) is transformed into a percentage in the next column.

The [13] column (Table 6.6) is the relative importance weight (RIW%), which was obtained from the percent importance weight for each requirement. Percentage weights for each student requirement needed the conversion of normalised weights into percentages through multiplication by 100, as given in equation (7) (Dias Júnior et al., 2020; Kurtulmuşoğlu & Pakdil, 2016; Singh & Rawani, 2019). This weight provides a clear indicator to set the priority of SRs for improvement (Gangurde & Patil, 2018). The relative importance weights for student requirements are shown in the planning matrix of the UQ Kano-QFD matrix in Table 6.6.

$$RIW(\%) = \left(\frac{ACI_i}{\sum_{i=1}^{n} ACI_i}\right) \times 100 \quad (7)$$

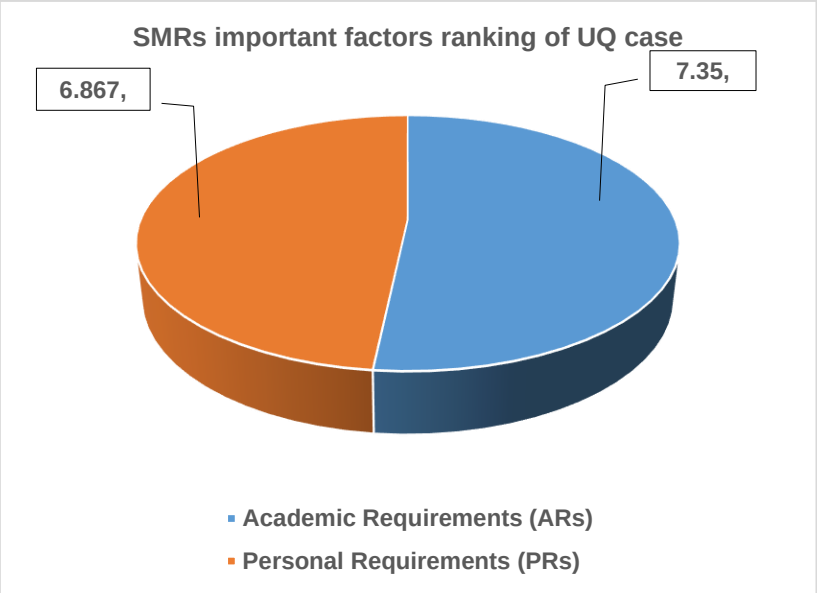
Finally, the last three columns show the student's main requirement, a rank of each student's requirements (SRs), and a rank of each student's main requirements (SMRs). After calculating a student's sub-requirement weights, the next task was for the SMR ratings to be calculated. The SMR rating is simply the mean of all calculated sub-requirements ratings of each main requirement. The list of sub-requirements for different main requirements varies in number. Therefore, a generalised formula to calculate the SMR rating is provided in equation (8). These SMRs' rating are shown in the third last column of the Kano-QFD matrix in 6.2 (Kurtulmuşoğlu & Pakdil, 2016; Singh & Rawani, 2019):

$$SMR = \frac{\sum_{i=1}^{n} SRs_{im}}{n} \quad (8)$$

For the *mth* SMR ratings, in this research two main requirements (ARs and PRs) have been considered. Here *m* varies from 1-2, and SRs*im* = *ith* student's sub-requirement ratings of *mth* main requirement; *i* varies from 1 to *n*, where *n* is the number of a student's sub-requirement ratings of a particular main requirement.

In order to define the importance rating of SMRs, the last column in the planning matrix of the Kano-QFD matrix of UQ indicated that the SMRs were statistically analysed and plotted on the pie chart shown in Figure 6.6. It is clear that the academic student requirements (ARs) (7.35) with (percentage score 52) demonstrate importance as dominant factors of AIS's requirements in the UQ case. In contrast, their personal student requirements (PRs) were less than fifty per cent importance. Therefore, ARs should be given the highest priority to fulfill student needs.

Figure 6. 6: SMRs ranking for UQ

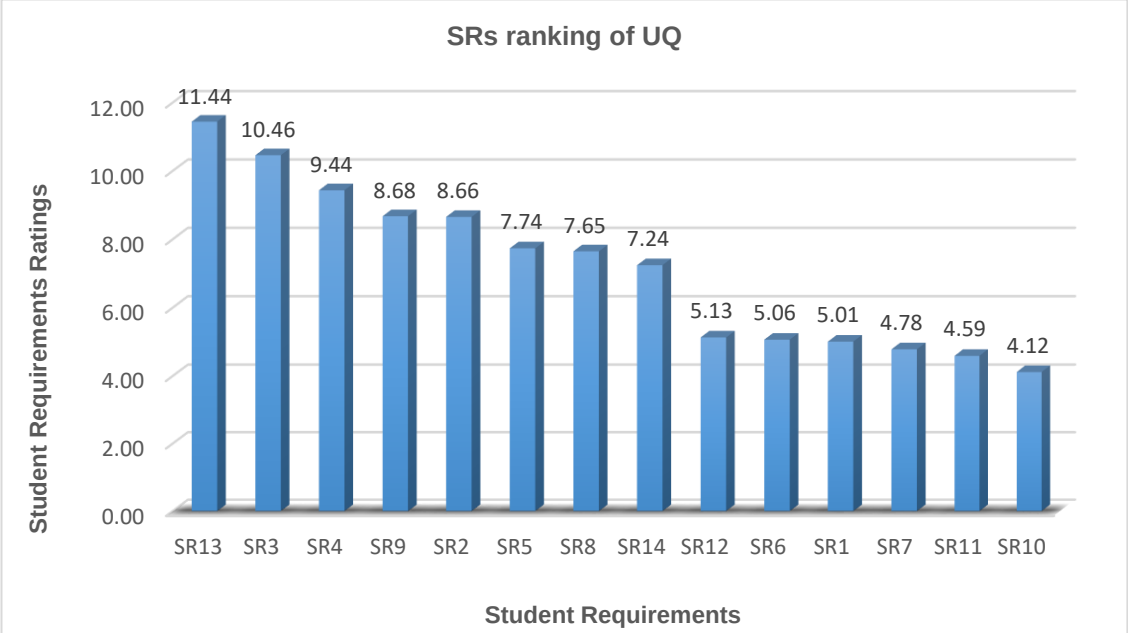


Source: Developed for this research.

In this context, Figure 6.7 shows the results of the student's sub-requirements. The most dominant factors of the student's sub-requirements included: "Support is available for students who have a financial hardship" (percentage score 11.44), "My university degree provides me with more job opportunities" (percentage score 10.46), "The academic staff in my area of study at university have a good reputation" (percentage score 9.44), "I feel welcomed and integrated into the university community" (percentage score 8.68), and "The learning is conducive to my learning and research" (percentage score 8.66), respectively. The most important of these, were: "Support is available for students who have a financial hardship", and "My university degree provides me with more job opportunities" as these were the most highly-rated parameters. Therefore, they should be given the highest priority in order to fulfill students' needs. Moderately rated importance parameters included: "Able to meet with supervisor and lecturer, and receive feedback" (percentage score 7.74), "Logistics and facilities support my learning experiences" (percentage score 7.65), "Support is available for my family if required" (percentage score 7.24), "I usually have no difficulty paying for education and living expenses" (percentage score 5.13), "Provides sufficient access to the library resources and online database" (percentage score 5.06), and "Courses are delivered effectively at my university" (percentage score 5.01). These ratings indicated that these were also important needs of the students. Of lesser importance to the needs of the students were: "I feel welcomed and

integrated into the wider community" (percentage score 4.12), "Student services adequately enhance my learning experiences" (percentage score 4.78). Of these low ranked parameters "I feel welcomed and integrated into the wider community" was found to be the least important need of the students, and it should therefore be given the lowest priority when satisfying students' requirements.

Figure 6. 7: Ranking of the SRs constructs based on perceived importance for UQ case



Source: Developed for this research.

6.5.1.2. Establishment of the relationship matrix

The next step in building a HOQ was to compare the SRs and IRs to determine their respective relationships. In the relationship matrix of the Kano-QFD matrix, it was specified that there were 14 student requirements and 18 corresponding institutional requirements to satisfy them. After the SRs and IRs were identified, a relationship matrix was constituted by the QFD team to determine how well institutional requirements meet student needs as well as the relationship weighting between SRs and IRs. The adjusted importance ratings (ACI) provide ranking IRs, with the highest values being the most important that satisfy the students' needs or

requirements. After setting up the basic matrix, it was necessary to assign relationships between the student requirements and the performance measures.

Tracing the relationships between the SRs and IRs is complex because each requirement may affect more than one institutional requirement, and vice versa. For this reason, varying degrees of the strength of the relationships between the SRs and IRs exist. In this matrix (Table 6.9), "1" indicates weak relation while "3" implies medium relation, and "9" implies strong relation. Empty cells in this matrix reflect that there is no relationship between the student needs and IRS (Baki et al., 2009; Camgöz-Akdağ et al., 2016; Gangurde & Patil, 2018; Mukaddes et al., 2012; Murugesan et al., 2020; Ömürgönülşen et al., 2020).

Table 6. 9: Relationship matrix symbols

Corresponding Intensity	Symbol	Assignment
Strong Relationship	●	9
Moderate relationship	○	3
Weak Relationship	Δ	1
No connection	Blank	0

If no relationship was found between SR and IRs, the components of SRs were deleted from the matrix. Directions of improvement for IRs were symbolised with upward triangle, downward triangle, or circle. The upward triangle (▲) shows the areas that should be improved by improving the relationship between SRs and IRs, while the downward triangle (▼) shows that for improvement, a decrease in IR is required. If it is concluded that there is no need for improvement, then the direction of improvement for that requirement is shown with a rhomboid (♦) (Camgöz-Akdağ et al., 2016). With the relationship matrix furnished, the row weights for each SR and column weights of each IR were computed. The raw scores obtained were then used to rank the various SRs and IRs on relative scales (Hwarng & Teo, 2001). Using these assigned numeric values, the adjusted importance ratings (ACI) and relative importance weight (RIW%) of each institutional requirement was calculated through the formulas (Foster & Ganguly, 2007; Gangurde & Patil, 2018) according to which set SR refers to student requirements and set IR refers to institutional requirements.

6.5.1.3. Performing correlation matrix

The next step in building the house of quality was to identify the correlation between the institutional requirements. This is the triangular matrix located at the top of the Kano-QFD matrix. The correlation matrix indicates the correlations of technical requirements with each other and those that conflict (Kelesbayev et al., 2016). These correlations can be positive or negative. Therefore, improving a particular technical requirement may cause improvement or decline in other technical requirements (Agarwal, 2020). This relationship needs to be known so that the development process can ensure that any strategies introduced can support each other, but it also points to where trade-offs should be made. (Sugiarti et al., 2018). Similar to the previous two steps, these interrelationships were identified by interviewing the QFD team/university's technical experts (Mukaddes et al., 2012; Ömürgönülşen et al., 2020; Talib & Maguad, 2011). Symbols were used to indicate the strength of association as shown in Table 6.10 (Gangurde & Patil, 2018; Jahanzaib et al., 2016; Lapinskienė & Motuzienė, 2021):

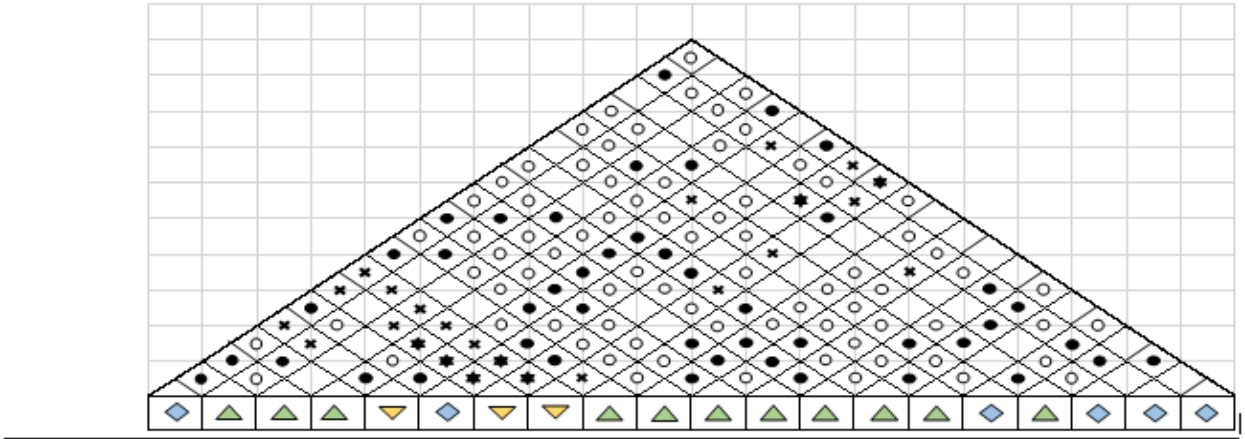
Table 6. 10: Correlation symbols

Symbols	Correlation among IRs
●	Indicating strong positive impact
○	Indicating moderate positive impact
✖	Indicating moderate negative impact
✱	Indicating strong negative impact
Blank	Indicating no impact or correlation

In Figure 6.8 (roof part) an empty cell without a symbol refers to the fact that there is no relationship between the corresponding institutional requirements. The correlation matrix, in this case, presents relationships between several quality indicators. Among them, it is possible to emphasise the strong positive correlation between IR5 (Students shall not collude or plagiarize) and IR13 (Comply with the course, program requirements, research integrity, and honesty); and also, IR14 (Maintain satisfactory progress through their HDR program and the undergraduate course) and IR19 (The ability to engage effectively and appropriately with ICT). As for weak negative relationships, IR3 (Have the capacity to pay university fees) with the IR8

(Not undertake unlawful activities of any kind), their results deserve to be highlighted in any possible modifications and/or adaptions that may be necessary for the educational quality service process, as this is aimed at the reduction of failures and low quality of the final service. Some of them might need important managerial choices about trade-offs, while others represent the borders of different functional areas (Azka & Nurcahyo, 2018).

Figure 6. 8: The correlation matrix for the UQ case



Student requirements (SRs)	Institutional Requirements (IRs)	IR1	IR2	IR3	IR4	IR5	IR6	IR7	IR8	IR9	IR10	IR11	IR12	IR13	IR14	IR15	IR16	IR17	IR18	IR19	IR20
	SR1																				
	SR2																				
	SR3																				
	SR4																				
	SR5																				
	SR6																				
	SR7																				
	SR8																				
	SR9																				
	SR10																				
	SR11																				
	SR12																				
	SR13																				
	SR14																				

Source: Developed for this research.

6.5.1.4. Competitive analysis and identifying target values

The final output of the matrix is a set of target values to be met by the new design for each technical requirement. To improve the sequence priority, the data in this matrix were used to calculate absolute importance data. These relation grades were put in sequence, from largest to smallest, to become the key points for improvement of management of the quality standards.

In this phase of the house of quality, the university's services related to institutional performance are compared with similar services of competitor universities. That is, a competitive analysis is conducted by making institutional evaluations with target values, determined through consideration of the university's competitors' services (Kelesbayev et al., 2016; Mamaghani & Barzin, 2019). First of all, institutional requirements were evaluated for UQ and one competitor university. Then the QFD team defined a target value between 1and 10 points for every IR. These values can be found in the "Target Values" row, along with measures for every IR. Each IR must have a measurable service parameter, which ensures better quality services (Sharma, 2020). This shows the strength and weaknesses of the particular university or competitor which can be improved by implementing suitable methods to achieve better satisfaction of students and business growth. The upward arrow shows the direction of technical efforts required for each competitor to improve. The new calculation provides institutional absolute importance weight (IAIW) after the Kano values have been considered as shown in equation (9), as follows (Camgöz-Akdağ et al., 2016; Gangurde & Patil, 2018; Iqbal et al., 2021; Kang & Qu, 2021; Kurtulmuşoğlu & Pakdil, 2016; Liu et al., 2020; Priyono & Yulita, 2017; Raharjo et al., 2007; Raissi, 2018; Singh & Rawani, 2019):

$$\text{IAIW} = \sum_{i=0}^{n} RIW_i \times R_{ij} \qquad (9)$$

Where, RIW_i = relative importance weight to student requirements, R_{ij} = strength of association to the relationship's matrix (i =1, 2… n and j =1, 2… m)

n = is the total number of student requirements, and m = is the total number of institutional requirements.

Also, using the assigned numeric value, the relative importance of each institutional requirement was calculated using the following formula of Institutional relative importance weight (IRIW), equation (10) (Agarwal, 2020; Ahmadzadeh et al., 2020; Dias Júnior et al., 2020; Kurtulmuşoğlu & Pakdil, 2016; Ömürgönülşen et al., 2020).

$$IRIW(\%) = \left(\frac{IAIW_j}{\sum_{j=1}^{m} IAIW_j}\right) \times 100 \quad (10)$$

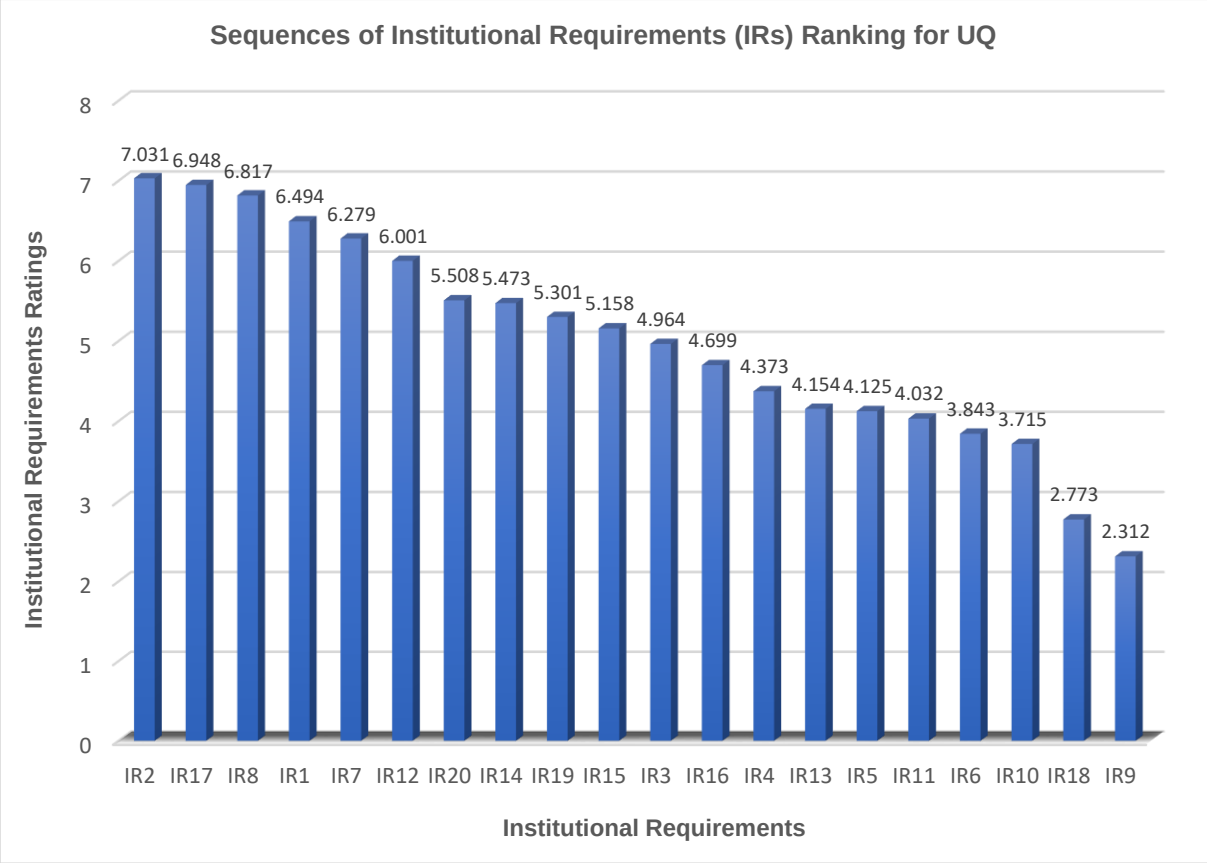
For example, the calculation of (IAIW) for "Adhere to the university's enrolment policies and procedures" is as follows: (9×5.009) + (9×8.657) + (9×10.461) + (9×9436) + (3×7.737) + (3×5.065) + (1×4.784) + (3×7.649) + (1×8.676) + (0×4.119) + (3×4.592) + (1×5.129) + (9×11.444) + (0×7.244) = 498.77, and the (IRIW) is (per cent score 6.494).

Through calculating the importance weights, more importance was assigned to those IRS that had higher absolute and relative importance weights. In addition, the prioritised IRs contain institutional priority rating charts, degree of technical difficulty, target value, and ranking of institutional priorities in each of the IRs. In terms of the degree of technical difficulty (TD), which helps to evaluate the ability to implement techniques to fulfill a student's requirements, a difficulty rating on a 1-10 point scale (10 being very difficult and risky) was determined for each subsystem/part of the institutional requirement (Mukaddes et al., 2012). The QFD team then identified IRs that were most needed to fulfill student requirements and required further improvement at UQ. A detailed ranking of each institutional requirement is shown in Figure 6.2 (House of Quality for UQ). The institutional competitiveness assessment is done by the QFD team and uses an average rating of five university experts from the same university. The results of the comparative analysis (Figure 6.2) show that, in general, "UQ performance" (UQ = more informed by students) was slightly higher than the QUT and USQ performance, the most commercially relevant available performance. However, an institutional comparison resulted in a draw with competitor QUT's performance. The target value is an objective measure that defines values that must be obtained to achieve that IRs are determined by evaluating all the information entered for the HOQ and selecting target values. It is an indicator of input required to meet or exceed the students' expectations measurement unit for each IR (Agarwal, 2020).

As can be seen in Figure 6.9, among the total (20) institutional requirements of the UQ case, scores revealed that the IR2 "Have English proficiency to successfully complete university study" (percentage score 7.03), followed by IR17 "The ability to work and learn independently and effectively" (percentage score 6.95), IR8 "Not undertake unlawful activities of any kind" (percentage score 6.82), and IR1 "Adhere to the university's enrolment policies and procedures" (percentage score 6.49), should be the parameters focused on to fulfill the greatest number of

student needs. Moderately focused parameters included: IR7 “Do not discriminate, bully or harass when interacting with other students, staff or other individuals visiting the university” (percentage score 6.28), IR12 “Maintain and enhance the trust that exists between academic staff and students through feedback and consultation” (percentage score 6.00), IR20 “Ensure safety and the respect of the property (University's and of others)” (percentage score 5.51), IR14 “Maintain satisfactory progress through their HDR program and the undergraduate course” (percentage score 5.47), IR19 “The ability to engage effectively and appropriately with ICT” (percentage score 5.30), IR15 “Attempt to resolve issues through informal discussion before taking a formal action” (percentage score 5.16), IR3 “Have the capacity to pay university fees” (percentage score 4.96), IR16 “Follow university requirements in the use of university-provided ICT, other resources and infrastructure” (percentage score 4.70), IR4 “Maintain/uphold the reputation of the university” (percentage score 4.37), IR13 “Comply with the course, program requirements, research integrity, and honesty” (percentage score 4.15), IR5 “Students shall not collude or plagiarize” (percentage score 4.13), and IR11 “Comply with rules of the academic misconduct” (percentage score 4.03). Lastly, the lowest scoring parameters were: IR9 “Follow the university's international student's policy (only for students under 18)” (percentage score 2.31), IR18 “Comply with requirements of intellectual property rights” (percentage score 2.77), IR10 “Comply with examination or assessment instruction” (percentage score 3.72) and IR6 “Follow the student code of conduct” (percentage score 3.84), which should therefore be given least focus in the quest to fulfill student requirements.

Figure 6. 9: UQ institutional requirements ranking

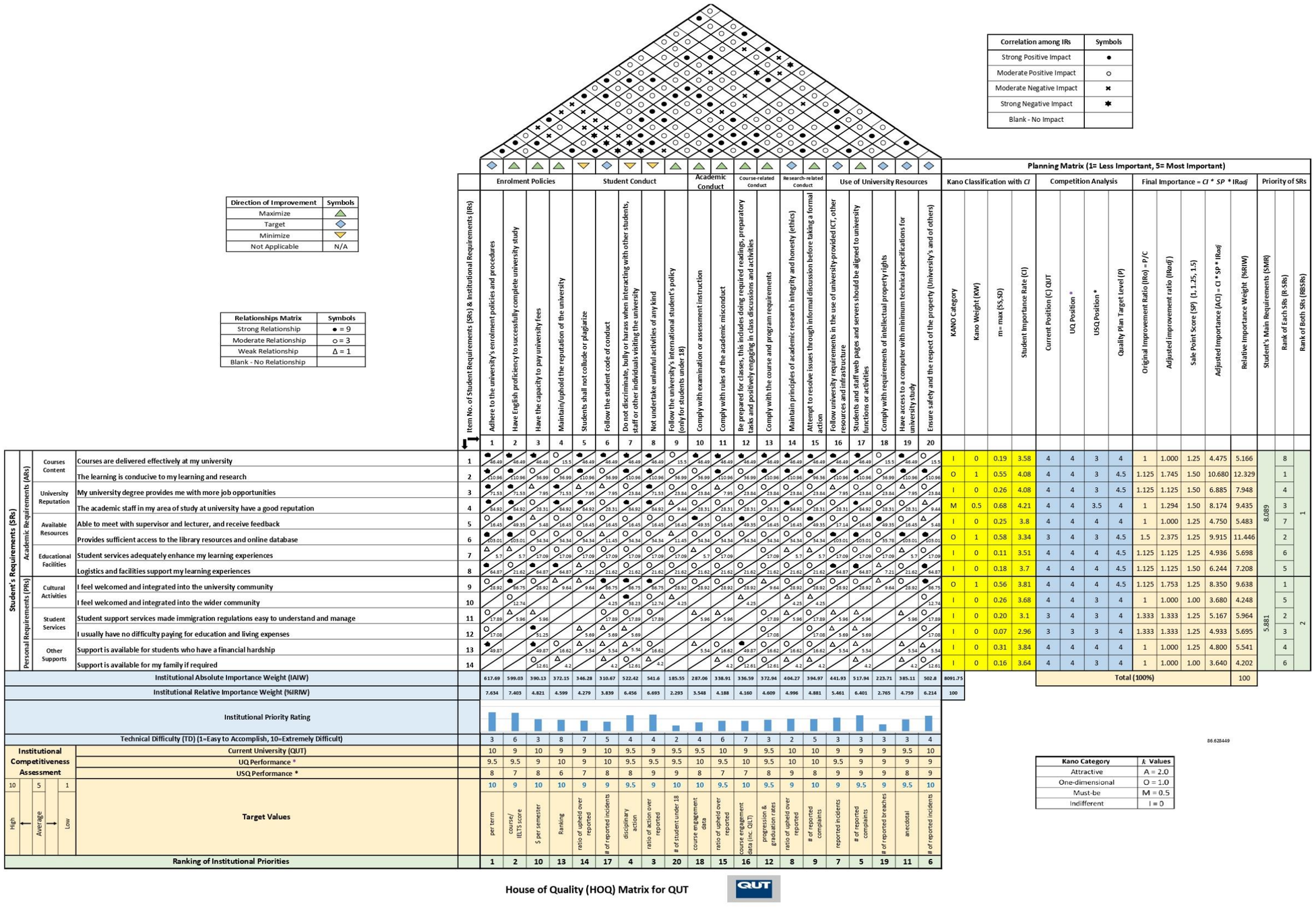


Source: Developed for this research.

6.5.2. QUT matrix case application

The implementation of the QUT case follows the same methods sequence as the UQ case. The application of the Kano-QFD matrix was carried out for QUT, which is one of the three Queensland university cases in this study and an active university in the Australian higher education sector. The planning matrix shown in Figure 6.10 indicates all information that will be combined to form a house of quality. The Kano-QFD matrix displays key SRs and their relationship to IRs. Students evaluate their requirements on two factors: (RIW), and perceived quality relative to competition (UQ and USQ). Similarly, the institutional relative importance (IRIW) of benchmark requirements are considered.

Figure 6. 10: The Kano-QFD matrix of QUT case



Correlation among IRs	Symbols
Strong Positive Impact	●
Moderate Positive Impact	○
Moderate Negative Impact	✖
Strong Negative Impact	✱
Blank - No Impact	

Direction of Improvement	Symbols
Maximize	△
Target	◇
Minimize	▽
Not Applicable	N/A

Relationships Matrix	Symbols
Strong Relationship	● = 9
Moderate Relationship	○ = 3
Weak Relationship	Δ = 1
Blank - No Relationship	

Kano Category	*k* Values
Attractive	A = 2.0
One-dimensional	O = 1.0
Must-be	M = 0.5
Indifferent	I = 0

House of Quality (HOQ) Matrix for QUT

6.5.2.1. Generating the planning matrix

To identify the Kano categories of SRs, the answers to functional and dysfunctional statements were incorporated in the Kano Evaluation Table (KET) and interpreted according to the frequency of answers. The frequency in the Kano model was applied to determine the students' requirements of QUT services. Out of the 14 requirements, ten items were found to be indifferent requirements; three items were classified as one-dimensional requirements, and the rest had only one as a must-be requirement, as shown in Table 6.11. In this case, quality requirements were categorised into six categories labelled service quality with "A" for attractive quality, "O" for one-dimensional quality, "M" for must-be quality, "R" for reverse quality, "I" for indifferent quality, and "Q" for invalid quality (Table 6.11).

Table 6. 11: Planning matrix according to Kano categories of QUT

Student Requirements (SRs)	Planning Matrix (1=Less important, 5= Most important)													Ranking of SRs
	Kano Classification with CI				Competition Analysis				Final Importance = CI * SP * IR *adj*					
	Kano Category	Kano weight	m = max (SS, SD)	Importance Rate (CI)	Current Position (C) QUT	UQ Position	USQ Position	Quality Plan Target (P)	Improvement Ratio (IRo)	Adjusted Improvement (IR adj)	Sales Point (SP)	Adjusted Importance (ACI)	Relative Importance Weight (RIW)	
SR1	I	0	0.19	3.58	4	4	3	4	1	1.000	1.25	4.475	5.166	12
SR2	O	1	0.55	4.08	4	4	3	4.5	1.125	1.745	1.50	10.680	12.329	1
SR3	I	0	0.26	4.08	4	4	3	4.5	1.125	1.125	1.50	6.885	7.948	5
SR4	M	0.5	0.68	4.21	4	4	3.5	4	1	1.294	1.50	8.174	9.435	4
SR5	I	0	0.25	3.8	4	4	4	4	1	1.000	1.25	4.750	5.483	11
SR6	O	1	0.58	3.34	3	4	3	4.5	1.5	2.375	1.25	9.915	11.446	2
SR7	I	0	0.11	3.51	4	4	4	4.5	1.125	1.125	1.25	4.936	5.698	8
SR8	I	0	0.18	3.7	4	4	4	4.5	1.125	1.125	1.50	6.244	7.208	6
SR9	O	1	0.56	3.81	4	4	4	4.5	1.125	1.753	1.25	8.350	9.638	3
SR10	I	0	0.26	3.68	4	4	3	4	1	1.000	1.00	3.680	4.248	8
SR11	I	0	0.20	3.1	3	4	3	4	1.333	1.333	1.25	5.167	5.964	7
SR12	I	0	0.07	2.96	3	3	3	4	1.333	1.333	1.25	4.933	5.695	9
SR13	I	0	0.31	3.84	4	4	4	4	1	1.000	1.25	4.800	5.541	10
SR14	I	0	0.16	3.64	4	4	3	4	1	1.000	1.00	3.640	4.202	14

Source: Developed for this research.

Student's satisfaction (SS) and dissatisfaction (SD) coefficients were also calculated for each requirement, as presented in Table 6.12. SS and SD were computed to determine the impacts of each specific requirement on students' satisfaction or dissatisfaction when the requirement was met or not met, and also to determine the positive or negative value of the requirement. In the competitive analysis factor, current students' satisfaction rates were calculated for all requirements from the student importance survey. The adjusted improvement ratio was also assessed (Ömürgönülşen et al., 2020). The planning matrix was constructed by the QFD team, which included two academics and two managers who were considered competent to evaluate and improve the service delivery processes, and who were experts on processing QFD and service quality.

Table 6. 12: Kano questionnaire results and calculations of SS and SD coefficients of QUT case

Student Main Requirements	SRs	Categories						Total	KC	Satisfaction Coefficient (SC)		Max *(m)*
										Student Satisfaction	Student Dissatisfaction	
		A	O	M	R	Q	I			Better SS	Worse SD	
Academic Student Requirements (ASR)	ASR1	1	10	3	7	1	56	78	I	0.157	-0.186	0.186
	ASR2	4	38	5	0	0	31	78	O	0.538	-0.551	0.551
	ASR3	5	15	3	0	2	53	78	I	0.263	-0.237	0.263
	ASR4	2	17	35	1	0	23	78	M	0.247	-0.675	0.675
	ASR5	1	16	3	2	1	55	78	I	0.227	-0.253	0.253
	ASR6	1	40	2	3	3	29	78	O	0.569	-0.583	0.583
	ASR7	3	5	2	1	3	64	78	I	0.108	-0.095	0.108
	ASR8	5	9	5	0	2	57	78	I	0.184	-0.184	0.184
Personal Student Requirements (PSR)	PSR9	5	38	1	1	0	33	78	O	0.558	-0.506	0.558
	PSR10	5	15	3	0	1	54	78	I	0.260	-0.234	0.260
	PSR11	2	10	3	11	1	51	78	I	0.182	-0.197	0.197
	PSR12	4	1	2	9	2	60	78	I	0.075	-0.045	0.075
	PSR13	5	18	2	1	2	50	78	I	0.307	-0.267	0.307
	PSR14	0	10	2	0	1	65	78	I	0.130	-0.156	0.156

Source: Developed for this research.

Table 6.13 shows the Kano survey results with the current student satisfaction levels in the QUT case. The weighted average values of the (89) questionnaires for the specific functional and dysfunctional items were computed. These values refer to student importance (CI). At the

same time, the QFD team defined rates of mean and median P50 for each functional statement to represent the ratings of current student satisfaction level in the QUT case.

Table 6. 13: Kano survey results with current student satisfaction level for the QUT case

Questions / Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N	sum	Weighted Average	Mean	Median P50
	1	2	3	4	5					
1. Functional	4	3	24	38	9	78	279	3.58	3.577	4
1. Dysfunctional	12	32	21	11	2	78	193	2.47	2.474	
2. Functional	1	2	12	37	25	77	314	4.08	4.078	4
2. Dysfunctional	23	35	8	4	0	70	133	1.90	1.900	
3. Functional	0	0	13	43	19	75	306	4.08	4.080	4
3. Dysfunctional	17	40	12	4	2	75	159	2.12	2.120	
4. Functional	0	3	8	30	29	70	295	4.21	4.629	4
4. Dysfunctional	30	29	9	4	1	73	136	1.86	1.877	
5. Functional	1	5	19	32	17	74	281	3.80	3.797	4
5. Dysfunctional	17	33	16	6	2	74	165	2.23	2.230	
6. Functional	2	12	28	21	10	73	244	3.34	3.342	3
6. Dysfunctional	8	16	19	23	7	73	224	3.07	3.068	
7. Functional	2	8	22	30	9	71	249	3.51	3.507	4
7. Dysfunctional	8	30	22	8	3	71	181	2.55	2.549	
8. Functional	1	6	19	31	13	70	259	3.70	3.700	4
8. Dysfunctional	14	28	23	4	1	70	160	2.29	2.286	
9. Functional	2	3	19	28	18	70	267	3.81	3.814	4
9. Dysfunctional	18	32	14	3	3	70	151	2.16	2.157	
10. Functional	1	7	21	24	16	69	254	3.68	3.681	4
10. Dysfunctional	16	25	24	4	0	69	154	2.23	2.232	
11. Functional	8	11	21	22	6	68	211	3.10	3.103	3
11. Dysfunctional	10	19	23	10	6	68	187	2.75	2.750	
12. Functional	6	16	26	15	5	68	201	2.96	2.956	3
12. Dysfunctional	4	20	23	13	8	68	205	3.01	3.015	
13. Functional	2	5	13	29	18	67	257	3.84	3.836	4
13. Dysfunctional	14	34	12	5	2	67	148	2.21	2.209	
14. Functional	1	3	24	30	9	67	244	3.64	3.642	4
14. Dysfunctional	12	32	22	1	0	67	146	2.18	2.179	

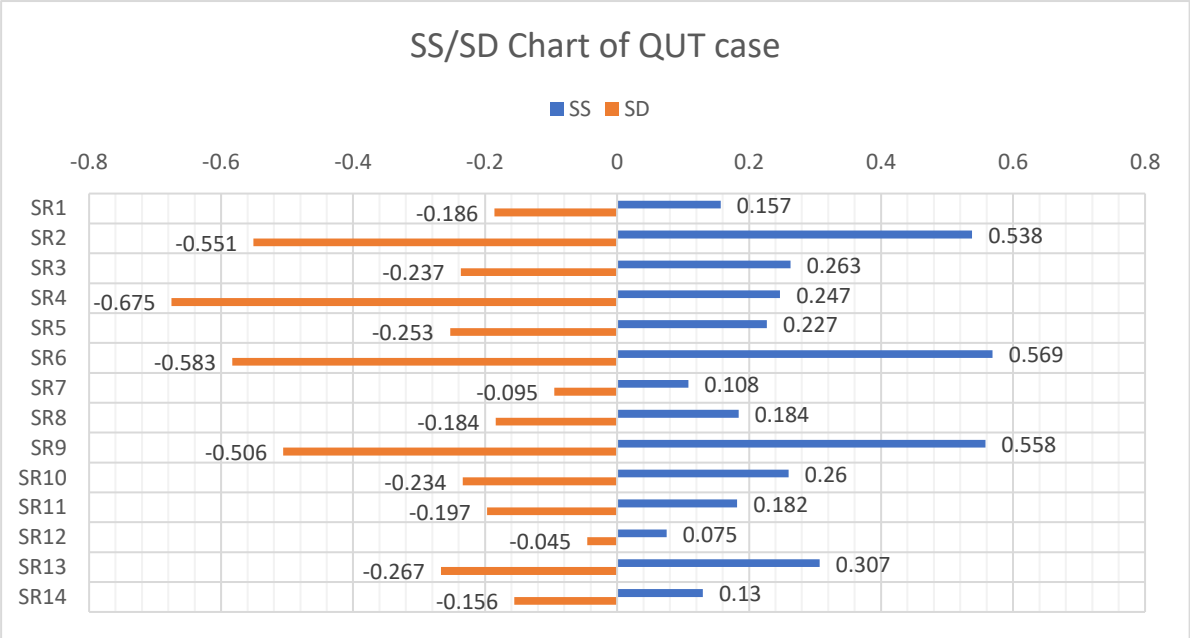
Source: Developed for this research

Respondent data from the Kano questionnaire were used to calculate each category in the Kano model. The results showed that one of the 14 requirements was classified as a must-be requirement, namely SR4, which is “The academic staff in my area of study at university have a good reputation”. A considerable proportion of the students expressed no satisfaction when this requirement was adequate but dissatisfaction when this element was inadequate, suggesting they valued this quality requirement. Three quality requirements that were categorised under the one-dimensional requirements included: SR2 “The learning is conducive to my learning and research”, SR6 “Provides sufficient access to the library resources and online database”, and SR9 “I feel welcomed and integrated into the university community”. The students expressed satisfaction when the quality requirements were adequate and dissatisfaction when these requirements were inadequate. By contrast, ten requirements that were classified as indifferent

needs included: SR3 “My university degree provides me with more job opportunities”, SR8 “Logistics and facilities support my learning experiences”, SR11 “Student support services made immigration regulations easy to understand and manage”, SR7 “Student services adequately enhance my learning experiences”, SR12 “I usually have no difficulty paying for education and living expenses”, SR13 “Support is available for students who have a financial hardship”, SR5 “Able to meet with supervisor and lecturer, and receive feedback”, SR10 “I feel welcomed and integrated into the wider community”, SR14 “Support is available for my family if required”, and SR1 “Courses are delivered effectively at my university”. The respondents expressed neither satisfaction nor dissatisfaction with these requirements.

Also, the findings of the calculation SSI, SDI coefficients, and max (*m*) of each requirement were calculated by using equations (1), (2), and (3). The results are shown in Table 6.12 which represents a significant association of SS, SD, and max (m). These results help the university to recognise more important effective factors in order to raise “Better” SS value and allocate university resources accurately on this basis. According to the SS/SD coefficients chart (Figure 6.11), the requirements in must-be classification have much influence on the dissatisfaction of the students, while the one-dimensional factors have much influence on the satisfaction of the students.

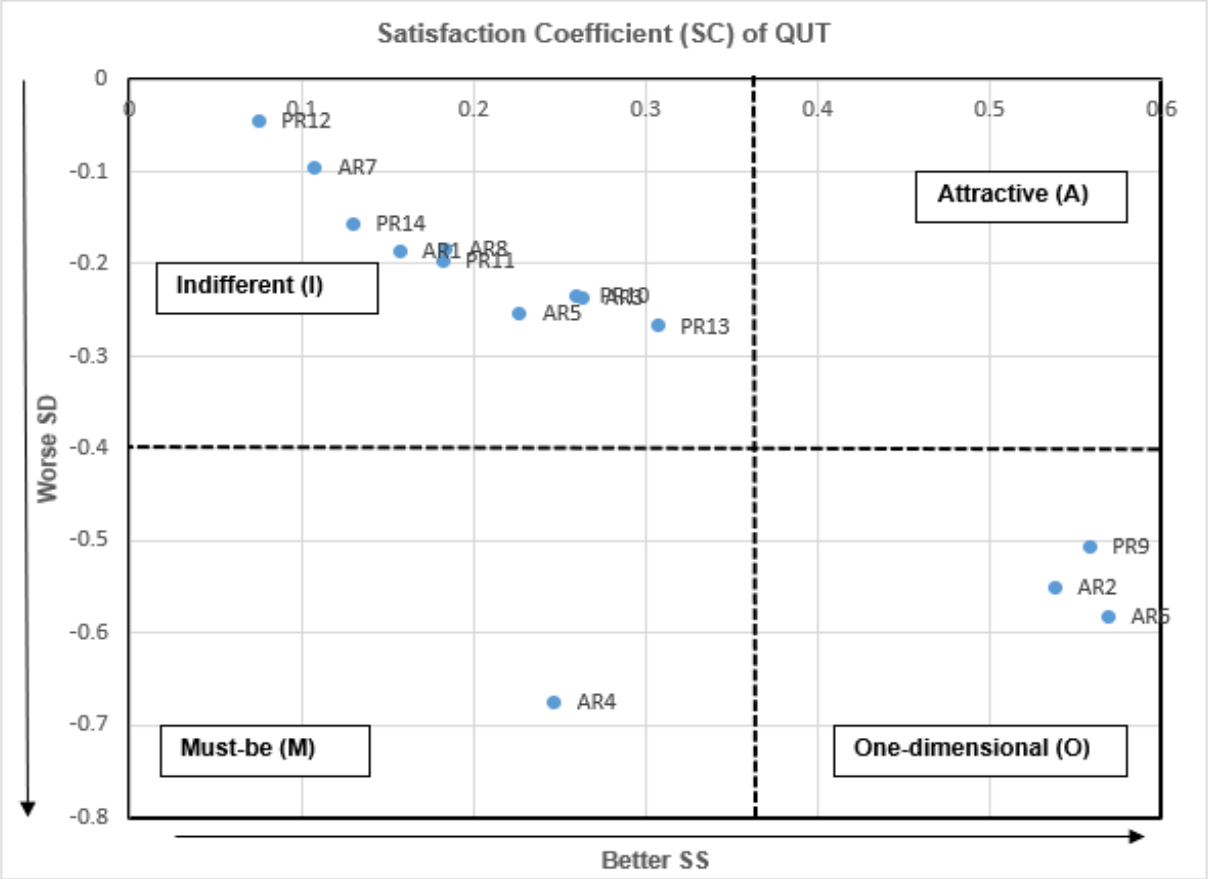
Figure 6. 11: Satisfaction and dissatisfaction coefficients chart for QUT case



Source: Developed for this research.

The results of the combination of the Kano model and QFD were then presented into a planning matrix, as shown in Figure 6.10. From the results related to data of the satisfaction coefficient, including SS and SD, the max value in Table 6.12 presents all the SRs, which are the ARs and PRs that were plotted in the student satisfaction coefficient diagram. Of all the quality requirements plotted in the second quadrant (high extent of satisfaction with high extent of dissatisfaction), there were three requirements that came under the one-dimensional category PR9 “I feel welcomed and integrated into the university community”, AR2 “The learning is conducive to my learning and research”, and AR5 “Able to meet with supervisor and lecturer, and receive feedback”, which were in the effective improving area. The requirements of the one-dimensional category must be focused and accomplished to have a major impact on the satisfaction of students. Requirement AR4 “The academic staff in my area of study at university have a good reputation”, located under must-be category, is plotted in the third quadrant (low extent of satisfaction with high extent of dissatisfaction), and leads to student dissatisfaction when the university is less functional of this requirement than students expect, but it has no effect on satisfaction when it is fully functional. The fourth quadrant includes the requirements that came under the indifferent category (low extent of satisfaction with low extent of dissatisfaction) (AR3, AR6, PR11, AR7, PR12, PR13, AR5, PR10, PR14, AR1), which has little effect on student satisfaction. This does not provide a strong view of satisfaction or dissatisfaction and it is therefore not important for the university to consider these requirements (Figure 6.12).

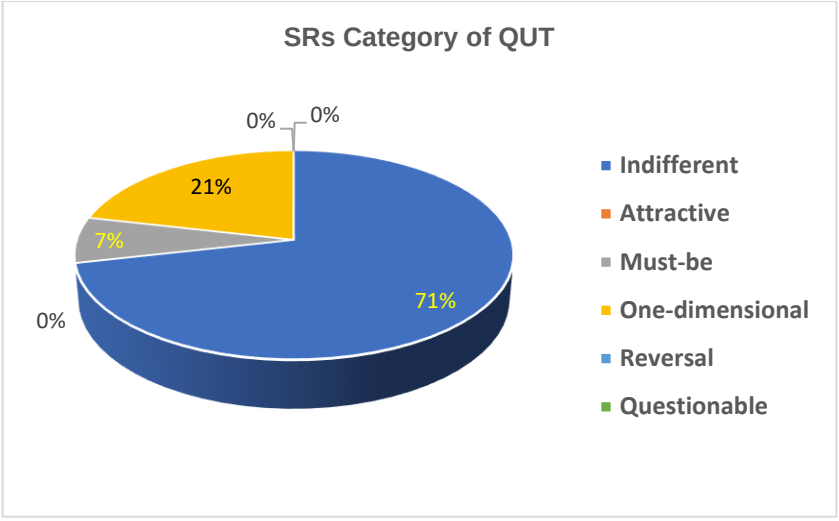
Figure 6. 12: Student satisfaction coefficient diagram for QUT case



Source: Developed for this research.

In this context, Figure 6.13 indicates that indifferent requirements were 71%, 21% for one-dimensional requirements, 7% for must-be requirements, and none for attractive requirements. In designing the quality of educational services at QUT, requirements for must-be, attractive, and one-dimensional should be strongly considered without completely ignoring all requirements followed under indifferent requirements. As can be seen in Table 6.12, of the total 14 quality requirements, most of the SRs (*n*=10) were classified as "Indifferent" needs, while a lower number of SRs (*n*=3) were classified as a "One-dimensional" need. The rest of (*n*=1) fell in the Kano category of "Must-be" needs. The participants regarded none of the student requirements as "Attractive" needs for the QUT case.

Figure 6. 13: Categorisation of requirements based on Kano analysis – QUT case



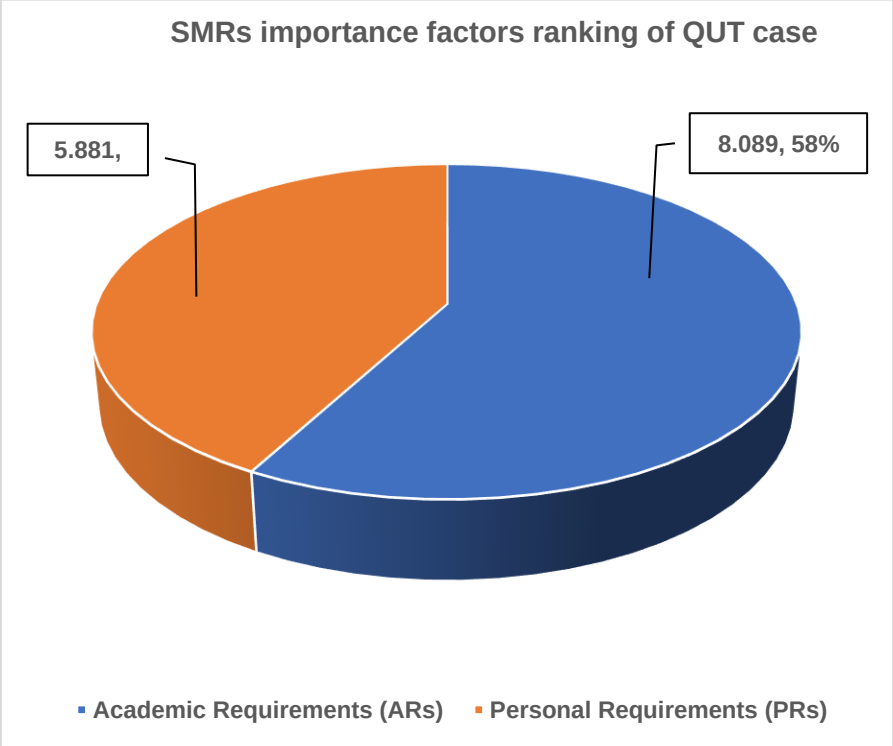
Indifferent	• My university degree provides me with more job opportunities. • Logistics and facilities support my learning experiences. • Student support services made immigration regulations easy to understand and manage. • Student services adequately enhance my learning experiences. • I usually have no difficulty paying for education and living expenses. • Support is available for students who have a financial hardship. • Able to meet with supervisor and lecturer and receive feedback. • I feel welcomed and integrated into the wider community. • Support is available for my family if required. • Courses are delivered effectively at my university.
One-dimensional	• Provides sufficient access to the library resources and online database. • The learning is conducive to my learning and research. • I feel welcomed and integrated into the university community.
Must-be	• The academic staff in my area of study at university have a good reputation.
Attractive	• NONE
Reversal	• NONE
Questionable	• NONE

Source: Developed for this research.

The responses collected from students in the form of the importance rating of students' main requirements (SMRs) were statistically analysed and plotted on the pie chart below. It is clear from Figure 6.14 that the ARs (8.089) with (percentage score 58) was the dominant factor of

AIS's requirements for the QUT case, whereas PRs were less important. Therefore, ARs should be given the greatest priority to fulfill academic student needs.

Figure 6. 14: SMRs ranking for QUT

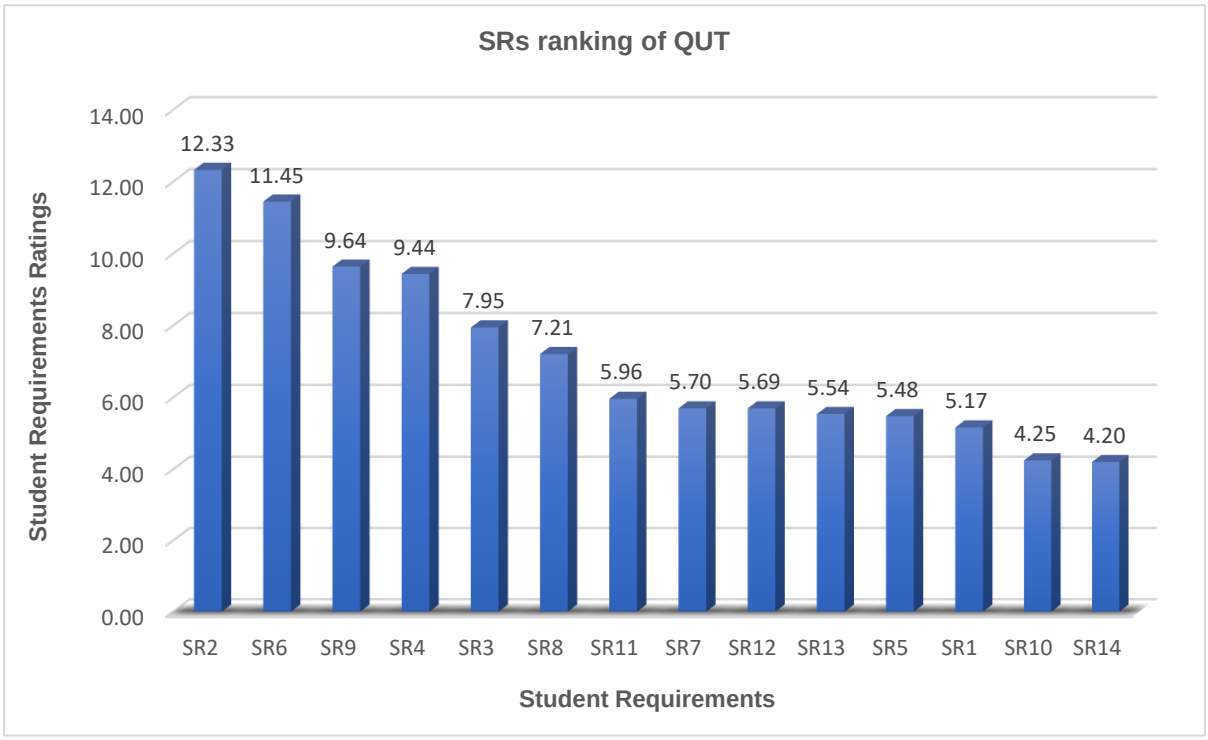


Source: Developed for this research.

Figure 6.15 shows the results of the student's sub-requirements ranking. The SR ratings "The learning is conducive to my learning and research" (percentage score 12.33), "Provides sufficient access to the library resources and online database" (percentage score 11.45), "I feel welcomed and integrated into the university community" (percentage score 9.64), and "The academic staff in my area of study at university have a good reputation" (percentage score 9.44) respectively, were the highly-rated parameters. Out of these, "The learning is conducive to my learning and research", and "Provides sufficient access to the library resources and online database" were the most dominant factors of the students' sub-requirements. Therefore, they should be given the greatest priority to fulfill student needs. Moderately-rated importance included, the "My university degree provides me with more job opportunities" (percentage score 7.95), "Logistics and facilities support my learning experiences' (percentage score 7.21),

"Student support services made immigration regulations easy to understand and manage" (percentage score 5.96), "Student services adequately enhance my learning experiences" (percentage score 5.70), "I usually have no difficulty paying for education and living expenses" (percentage score 5.69), "Support is available for students who have a financial hardship" (percentage score 5.54), and "Able to meet with supervisor and lecturer, and receive feedback' (percentage score 5.48). The rating of these parameters indicates that these were also important needs of the students, whereas the "Support is available for my family if required" (percentage score 4.20), "I feel welcomed and integrated into the wider community" (percentage score 4.25), and "Courses are delivered effectively at my university" (percentage score 5.17) were of lesser importance in regards to the needs of the students. Of these lesser needs "Support is available for my family if required" was found to be the least important need of the students. Therefore, it should be given the least priority when it comes to satisfying student requirements.

Figure 6. 15: Ranking of the SRs constructs based on perceived importance for QUT case



Source: Developed for this research.

6.5.2.2. Establishment of the relationship matrix

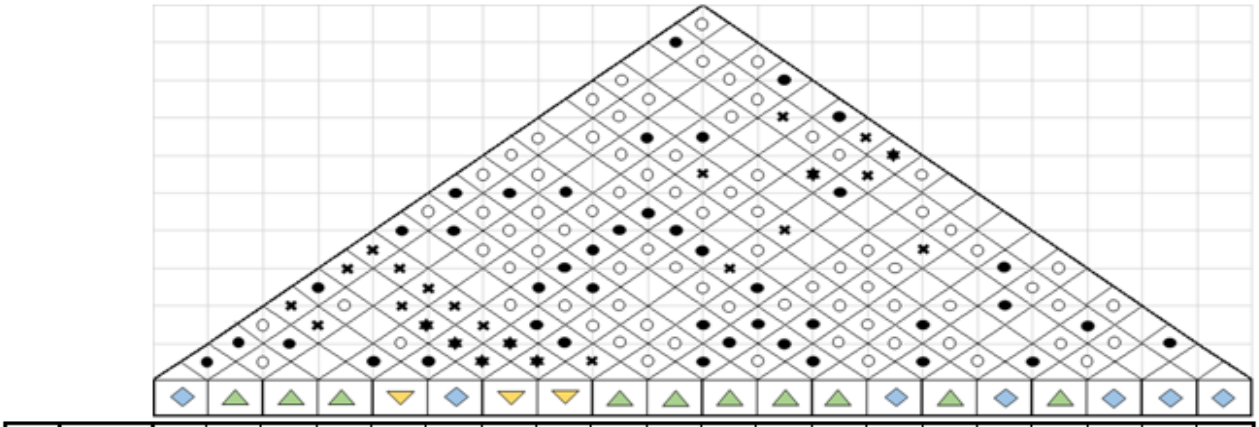
Following development of the planning matrix, it was determined that there were 14 student requirements and 20 corresponding institutional requirements to satisfy them. After the SRs and IRs were identified, the QFD team of experts constructed relationships between student needs and IRs. Importance ratings and direction of improvement are other crucial points for QFD analysis, with the information evaluated and determined by these experts. The experts at QUT defined student requirements in relation to specific IRs and calculated the importance of each SR. All relationships were categorised as either strong, medium, or weak. The strength of the relationships enabled the identification of priorities and indicates the degree of dependence between the SR and IR. The relative importance weight (%RIW) of each SR is the percentage of each SR based on its importance among all SRs (Camgöz-Akdağ et al., 2016). Next, institutional absolute importance weight (IAIW), shown at the lower level of the HOQ matrix of the QUT case (Figure 6.10), was calculated for each IR (refer equation 9). Through the process of determining the relationship between SRs and IRs, the relationship matrix was constituted by the QFD team. As stated in the previous case, with the relationship matrix furnished, the row weights for each SR and the column weights of each IR were computed. The raw scores obtained were then used to rank the various SRs and IRs on relative scales.

6.5.2.3. Performance correlation matrix

The house roof or correlation matrix (Figure 6.16) presents relationships between the IRs themselves. Improvement for one IR can also indirectly or directly affect another IR positively or negatively or vice versa (Camgöz-Akdağ et al., 2016). After the correlation is calculated among IRs, the symbols are placed on the correlation matrix (Figure 6.10) of the HOQ matrix for the QUT case. In Figure 6.16 (correlation matrix), an empty cell without a symbol indicates that there is no correlation between the corresponding IRs (Ömürgönülşen et al., 2020). This matrix illustrates which IR has a positive or negative correlation with other IRs. It is apparent there is a strong positive correlation between IR13 (Comply with the course and program requirements) and IR10 (Comply with examination or assessment instruction), and a moderate positive correlation between IR16 (Follow university requirements in the use of university-provided ICT, other resources and infrastructure) and IR13. In contrast, a strong negative correlation can be observed between IR7 (Do not discriminate, bully or harass when interacting

with other students, staff, or other individuals visiting the university) and IR8 (Do not undertake unlawful activities of any kind). These results deserve to be highlighted to guide any modifications and/or adaptations that will be necessary in the educational service process, with the aim of reducing the low performance or quality of the final educational service.

Figure 6. 16: The correlation matrix for the QUT case



Student requirements (SRs)	Institutional Requirements (IRs)	IR1	IR2	IR3	IR4	IR5	IR6	IR7	IR8	IR9	IR10	IR11	IR12	IR13	IR14	IR15	IR16	IR17	IR18	IR19	IR20
	SR1																				
	SR2																				
	SR3																				
	SR4																				
	SR5																				
	SR6																				
	SR7																				
	SR8																				
	SR9																				
	SR10																				
	SR11																				
	SR12																				
	SR13																				
	SR14																				

Source: Developed for this research

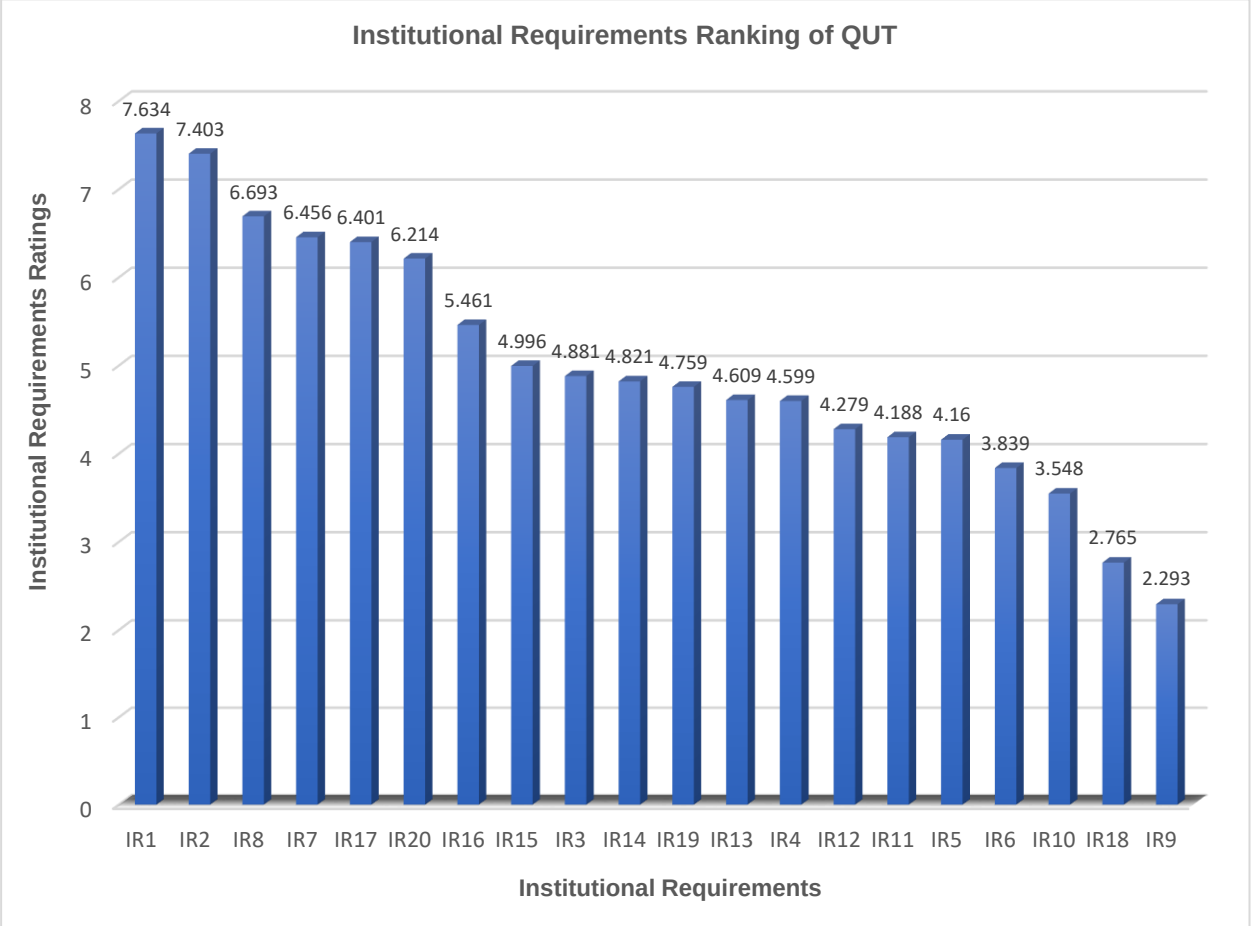
6.5.2.4. Competitive analysis and identifying target values

The indicators for output results of the HOQ matrix for the QUT case (Figure 6.10) were classified according to the institutional relative importance weight (IAIW) of each quality IR, to identify those that deserve prioritisation of attention (Dias Júnior et al., 2020). To create target values, IRs were first evaluated for QUT and competitive universities. Then the QFD team defined a target value between 0-10 points for every IR. These values can be found in the target value score row in the Kano-QFD matrix. Finally, institutional importance levels were computed. For each student need, the score defining the relationship between student need and IRs was multiplied by the student priority level in that row. These values were summarised for each IR with institutional importance levels presented as percentages in the last row of the target values matrix for ease of comparison. Results show that just four of the total (20) IRs have an institutional importance level higher than 10 percent (Baki et al., 2009).

The results showing the priority of each IR are presented in Figure 6.17. Of the total 20 institutional requirements in the QUT case, scores revealed that the IR1 "Adhere to the university's enrolment policies and procedures" (percentage score 7.634), followed by IR2 "Have English proficiency to successfully complete university study" (percentage score 7.403), IR8 "Not undertake unlawful activities of any kind" (percentage score 6.693), and IR7 "Do not discriminate, bully or harass when interacting with other students, staff or other individuals visiting the university" (percentage score 6.456), should be focused on, as these parameters fulfill the greatest number of student needs. Moderately focused parameters included: IR17 "Students and staff web pages and servers should be aligned to university functions or activities" (percentage score 6.401), IR20 "Ensure safety and the respect of the property (university's and of others)" (percentage score 6.214), IR16 " Follow university requirements in the use of university-provided ICT, other resources and infrastructure" (percentage score 5.461), IR14 "Maintain principles of academic research integrity and honesty (ethics)" (percentage score 4.996), IR15 "Attempt to resolve issues through informal discussion before taking a formal action" (percentage score 4.881), IR10 "Have the capacity to pay university fees" (percentage score 4.821), IR19 "Have access to a computer with minimum technical specifications for university study" (percentage score 4.759), IR13 "Comply with the course and program requirements" (percentage score 4.609), IR4 "Maintain/uphold the reputation of the university" (percentage score 4.599), IR5 "Students shall not collude or plagiarize" (percentage score 4.279), IR11 "Comply with rules of the academic misconduct" (percentage

score 4.188), and IR12 “Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities” (percentage score 4.16). The lowest performing parameters for the QUT case were: IR9 “Follow the university's international student's policy (only for students under 18) (percentage score 2.293), IR18 “Comply with requirements of intellectual property rights” (percentage score 2.765), IR10 “Comply with examination or assessment instruction” (percentage score 3.548) and IR6 “Follow the student code of conduct” (percentage score 3.839). Therefore, these low-ranking parameters should be given least focus in the quest to fulfill student requirements. The sequence of IRs ranking for the QUT case are shown in Figure 6.17.

Figure 6. 17: QUT institutional requirements ranking

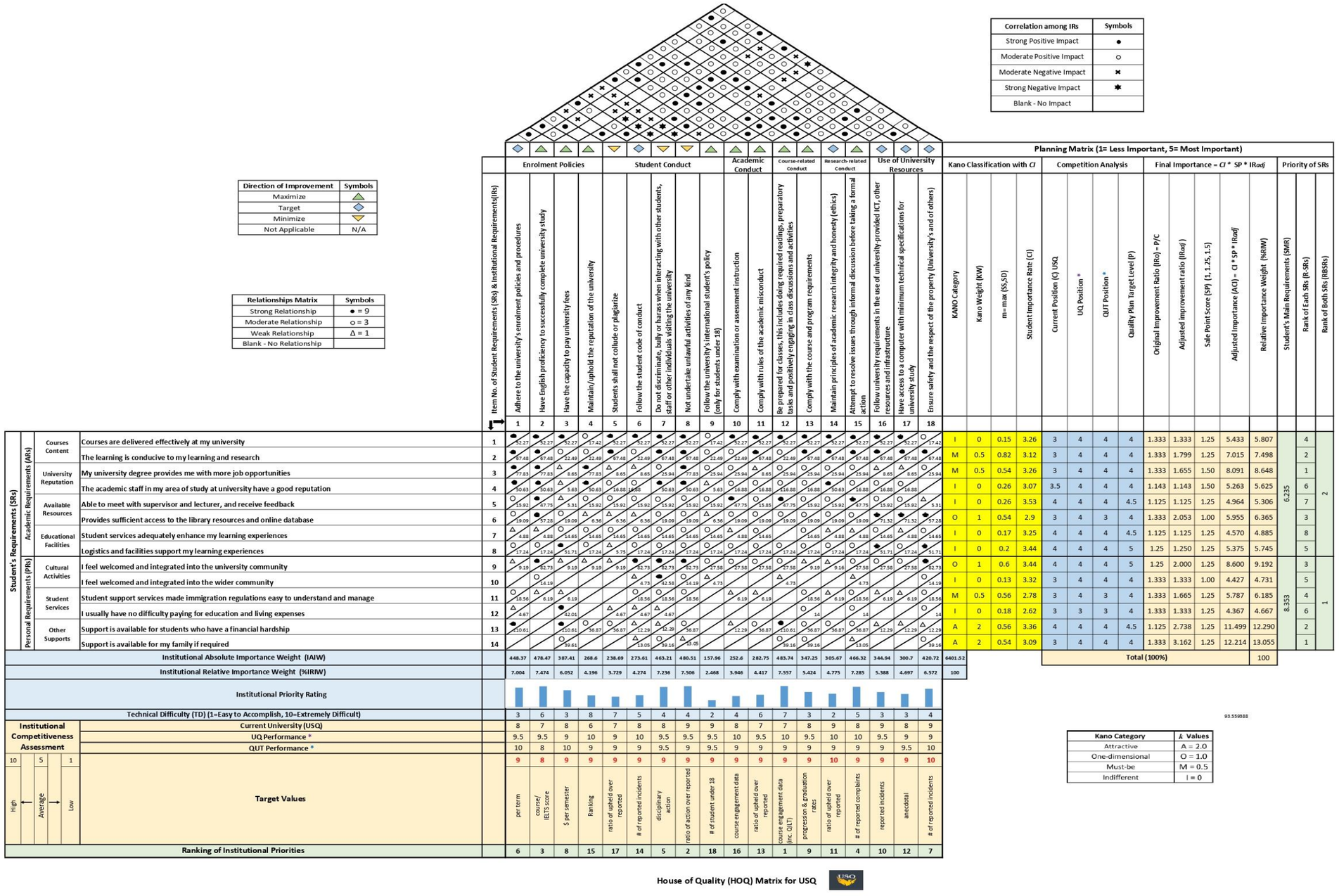


Source: Developed for this research

6.5.3. USQ matrix case application

The most important phase in QFD is the development of the HOQ. The final Kano-QFD matrix of USQ obtained in this case is provided in Figure 6.18.

Figure 6. 18: The Kano-QFD matrix of USQ case



House of Quality (HOQ) Matrix for USQ

6.5.3.1. Generating the planning matrix

As discussed in the UQ and QUT cases, the adjusted importance (ACI) and relative importance weights (RIW%) were calculated for each student requirement by the formula given in (equations 6 and 7). Then student requirements were placed according to priority, based on the relative importance weight column in the planning matrix of the Kano-QFD matrix. The frequency results in the Kano model were applied to determine the students' requirements of USQ services. In this case, quality requirements were Kano categorised into six categories. Specifically, Table 6.14 shows the list of elements in the planning matrix based on the sequence of the steps above. The results from the questionnaire provide real information about the student requirements of USQ cases.

Table 6. 14: Planning matrix according to Kano categories of USQ

Student Requirements (SRs)	Planning Matrix (1=Less important, 5= Most important)													Ranking of SRs
	Kano Classification with CI				Competition Analysis				Final Importance = CI * SP * IR *adj*					
	Kano Category	Kano weight	m = max (SS, SD)	Importance Rate (CI)	Current Position (C) USQ	UQ Position	QUT Position	Quality Plan Target (P)	Improvement Ratio (IRo)	Adjusted Improvement (IR adj)	Sales Point (SP)	Adjusted Importance (ACI)	Relative Importance Weight (RIW)	
SR1	I	0	0.15	3.26	3	4	4	4	1.333	1.333	1.25	5.433	5.807	8
SR2	M	0.5	0.82	3.12	3	4	4	4	1.333	1.799	1.25	7.015	7.498	5
SR3	M	0.5	0.54	3.26	3	4	4	4	1.333	1.655	1.50	8.091	8.648	4
SR4	I	0	0.26	3.07	3.5	4	4	4	1.142	1.143	1.50	5.263	5.625	10
SR5	I	0	0.26	3.53	4	4	4	4.5	1.125	1.125	1.25	4.964	5.306	11
SR6	O	1	0.54	2.9	3	4	3	4	1.333	2.053	1.00	5.955	6.365	6
SR7	I	0	0.17	3.25	4	4	4	4.5	1.125	1.125	1.25	4.570	4.885	12
SR8	I	0	0.2	3.44	4	4	4	5	1.25	1.250	1.25	5.375	5.745	9
SR9	O	1	0.6	3.44	4	4	4	5	1.25	2.000	1.25	8.600	9.192	3
SR10	I	0	0.13	3.32	3	4	4	4	1.333	1.333	1.00	4.427	4.731	13
SR11	M	0.5	0.56	2.78	3	4	3	4	1.333	1.665	1.25	5.787	6.185	7
SR12	I	0	0.18	2.62	3	3	3	4	1.333	1.333	1.25	4.367	4.667	14
SR13	A	2	0.56	3.36	4	4	4	4.5	1.125	2.738	1.25	11.499	12.290	2
SR14	A	2	0.54	3.09	3	4	4	4	1.333	3.162	1.25	12.214	13.055	1

Source: Developed for this research.

After identifying the categories of each requirement, SS and SD coefficients were calculated for each requirement, as presented in Table 6.15. SS and SD were computed to determine the impacts of each specific requirement on student satisfaction or dissatisfaction, when the requirement was met or not met, and also, to determine the positive or negative value of the requirement. The evaluation of the competitive analysis showed the opinion and current satisfaction of students for a particular VOS for different competitors. Results of the student competitive evaluation are depicted in Table 6.14. The adjusted improvement ratio (IR *adj*) and sales point were assessed to define the ACI. An adjusted improvement ratio larger than one indicates student requirements that should be improved. In this case, four student requirements indicated in Table 6.15 showed the highest importance, SR14, SR13, SR6, and SR9 respectively, which means they should be the first priority to be addressed.

The planning matrix was built through data surveying from AIS and the QFD team at USQ. The QFD team included five managers from different divisions of USQ, who were considered competent to evaluate and improve the service delivery processes, and who were experts on processing QFD and service quality.

Table 6. 15: Kano questionnaire results and calculations of SS and SD coefficient of USQ case

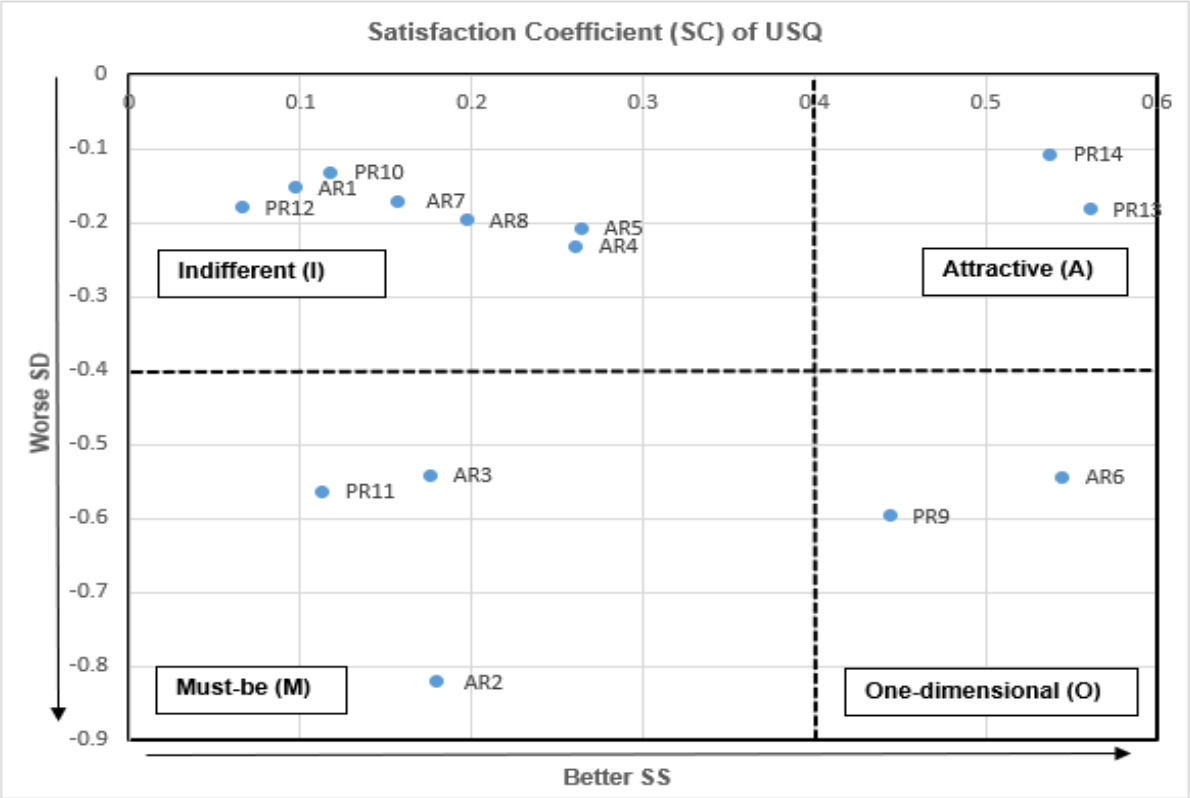
Student Main Requirements	SRs	Categories						Total	KC	Satisfaction Coefficient (SC)		Max *(m)*
										Student Satisfaction	Student Dissatisfaction	
		A	O	M	R	Q	I			Better SS	Worse SD	
Academic Student Requirements (ASR)	ASR1	1	6	5	2	0	60	74	I	0.097	-0.153	0.150
	ASR2	2	10	45	6	1	10	74	M	0.179	-0.821	0.820
	ASR3	5	8	32	0	0	29	74	M	0.176	-0.541	0.540
	ASR4	4	14	2	4	1	49	74	I	0.261	-0.232	0.260
	ASR5	7	12	3	1	1	50	74	I	0.264	-0.208	0.260
	ASR6	1	35	1	8	0	29	74	O	0.545	-0.545	0.540
	ASR7	0	11	1	3	1	58	74	I	0.157	-0.171	0.170
	ASR8	1	13	1	2	1	56	74	I	0.197	-0.197	0.190
Personal Student Requirements (PSR)	PSR9	1	31	12	2	0	28	74	O	0.444	-0.597	0.590
	PSR10	1	7	2	3	3	58	74	I	0.118	-0.132	0.130
	PSR11	6	2	38	2	1	25	74	M	0.113	-0.563	0.560
	PSR12	0	4	7	12	1	50	74	I	0.066	-0.180	0.180
	PSR13	28	9	3	6	2	26	74	A	0.561	-0.182	0.560
	PSR14	30	5	2	7	2	28	74	A	0.538	-0.108	0.530

Source: Developed for this research.

Table 6.16 shows the Kano survey results with the current student satisfaction level in the USQ case. The weighted average values of the (85) questionnaires for the specific functional and dysfunctional items were computed. These values refer to the student importance (CI). At the same time, the QFD team defined rates of mean and median P50 of each functional statement to represent the ratings of current student satisfaction levels in the USQ case.

A value of zero shows that this requirement does not cause dissatisfaction if it is not met. In this way, all the SRs, which are academic requirements (ARs) and personal requirements (PRs), were visually presented in Figure 6.19. The diagram is divided into four quadrants according to four types of requirements: attractive, must-be, indifferent, and one-dimensional. Pairs of SS and DS coefficients for each requirement are plotted in the student satisfaction coefficient diagram. The quality requirements plotted in the first quadrant (high extent of satisfaction, the low extent of dissatisfaction) are the key attractive student personal requirements (PSRs). It is clear from the evaluation diagram that there are some requirements which, if provided, will make students highly satisfied: PR14 "Support is available for my family if required", and PR13 "Support is available for students who have a financial hardship". This diagram shows that the university must focus on requirements placed in the attractive and one-dimensional categories to achieve positive results. In the second quadrant (high extent of satisfaction with high extent of dissatisfaction), two requirements that come under the one-dimensional category AR6 "Provides sufficient access to the library resources and online database", and PR9 "I feel welcomed and integrated into the university community" were in the effective improving area. The requirements nearer to the one-dimensional and attractive category must be focused and accomplished in order to have a major impact on the satisfaction of students. Requirements such as AR2 "The learning is conducive to my learning and research", AR3 "My university degree provides me with more job opportunities", and PR11 "Student support services made immigration regulations easy to understand and manage" came under the must-be category. They are plotted in the third quadrant (low extent of satisfaction with high extent of dissatisfaction) that leads to student dissatisfaction when the university is less functional in terms of these quality requirements than students expect, but they have no effect on satisfaction when they are fully functional. The fourth quadrant includes the rest of the requirements that came under the indifferent category (low extent of satisfaction with low extent of dissatisfaction), which does not provide a strong view on satisfaction or dissatisfaction and it is not important for the university to pay as much attention to these requirements.

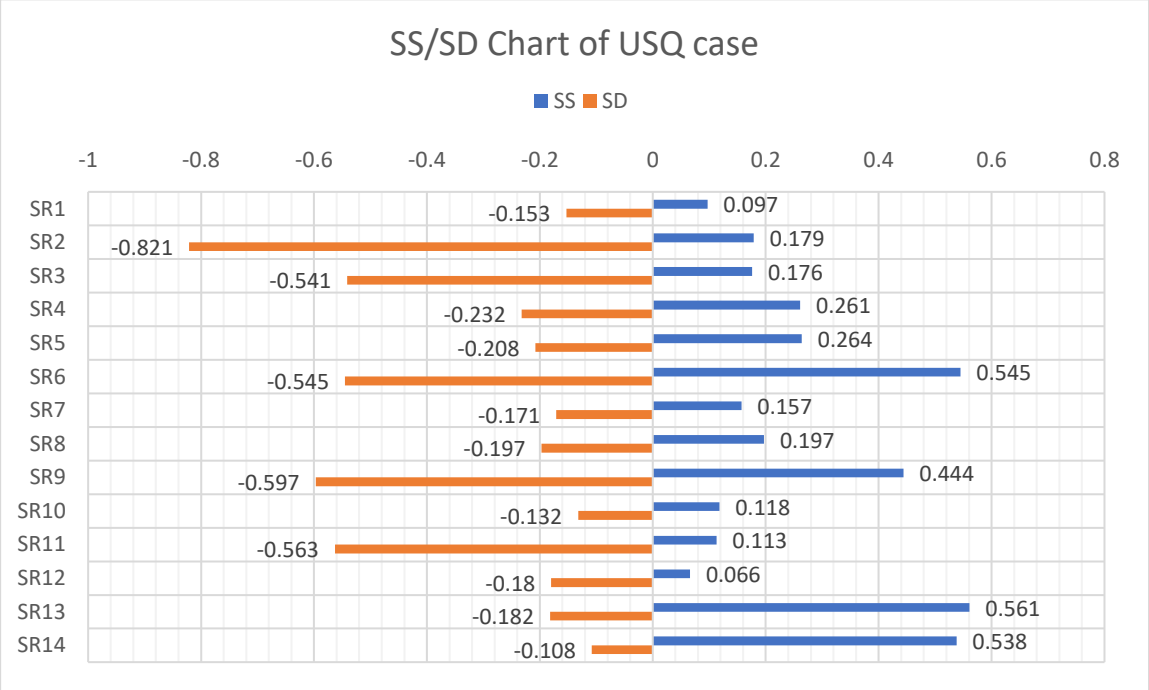
Figure 6. 19: Student satisfaction coefficient diagram for the USQ case



Source: Developed for this research.

According to the SS/SD coefficients chart (Figure 6.20), SSI indicates that how strongly a product feature may impact on SSI and SDI indicates how strongly the non-fulfillment of a requirement may influence student dissatisfaction. The requirements in the must-be classification have much influence on the dissatisfaction of the students, the one-dimensional factors have much influence on the satisfaction of the students, and the attractive requirements have high "Better" and "Worse" values; these factors have much influence on both the satisfaction and dissatisfaction of students.

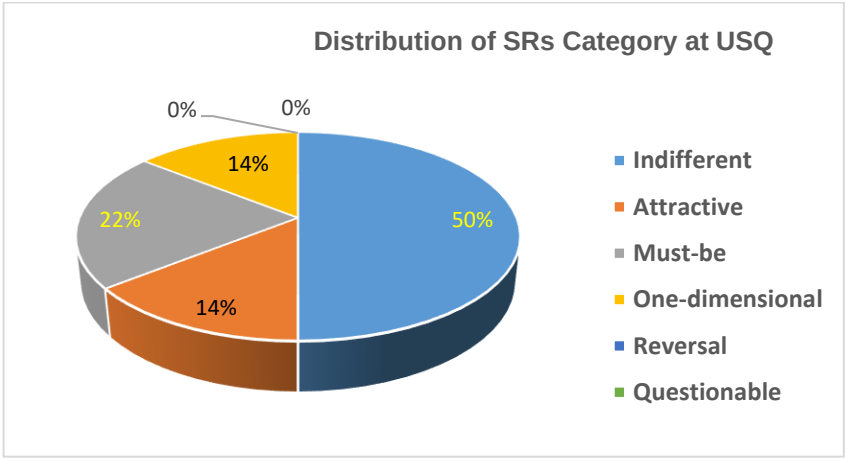
Figure 6. 20: Satisfaction and dissatisfaction coefficients chart for the USQ case



Source: Developed for this research.

Figure 6.21 indicates that indifferent requirements were 50%, 22% for must-be requirements, 14% for one-dimensional requirements, and 14% for attractive requirements. In designing the quality of educational services at USQ, requirements for must-be, attractive, and one-dimensional should be strongly considered without completely ignoring all requirements followed under indifferent requirements. As can be seen in this Figure, among the total 14 quality requirements, half of the SRs (*n*=7) were classified as "Indifferent", while a relatively lower number of SRs (*n*=3) were classified as "Must-be", other SRs (*n*=2) were classified as "One-dimensional", and the rest (*n*=2) fell in the Kano category of attractive needs.

Figure 6. 21: Categorisation of SRs based on Kano analysis for the USQ case



Indifferent	• Courses are delivered effectively at my university. • The academic staff in my area of study at university have a good reputation. • Able to meet with supervisor and lecturer, and receive feedback. • Student services adequately enhance my learning experiences. • Logistics and facilities support my learning experiences. • I feel welcomed and integrated into the wider community. • I usually have no difficulty paying for education and living expenses.
Must-be	• The learning is conducive to my learning and research. • My university degree provides me with more job opportunities. • Student support services made immigration regulations easy to understand and manage.
One-dimensional	• Provides sufficient access to the library resources and online database. • I feel welcomed and integrated into the university community.
Attractive	• Support is available for my family if required. • Support is available for students who have a financial hardship.
Reversal	• NONE
Questionable	• NONE

Source: Developed for this research.

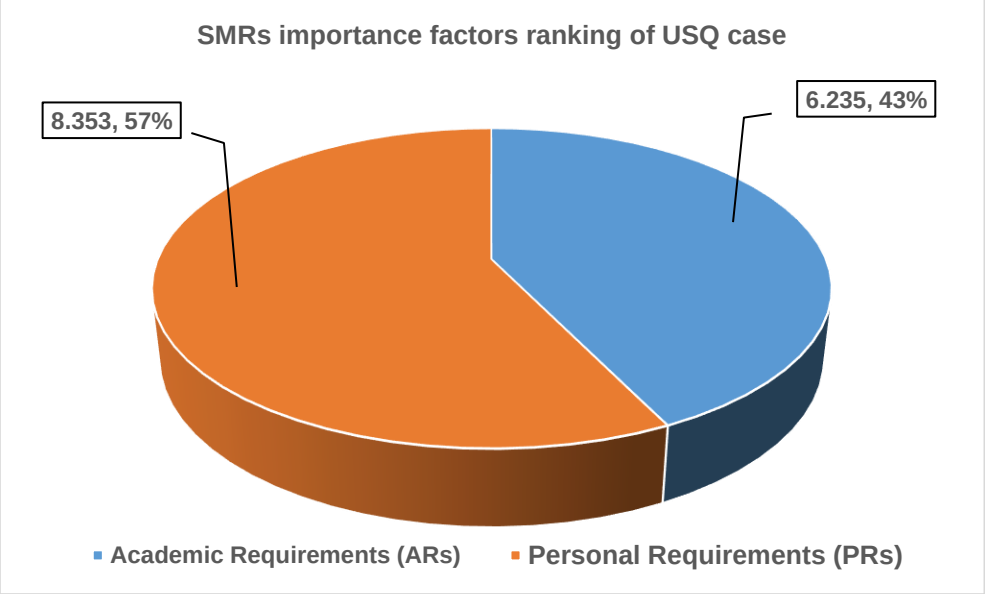
Table 6. 16: Kano survey results with the current student satisfaction level for the USQ case

Questions/ Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N	sum	Weighted Average	Mean	Median P50
	1	2	3	4	5					
1. Functional	7	8	23	31	5	74	241	3.26	3.257	3
1. Dysfunctional	8	23	21	16	4	72	201	2.79	2.792	
2. Functional	10	14	16	23	10	73	228	3.12	3.123	3
2. Dysfunctional	1	1	1	1	0	4	10	2.50	2.500	
3. Functional	10	7	22	22	12	73	238	3.26	3.260	3
3. Dysfunctional	11	24	23	10	5	73	193	2.64	2.644	
4. Functional	7	11	9	25	2	54	166	3.07	3.111	3.5
4. Dysfunctional	16	29	9	15	0	69	161	2.33	2.333	
5. Functional	8	8	11	29	17	73	258	3.53	3.534	4
5. Dysfunctional	15	25	19	10	4	73	182	2.49	2.493	
6. Functional	12	14	23	17	7	73	212	2.90	2.904	3
6. Dysfunctional	6	14	22	19	12	73	236	3.23	3.233	
7. Functional	7	13	15	29	8	72	234	3.25	3.250	4
7. Dysfunctional	9	26	21	11	5	72	193	2.68	2.681	
8. Functional	6	4	24	28	10	72	248	3.44	3.444	4
8. Dysfunctional	10	29	22	6	5	72	183	2.54	2.542	
9. Functional	7	3	24	27	11	72	248	3.44	3.444	4
9. Dysfunctional	12	28	24	4	4	72	176	2.44	2.444	
10. Functional	8	3	26	28	7	72	239	3.32	3.319	3
10. Dysfunctional	8	23	21	16	4	72	201	2.79	2.708	
11. Functional	11	17	25	15	4	72	200	2.78	2.778	3
11. Dysfunctional	3	15	24	20	10	72	235	3.26	3.264	
12. Functional	14	15	25	13	2	69	181	2.62	2.623	3
12. Dysfunctional	8	13	24	16	8	69	210	3.04	3.043	
13. Functional	11	5	15	24	14	69	232	3.36	3.362	4
13. Dysfunctional	10	28	17	6	8	69	181	2.62	2.623	
14. Functional	10	4	30	20	5	69	213	3.09	3.087	3
14. Dysfunctional	8	16	31	6	8	69	197	2.86	2.855	

Source: Developed for this research.

The responses collected from students in the form of the importance rating of students' main requirements (SMRs) were statistically analysed and plotted on the pie chart in Figure 6.22. It is clear from Figure 6.4 that the personal requirements (PRs) (8.353) with (percentage score 57) was the dominant factor of AIS's requirements, and thus had a greater importance for USQ. Whereas their academic requirements (ARs) (6.235) with (percentage score 43) indicated lower importance. Therefore, PRs should be given priority in order to best fulfill students' personal needs.

Figure 6. 22: SMRs ranking for USQ

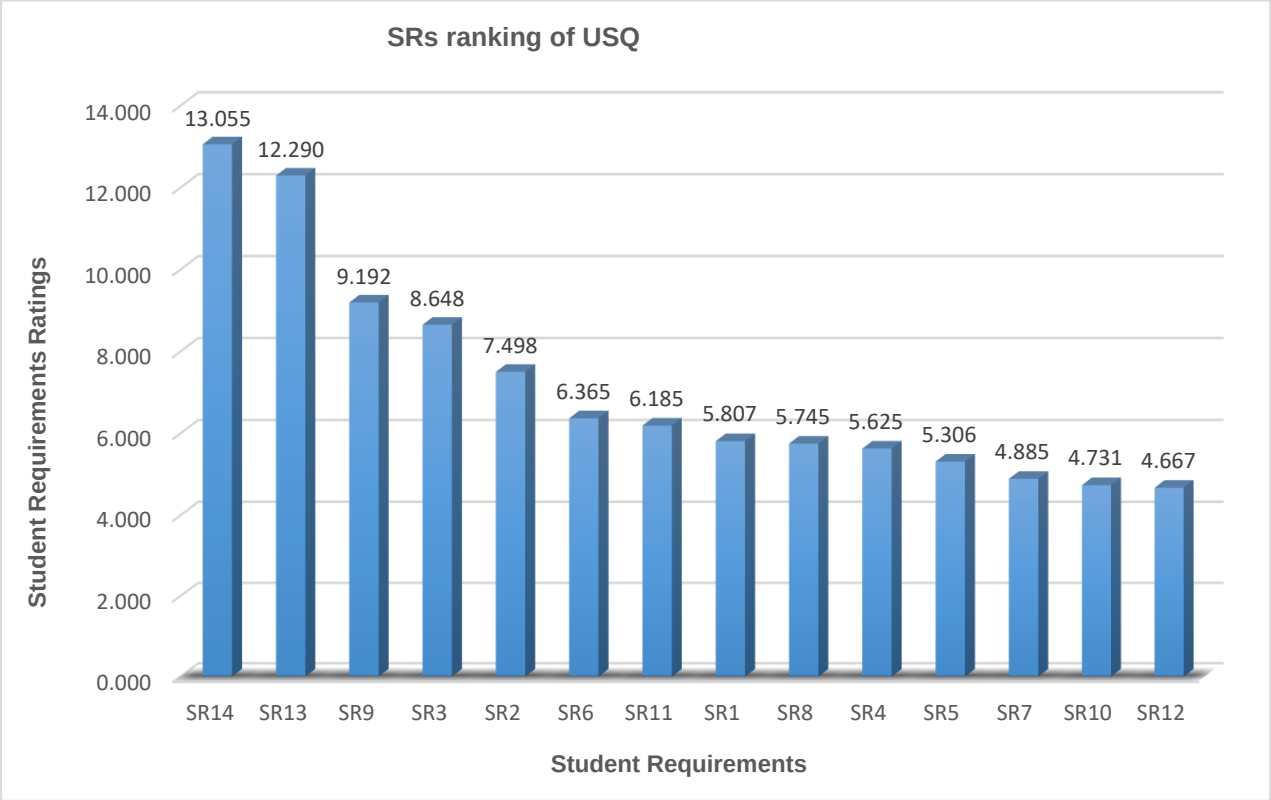


Source: Developed for this research.

In this context, Figure 6.23 shows the results of students' sub-requirements ranking. Out of the total number of 14 items, it is clear that "Support is available for my family if required" (percentage score 13.055), "Support is available for students who have a financial hardship" (percentage score 12.290), "I feel welcomed and integrated into the university community" (percentage score 9.192) and "My university degree provides me with more job opportunities" (percentage score 8.648), respectively, were the most highly-rated parameters. Out of these, "Support is available for my family if required", and "Support is available for students who have a financial hardship" were the most dominant factors of the students' sub-requirements. Therefore, these two should be given the greatest priority in order to fulfill student needs. The factors "The learning is conducive to my learning and research" (percentage score 7.498), "Provides sufficient access to the library resources and online database" (percentage score 6.365), "Student support services made immigration regulations easy to understand and manage' (percentage score 6.185), "Courses are delivered effectively at my university" (percentage score 5.807), "Logistics and facilities support my learning experiences" (percentage score 5.745), "The academic staff in my area of study at university have a good reputation" (percentage score 5.625), and "Able to meet with supervisor and lecturer, and

receive feedback" (percentage score 5.306) were moderately rated importance parameters that still indicate important needs of the students. The "I usually have no difficulty paying for education and living expenses" (percentage score 4.667), "I feel welcomed and integrated into the wider community" (percentage score 4.731), and "Student services adequately enhance my learning experiences" (percentage score 4.885) were of lesser importance for the needs of the students, with "I usually have no difficulty paying for education and living expenses" being of least importance. Therefore, it should be given the lowest priority when USQ is considering a strategy to satisfy students' requirements.

Figure 6. 23: Ranking of the SRs constructs based on perceived importance for USQ



Source: Developed for this research.

After the planning matrix has been developed and evaluated in detail, the institutional requirements for meeting student needs were obtained and a plan was determined by the QFD team based on evaluation of the deep discussions with university experts, as explained in Chapter 5.

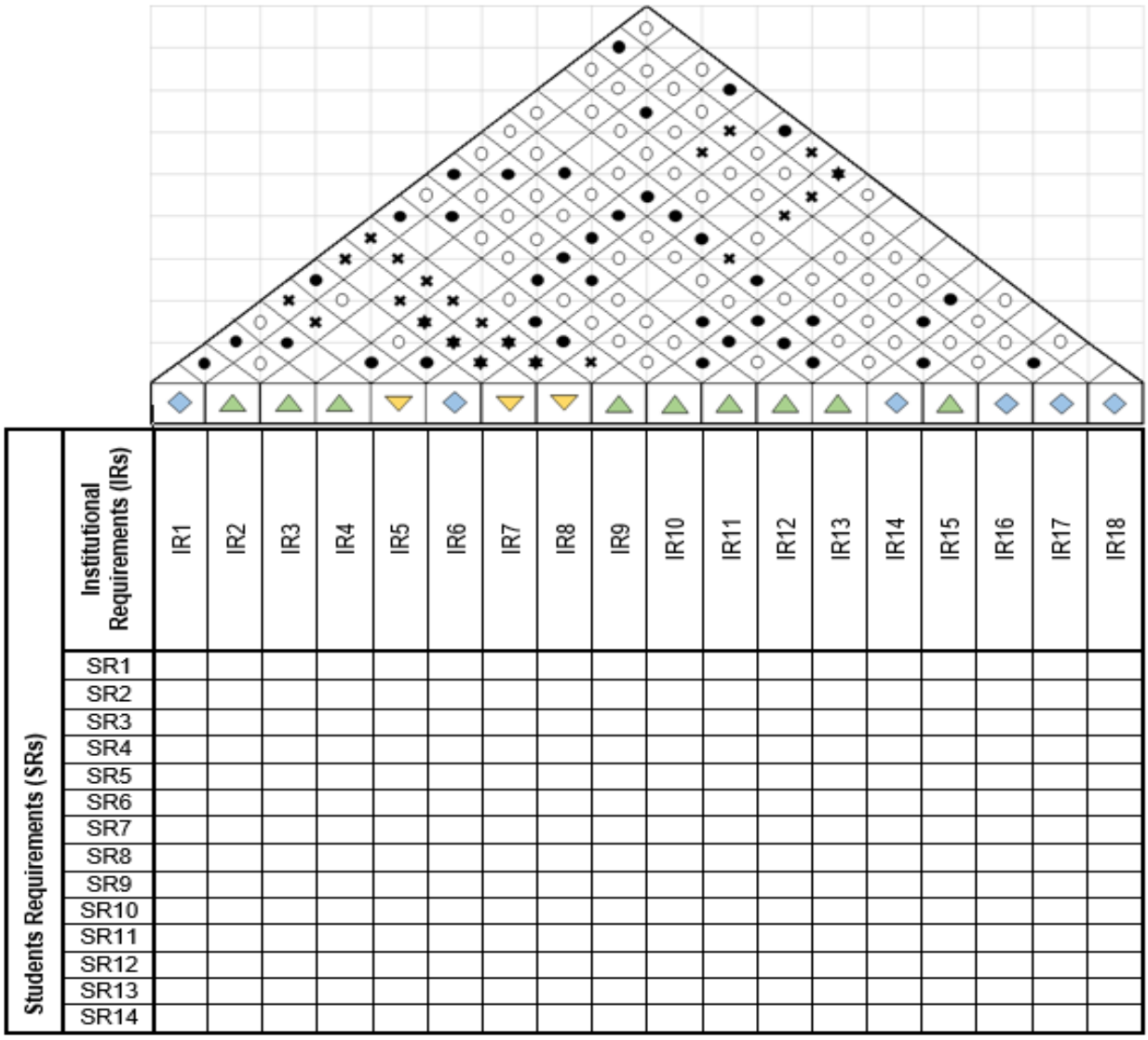
6.5.3.2. Establishment of the relationship matrix

The next step in building a HOQ was to compare the SRs and IRs to determine their respective relationships. In the relationship matrix of the Kano-QFD matrix, it was specified that there were 14 student requirements and 18 corresponding institutional requirements to satisfy them (Figure 6.18). After the SRs and IRs were identified, a relationship matrix was constituted by the QFD team to determine how well institutional requirements met student needs and the relationship weightings between SRs and IRs. The adjusted importance ratings (ACI) provide ranking IRs, with the highest values being the most important in satisfying student needs or requirements. After setting up the basic matrix, it was necessary to assign relationships between the student requirements and the performance measures.

6.5.3.3. Performing correlation matrix

In Figure 6.24, the correlation matrix, in this case, presents relationships between several quality indicators. Among 18 items of IRS, it is possible to emphasise the strong positive correlation between IR5 (Students shall not collude or plagiarize) and IR14 (Maintain principles of academic research integrity and honesty (ethics)). Weak negative relationships include IR8 (Do not undertake unlawful activities of any kind) with IR5 (Have the capacity to pay university fees), and IR5 (Students shall not collude or plagiarize). These results deserve to be highlighted in any possible modifications and /or adaptions that may be necessary for an educational quality service process that is aimed at the reduction of failures and low quality of the final service. Some of these may require high-level managerial decisions regarding trade-offs, and some are cross-functional area boundaries (Azka & Nurcahyo, 2018).

Figure 6. 24: The correlation matrix for the USQ case



Source: Developed for this research.

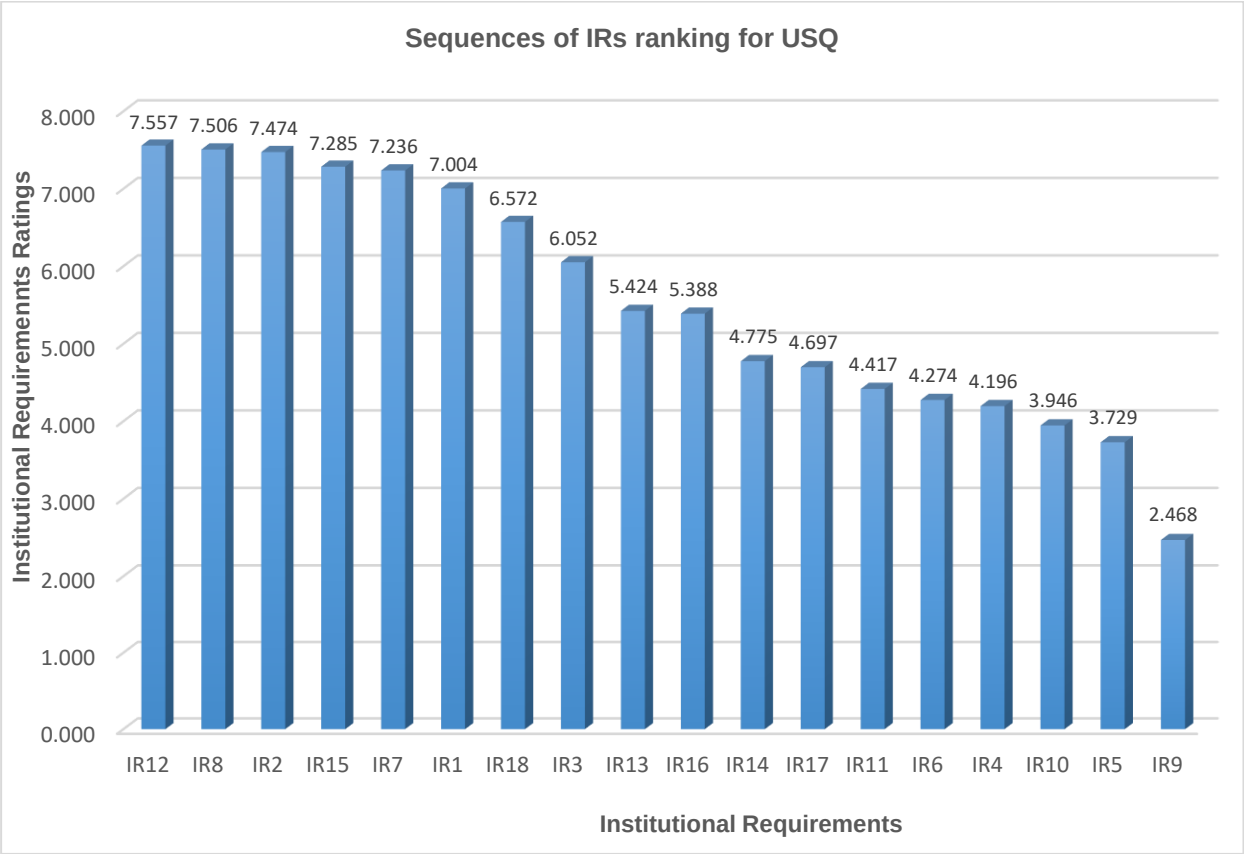
6.5.3.4. Competitive analysis and identifying target values

To improve the sequence priority, the data in this matrix were used to calculate absolute importance data. These relation grades were put in sequence from largest to smallest to become the key points for improvement of management of the quality standards. The IRs were evaluated for USQ and one competitor university. Then the QFD team defined a target value between

1and 10 points for every IR. These values can be found in the “Target Values” row along with measures for every IR.

Scores shown in Figure 6.25 indicate that IR12 “Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities” (percentage score 7.557), followed by IR8 “Not undertake unlawful activities of any kind” (percentage score 7.506), IR2 “Have English proficiency to successfully complete university study” (percentage score 7.474), and IR15 “Attempt to resolve issues through informal discussion before taking a formal action” (percentage score 7.285), should be the parameters focused on to best fulfill a greater number of the students’ needs. Along with these, IR7 “Do not discriminate, bully or harass when interacting with other students, staff or other individuals visiting the university” (percentage score 7.236), IR1 “Adhere to the university's enrolment policies and procedures” (percentage score 7.004), IR18 “Ensure safety and the respect of the property (university's and of others)” (percentage score 6.572), IR3 “Have the capacity to pay university fees” (percent score 6.052), IR13 “Comply with the course and program requirements” (percentage score 5.424), IR16 “Follow university requirements in the use of university-provided ICT, other resources and infrastructure” (percentage score 5.388), and IR14 “Maintain principles of academic research integrity and honesty (ethics)” (percentage score 4.775), IR17 “Have access to a computer with minimum technical specifications for university study” (percentage score 4.697), IR11 “Comply with rules of the academic misconduct” (percentage score 4.417), IR6 “Follow the student code of conduct” (percentage score 4.274), and IR4 “Maintain/uphold the reputation of the university” (percentage score 4.196) were moderately focused parameters. Further, IR9 “Follow the university's international student's policy (only for students under 18)” (percentage score 2.468), IR5 “Students shall not collude or plagiarize” (percentage score 3.729), and IR10 “Comply with examination or assessment instruction” (percentage score 3.946), were the lowest parameters, which should be given the least focus in the quest to fulfill student requirements.

Figure 6. 25: USQ institutional requirements ranking



Source: Developed for this research.

6.6. SWOT matrix of Kano-QFD of three universities

This section focuses on the SWOT analysis of the Kano-QFD model results related to three public universities in Queensland. It contributes a method for evaluating and analysing the student data and the institutional data in the Kano-QFD matrix and therefore serves the function of generating useful information resulting in a better decision-making process. The outcomes of applying the Kano-QFD approach constitute a comprehensive solution that discusses post-matrix analysis through underlying requisite steps, sections of the matrix, the information needed relating to the voice of market (VOM) and competitor universities, and the computations involved (Sharma & Rawani, 2008). The perceptions of the respondents regarding the strengths, weaknesses, opportunities, and threats in the Kano-QFD matrix results at the university were

examined. The findings from the analysis are shown in the Tables and Figures for the three Queensland universities.

The final priority score when sorted on their numeric values highlights the area on which the developer should focus their attention. For carrying out these improvements the university needs to focus on the institutional requirements with greater values of final priority scores. These are the institutional requirements that the university should be concentrating on. This will not only lead to a better level of performance but also give them an edge over their competitors as far as student satisfaction is concerned. The relationship between the final raw weight of the customer requirements and the priority scores of the institutional requirements such that as the universities concentrate their efforts on the design measures and improve them to the target level, the students' needs are automatically taken care of. A little improvement in the performance of the university in these respects would overcome a number of weaknesses which will not only help the university in competing better but also stand them in good stead as far as the expectations of students are concerned (Sharma & Rawani, 2008). Thus, improving the product concerning these engineering characteristics will be solving most of their problems. Because these considered institutional requirements have a direct bearing on the disadvantages the university has vis-à-vis its competitors.

6.6.1. SWOT matrix of Kano-QFD in the UQ case

The final Kano-QFD matrix provided the relative importance weights of each student requirement as well as the priority scores of each institutional requirement. Carrying out a comparative analysis on the results provided by the final QFD with SWOT on the final relative importance (student data) and final priority scores (institutional data), the following inferences can be drawn. Tables 6.17 and 6.18 show the weights and scores in the sorted rank-order form. The ranking of the SRs and IRs priorities were calculated to assist the providers in concluding how the results relate to the critical-success-parameters of the SRs data and IRs data (Das, 2019). The findings from the analysis of the UQ case are shown in Tables 6.17 and 6.18.

The researcher adopted the student satisfaction coefficient as an indicator of the student satisfaction value and student dissatisfaction value. The "Better" value and "Worse" value were calculated for each requirement in order to clarify the contribution of each requirement on

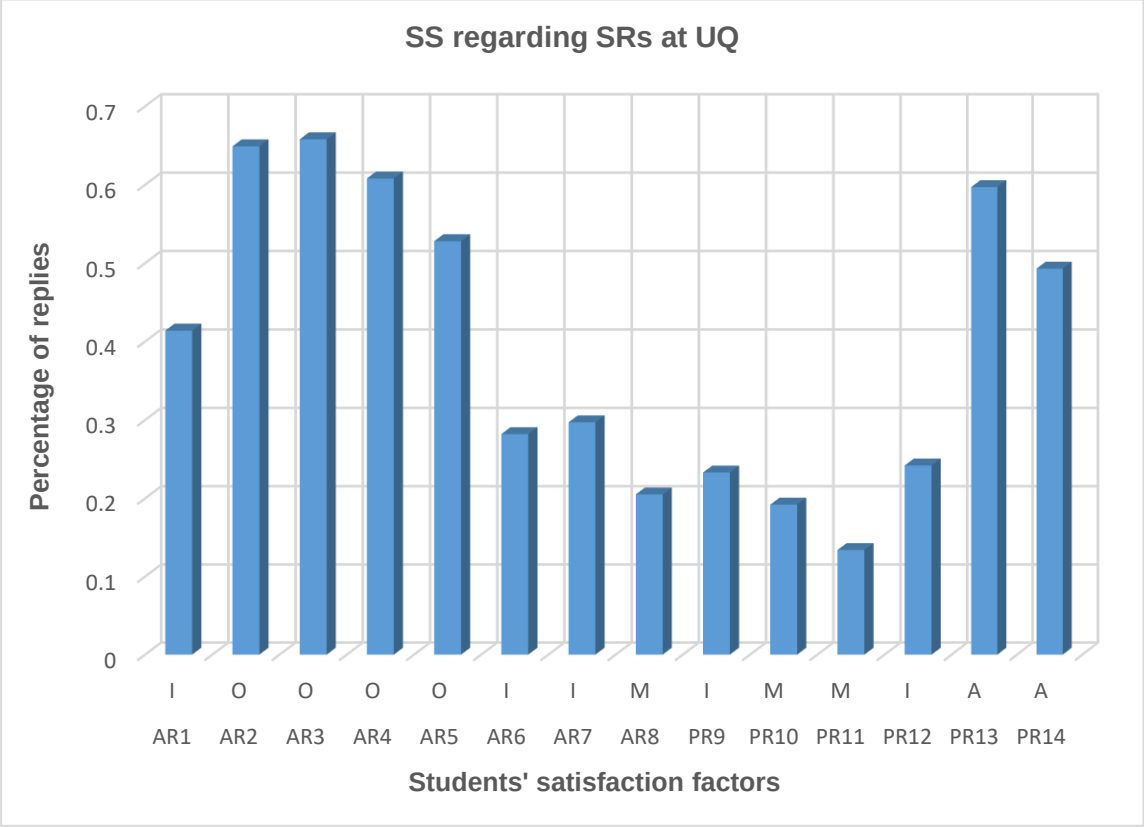
increasing or decreasing student satisfaction (see Section 6.5.1.1; Table 6.7). This was done to provide more accurate information related to the strength and weaknesses variables in the SWOT matrix, as well as to help the decision-makers at the university (Mohammad, 2020). It is recognised that the "Better" value estimates the ability of the requirement to create satisfaction, based on the Attractive (A) and One-dimensional (O) categories, which then indicates the potential of the requirement to create high value and measures the extent of satisfaction. By contrast, the "Worse" value estimates the value of the requirement to create dissatisfaction if it is not included, based on the one-dimensional (O) and Must-be (M) categories, which indicates the risk of not including the requirement and measures the extent of dissatisfaction (Materla & Cudney, 2019; Materla et al., 2019). As indicated in Figures 6.26 and 6.27, factors of students' satisfaction and dissatisfaction (academic and personal requirements) depend on the performance of UQ regarding these requirements.

After a thorough review of all the major findings of the program of the Kano-QFD analysis for the UQ case, results were obtained that are presented in Figure 6.28: SWOT matrix. SWOT analysis of a Kano-QFD, or any program, can be viewed as a driving force for implementing needs-based change. Even though SWOT analysis is an old methodology, it has stood the test of time and can readily integrate ideas from newer approaches, such as resource development and competency-based planning (Das, 2019). It remains an important tool to use in a strategic planning process.

Figure 6.26 shows the student satisfaction factors representing the *opportunities* in the SWOT matrix. Among 14 requirements, there are five indifferent (I) requirements (PR9, AR6, AR7, PR12, AR1). These can be temporarily sidelined, as there is no immediate need for the university to focus on them in the first instance, though they should not be ignored. The university should instead focus on providing requirements (PR13and PR14) that fall under the attractive (A) category, as these will immediately enhance student satisfaction. Also, there are four requirements (AR3, AR2, AR4, and AR5) under one-dimensional (O) where the university needs to increase its performance to maintain satisfaction, while simultaneously decreasing dissatisfaction. Finally, there are three requirements categorised into the must-be (M) category, as these are basic requirements that must be fulfilled by the university. If this category is fulfilled, it will not increase student satisfaction, but if it is not fulfilled, students will feel disappointed. Thus, the requirements in this category must be maintained, but only to what the

student wants, so that the available resources are not wasted and can be used to improve other requirements in the (A) and (O) categories.

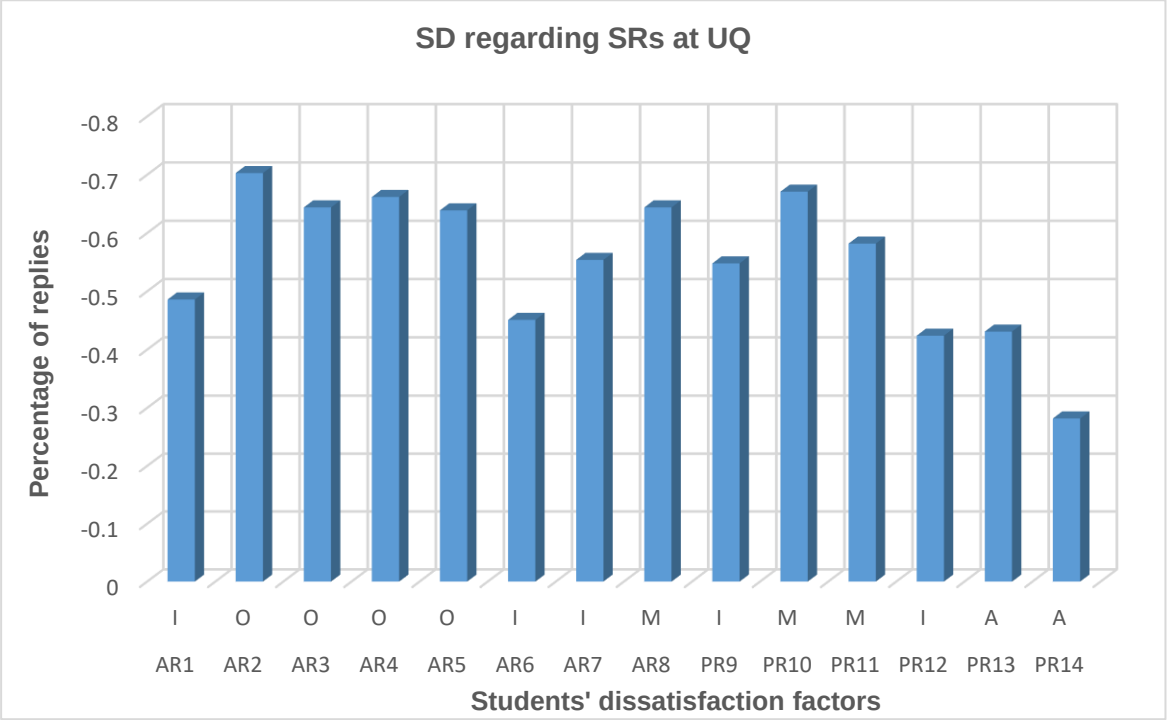
Figure 6. 26: Students' satisfaction factors regarding ARs and PRs at UQ



Source: Developed for this research.

On the other hand, Figure 6.27 indicates the student dissatisfaction factors, which represent the *threats* in the SWOT matrix. Requirements (AR8, PR10, and PR11) are under the must-be (M) category, so the university must ensure that students are provided with these requirements as failing to fulfill them will dissatisfy students. One-dimensional (O) requirements include (AR2, AR3, AR4, and PR5) and what the university should do about these.

Figure 6. 27: Students' dissatisfaction factors regarding ARs and PRs at UQ



Source: Developed for this research.

Consequently, a full comparative SWOT analysis was conducted of the outcomes from the Kano-QFD model analyses of the three case universities. The first step was to segregate the necessary and crucial information about the 'critical success parameters' from the students as well as the institutional point of view. The critical success parameters here refer to the student requirements and institutional requirements that are vital for the success of the university's quality educational services. It is recommended practice to focus and concentrate on only the critical success parameters, which are considered to be the top half of the sorted rank-order attributes based on their percentage importance weights of student satisfaction (Sharma & Rawani, 2008).

In this section, the final relative importance weights (%RIW) of requirements and the Kano category (KC) are taken into account for the selection of students and institutional requirements through the SWOT matrix (see Figure 6.28). SWOT is used to set institutional goals more realistically and effectively, as well as formulate effective strategies for improving university performance in the provision of quality educational services.

Table 6. 17: Sorted rank order final list of student requirements of UQ

Rank	Student Requirements	S. No.	KC	ACI	% RIW
1	Support is available for students who have a financial hardship	13	A	12.851	11.44
2	My university degree provides me with more job opportunities	3	O	11.748	10.46
3	The academic staff in my area of study at university have a good reputation	4	O	10.596	9.44
4	I feel welcomed and integrated into the university community	9	I	9.743	8.68
5	The learning is conducive to my learning and research	2	O	9.721	8.66
6	Able to meet with supervisor and lecturer, and receive feedback	5	O	8.688	7.74
7	Logistics and facilities support my learning experiences	8	M	8.589	7.65
8	Support is available for my family if required	14	A	8.135	7.24
9	I usually have no difficulty paying for education and living expenses	12	I	5.760	5.13
10	Provides sufficient access to the library resources and online database	6	I	5.688	5.06
11	Courses are delivered effectively at my university	1	I	5.625	5.01
12	Student services adequately enhance my learning experiences	7	I	5.372	4.78
13	Student support services made immigration regulations easy to understand and manage	11	M	5.157	4.59
14	I feel welcomed and integrated into the wider community	10	M	4.625	4.12
	Total			**112.297**	**100.00**

Source: Developed for this research

In utilising the SWOT matrix, the following are alternative strategies based on the combinations of each factor (Abdi et al., 2013; Büyüközkan & Ilıcak, 2019; Yusran & Sabar, 2019):

- SO: Utilise strength (S) maximally to gain opportunities (O);
- ST: Utilise strength (S) maximally to anticipate or deal with threats (T) and try to convert threats to opportunities (O);
- WO: Minimise weaknesses (W) to again opportunities (O) and;
- WT: Minimise weaknesses (W) to avoid threats (T)

The four factors of the SWOT matrix were first analysed individually based on the components of each factor and then given an assessment to determine the position of the third research object in the SWOT quadrant (Thamrin & Pamungkas, 2017). Table 6.17 results were further summarised into Figures 6.26 and 6.27, and the final results from the Kano-QFD analysis are presented in the SWOT matrix (Figure 6.28). The *strengths* and *weaknesses* pertain to the institutional data, influenced by internal assessment and market competitors, while the *opportunities* and threats related to the student data are influenced by the external assessment and performance factors in the market. As per the final matrix of the Kano-QFD analysis, which

tried to calculate the variables and values of rank amongst student requirements, the critical success parameters for the SWOT matrix were determined through consideration of the sorted values of student requirements and relative importance weights. The critical success parameters presenting *opportunities* were 'Support is available for my family if required' (RIW = 13.055) and 'Support is available for students who have financial hardship' (RIW = 12.290), which were the highest importance and attractive (A) quality requirements, followed by 'I feel welcomed and integrated into the university community' (RIW = 9.192), and 'Provides sufficient access to the library resources and online database' (RIW = 6.365), which were rated one-dimensional (O) quality requirements. However, the apparent *threats* were from 'The learning is conducive to my learning and research' (RIW = 7.498), 'Student support services made immigration regulations easy to understand and manage' (RIW = 6.185), and 'My university degree provides me with more job opportunities' (RIW = 8.648), which were rated must-be (M) quality requirements, followed by 'I feel welcomed and integrated into the university community' (RIW = 9.192), and 'Provides sufficient access to the library resources and online database', which were rated one-dimensional (O) quality requirements (Table 6.17).

Similarly, the critical success parameters concerning the institutional design aspect of quality educational services and institutional characteristics can be interpreted from the absolute priority scores below the central relationship matrix in each of the columns. When investigated column-wise as per the value of final priority scores, the significance and contribution of each institutional requirement in satisfying overall student needs can be seen as shown in Table 6.18. This depicts the magnitude of final priority scores - calculated with the relationship cell values and final institutional relative importance weights (%IRIW).

The final output of the UQ case shows that institutional requirements like 'Have English proficiency to successfully complete university study' (IRIW = 7.031), 'The ability to work and learn independently and effectively' (IRIW = 6.948), 'Do not undertake unlawful activities of any kind' (IRIW = 6.817), and 'Adhere to the university's enrolment policies and procedures' (IRIW = 6.494), respectively, were the highest contributors to the overall success of the provided educational services and therefore represent strengths of the university. On the other hand, the technical weaknesses of the university are indicated by the analysis through 'Follow the university's international student's policy (only for students under 18)' (IRIW = 2.312), 'Comply with requirements of intellectual property rights' (IRIW = 2.773), 'Comply with examination or assessment instruction' (IRIW = 3.715), and 'Follow the student code of

conduct' (IRIW = 3.843), respectively. These elements were the lowest contributors to the overall success of the service and therefore represent the weakness aspects of the university's provision of educational services to this cohort of students (Table 6.18).

Table 6. 18: Sorted rank order final list of institutional requirements of UQ

Rank	Institutional Requirements	S. No.	IAIW	% IRIW
1	Have English proficiency to successfully complete university study	2	540.04	7.031
2	The ability to work and learn independently and effectively	17	533.62	6.948
3	Not undertake unlawful activities of any kind	8	523.56	6.817
4	Adhere to the university's enrolment policies and procedures	1	498.77	6.494
5	Do not discriminate, bully or harass when interacting with other students, staff, or other individuals visiting the university	7	482.23	6.279
6	Maintain and enhance the trust that exists between academic staff and students through feedback and consultation	12	460.91	6.001
7	Ensure safety and the respect of the property (University's and of others)	20	423.06	5.508
8	Maintain satisfactory progress through their HDR program and undergraduate course	14	420.37	5.473
9	The ability to engage effectively and appropriately with ICT.	19	407.13	5.301
10	Attempt to resolve issues through informal discussion before taking a formal action	15	396.12	5.158
11	Have the capacity to pay university fees	3	381.22	4.964
12	Follow university requirements in the use of university-provided ICT, other resources, and infrastructure	16	360.93	4.699
13	Maintain/uphold the reputation of the university	4	335.89	4.373
14	Comply with the course, program requirements, research integrity, and honesty	13	319.03	4.154
15	Students shall not collude or plagiarize	5	316.78	4.125
16	Comply with rules of the academic misconduct	11	309.65	4.032
17	Follow the student code of conduct	6	295.19	3.843
18	Comply with examination or assessment instruction	10	285.35	3.715
19	Comply with requirements of intellectual property rights	18	212.95	2.773
20	Follow the university's international student's policy (only for students under 18)	9	177.54	2.312
	Total		**7680.30**	**100.00**

Source: Developed for this research

The institutional requirements highlighted by the sorted top-ranked maximum priority scores reflect demanded quality characteristics from both the student viewpoint and through the values of adjusted importance weights (ACI), as well as the final relative importance ratings of each student's requirements (RIW). The top half of the ranked order student requirements pertained to other supports (Support is available for my family if required), (My university degree provides me with more job opportunities), (The academic staff in my area of study at the university have a good reputation) and (Support is available for students who have a financial hardship) and represented *opportunity.* It is interesting that the top half of the rank-ordered

institutional requirements directly align and are representative of these same student requirements. This adds credibility and justifiably pertains to the same demanded quality functions that hence need to be catered for. University should have significant resources to addressing language difficulties (Have English proficiency to successfully complete university study), use of university resources (The ability to work and learn independently and effectively), enrolment policies and student conduct of the (Not undertake unlawful activities of any kind), and (Adhere to the university's enrolment policies and procedures), which are the aspects of the product representing *strengths.*

Conversely, the bottom half of the student requirements pertain to performance – student conduct (SR2, SR10, SR4, SR8, SR5, SR3, and SR11), conformance - student services (SR6), and educational facilities (SR9), which are the aspects representing *threats.* Again, these corresponded with the bottom half of the institutional requirements so that they directly relate to the requirements viz, performance (IR9), (IR18), (IR10, and (IR6) conformance (IR5) and enrolment policies (IR10), which are aspects representing the *weaknesses*. The institutional requirements with higher importance weights in the form of final priority scores are governing the student requirements represented through the final raw weights. Thus, the outcome manifested a representation of all the important factors affecting and leading to the revision of the importance of weightings of student needs. These SWOT influenced values of importance, their rankings and order are more precise and accurate, leading to better informed decision making. Thus, the results can facilitate decision making and guide management to distinguish which aspects of quality need more effort and resources to improve their service to this group of students (Figure 6.28).

Figure 6. 28: Summary of the findings in the SWOT matrix at UQ

	Strengths	Opportunities	
Internal university	1. Have English proficiency to successfully complete university study. 2. The ability to work and learn independently and effectively. 3. Do not undertake unlawful activities of any kind. 4. Adhere to the university's enrolment policies and procedures.	1. My university degree provides me with more job opportunities. 2. The learning is conducive to my learning and research. 3. The academic staff in my area of study at the university have a good reputation. 4. Support is available for students who have a financial hardship 5. Able to meet with supervisor and lecturer and receive feedback. 6. Support is available for my family if required.	External university
	1. Follow the University's International student policy (only for students under 18). 2. Comply with requirements of intellectual property rights. 3. Comply with examination or assessment instructions. 4. Follow the student code of conduct.	1. The learning is conducive to my learning and research. 2. I feel welcomed and integrated into the wider community. 3. The academic staff in my area of study at the university have a good reputation. 4. Logistics and facilities support my learning experiences. 5. Able to meet with supervisor and lecturer and receive feedback. 6. My university degree provides me with more job opportunities. 7. Student support services made immigration regulations easy to understand and manage.	
	Weaknesses	**Threats**	

Source: Developed for this research

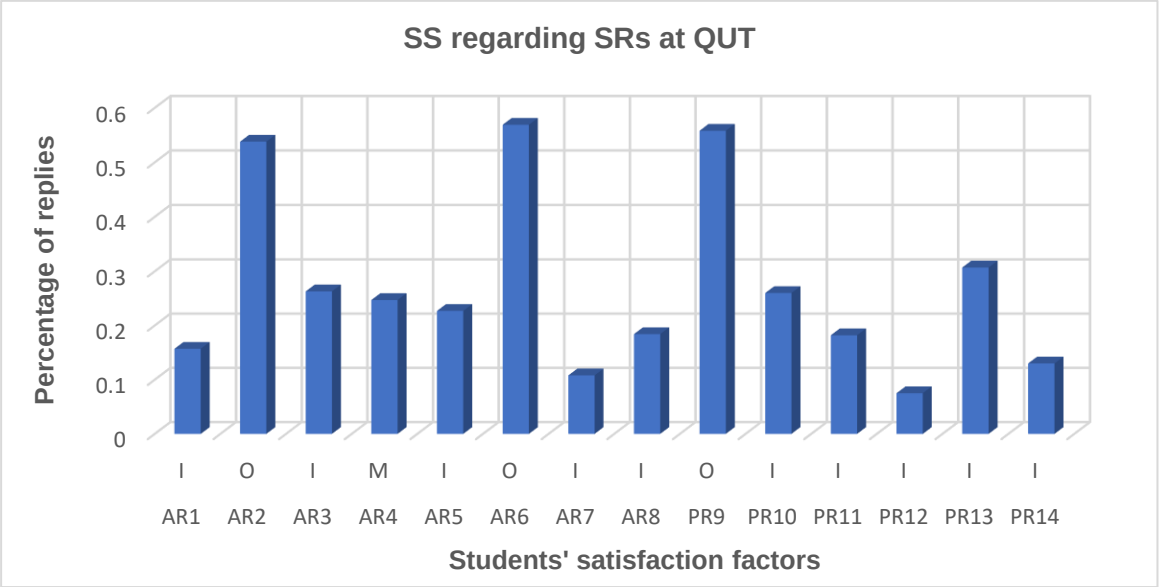
6.6.2. SWOT matrix of Kano-QFD in the QUT case

After a thorough review of all the major findings of the Kano-QFD analysis in the QUT case, the following results were obtained, and they are presented in Figure 6.31: SWOT matrix. In order to carry out a full comparative analysis of the outcomes of the Kano-QFD model, the critical-success parameters for student requirements and institutional requirements, which are essential for the success of the QUT's quality educational services, were considered. As per recommended practice, the focus was limited to the critical success parameters in the top half of the sorted rank-order attributes, based on their percent importance weights. A comparative

analysis on the values of the student satisfaction coefficient, provided by the final Kano-QFD matrix with SWOT, was conducted for each requirement, as represented in Table 6.11 (Section 6.5.2.1).

Figure 6.29 shows the student satisfaction factors, after exclusion of ten indifferent requirements (I) including (AR1, AR3, AR5, AR7, AR8, PR10, PR11, PR12, PR13, and PR14). There were three one-dimensional (O) requirements (AR2, AR6, and PR9). For these requirements, satisfaction increases proportionally to the university performance. Requirement number (AR4) was the only must-be requirement under the academic requirement category. Fulfilment of this requirement would therefore lower the dissatisfaction rate.

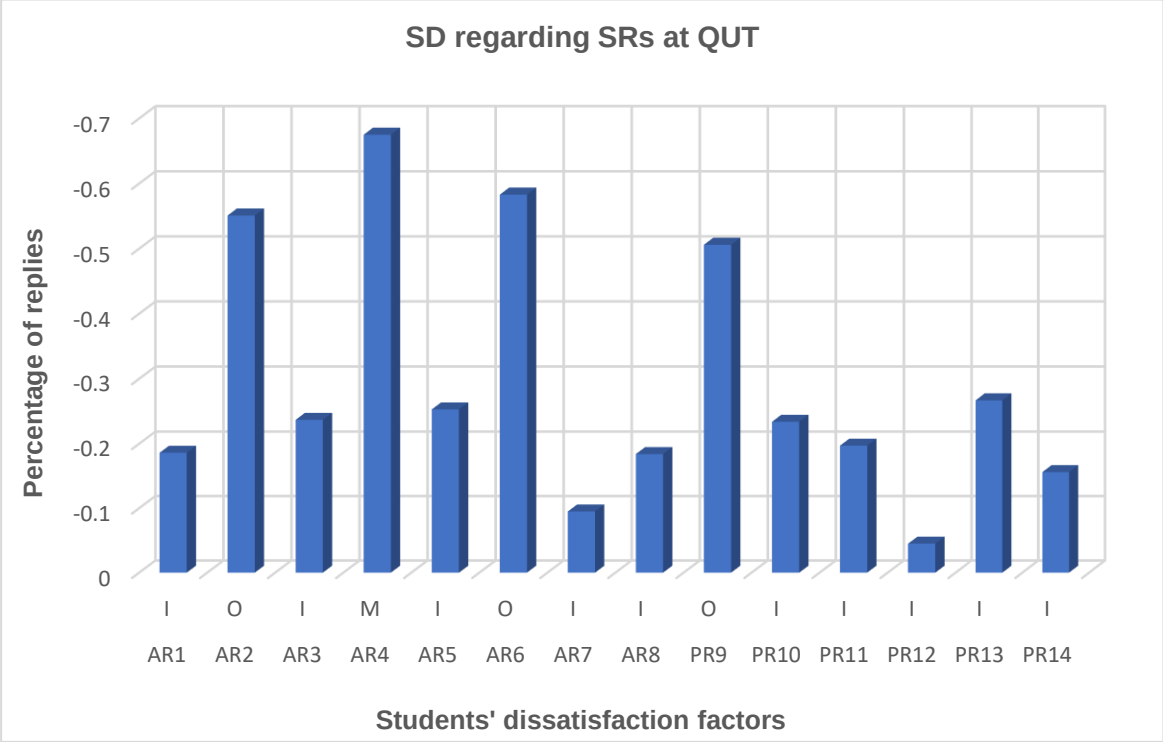
Figure 6. 29: Students' satisfaction factors regarding ARs and PRs at QUT



Source: Developed for this research.

Figure 6.30 also shows the students' dissatisfaction factors which are represented by the opportunities in the SWOT matrix of QUT. Requirements under one-dimensional (O) (AR2, AR6, and PR9) were predominant, while one requirement was rated as must-be (M) (AR4). This rating indicates that this requirement should be a priority for QUT as its presence is necessary, and its absence creates a state of dissatisfaction.

Figure 6. 30: Students' dissatisfaction factors regarding ARs and PRs at QUT



Source: Developed for this research.

Tables 6.19 and 6.20 show the weights and scores in a sorted rank-order form at QUT.

Table 6. 19: Sorted rank-order final list of SRs for QUT

Rank	Student Requirements	S. No.	KC	ACI	% RIW
1	The learning is conducive to my learning and research	2	O	10.680	12.33
2	Provides sufficient access to the library resources and online database	6	O	9.915	11.45
3	I feel welcomed and integrated into the university community	9	O	8.350	9.64
4	The academic staff in my area of study at university have a good reputation	4	M	8.174	9.44
5	My university degree provides me with more job opportunities	3	I	6.885	7.95
6	Logistics and facilities support my learning experiences	8	I	6.244	7.21
7	Student support services made immigration regulations easy to understand and manage	11	I	5.167	5.96
8	Student services adequately enhance my learning experiences	7	I	4.936	5.70
9	I usually have no difficulty paying for education and living expenses	12	I	4.933	5.69
10	Support is available for students who have a financial hardship	13	I	4.800	5.54
11	Able to meet with supervisor and lecturer, and receive feedback	5	I	4.750	5.48
12	Courses are delivered effectively at my university	1	I	4.475	5.17
13	I feel welcomed and integrated into the wider community	10	I	3.680	4.25
14	Support is available for my family if required	14	I	3.640	4.20
	Total			**86.628**	**100.00**

Source: Developed for this research

The final results from the Kano-QFD analysis are provided in the SWOT matrix (see Figure 6.31). The strengths and weaknesses pertain to QUT's institutional data, influenced by internal assessment and market competitors, while the opportunity and threats pertain to the student data influenced by the external assessment and performance factors in the market. As per the final matrix of Kano-QFD analysis, which tries to calculate the variables and values of rank amongst student requirements, the sorted values of student requirements on adjusted importance weights list out the critical-success-parameters. The parameters presenting *opportunity* were: 'The learning is conducive to my learning and research' (RIW = 12.33), 'Provides sufficient access to the library *resources* and online database' (RIW = 11.45), and 'I feel welcomed and integrated into the university community' (RIW = 9.64), which were rated the highest importance and were considered one-dimensional (O) quality requirements. The apparent *threats* were from 'The academic staff in my area of study at university have a good reputation', (RIW = 9.44), which was rated a must-be quality requirement, followed by 'The learning is conducive to my learning and research' (RIW = 12.33), 'Provides sufficient access to the library resources and online database' (RIW = 11.45), and 'I feel welcomed and integrated into the university community' (RIW = 9.64), respectively. They were also rated one-dimensional (O) quality requirements (see Table 6.29).

The critical success parameters concerning the institutional design aspect of the quality educational services and institutional characteristics were interpreted from the absolute priority scores below the central relationship matrix in each of the columns. When investigated column-wise, as per the value of the final priority scores, the significance and contribution of each institutional requirement in satisfying overall student needs can be seen. Table 6.20 depicts the magnitude of final priority scores, calculated with the relationship cell values and final institutional absolute importance weights.

Table 6. 20: Sorted rank-order final list of IRs for QUT

Rank	Institutional Requirements	S. No.	IAIW	% IRIW
1	Adhere to the university's enrolment policies and procedures	1	617.69	7.634
2	Have English proficiency to successfully complete university study	2	599.03	7.403
3	Not undertake unlawful activities of any kind	8	541.6	6.693
4	Do not discriminate, bully or harass when interacting with other students, staff, or other individuals visiting the university	7	522.42	6.456
5	Students and staff web pages and servers should be aligned to university functions or activities	17	517.94	6.401
6	Ensure safety and the respect of the property (University's and of others)	20	502.8	6.214
7	Follow university requirements in the use of university-provided ICT, other resources, and infrastructure	16	441.93	5.461
8	Attempt to resolve issues through informal discussion before taking a formal action	15	394.97	4.881
9	Have the capacity to pay university fees	3	390.13	4.821
10	Maintain principles of academic research integrity and honesty (ethics)	14	404.27	4.996
11	Have access to a computer with minimum technical specifications for university study	19	385.11	4.759
12	Comply with the course and program requirements	13	372.94	4.609
13	Maintain/uphold the reputation of the university	4	372.15	4.599
14	Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities	12	336.59	4.16
15	Comply with rules of the academic misconduct	11	338.91	4.188
16	Students shall not collude or plagiarize	5	346.28	4.279
17	Follow the student code of conduct	6	310.67	3.839
18	Comply with examination or assessment instruction	10	287.06	3.548
19	Comply with requirements of intellectual property rights	18	223.71	2.765
20	Follow the university's international student's policy (only for students under 18)	9	185.55	2.293
	Total		**8091.75**	**100.00**

Source: Developed for this research.

The final output of the QUT case has shown that the institutional requirements like ‘Adhere to the university's enrolment policies and procedures’ (IRIW = 7.634), ‘Have English proficiency to successfully complete university study’ (IRIW = 7.403), ‘Do not undertake unlawful activities of any kind’ (IRIW = 6.693), and ‘Do not discriminate, bully or harass when interacting with other students, staff, or other individuals visiting the university’ (IRIW = 6.456), respectively, were the highest contributors to the overall success of the service and also represent *strengths* of the university. On the other hand, the technical *weaknesses* of the university were exposed in the form of ‘Follow the university's international student's policy (only for students under 18)’ (IRIW = 2.293), ‘Comply with requirements of intellectual property rights’ (IRIW = 2.765), ‘Comply with examination or assessment instruction’ (IRIW = 3.548), and ‘Follow the student code of conduct’ (IRIW = 3.839), respectively, as they were the lowest contributors to the overall success of the service and therefore also represent *weaknesses* of the university (Table 6.20).

The institutional requirements, highlighted by the sorted top-ranked maximum priority scores, reflect the demanded quality characteristics, from both the student viewpoint and also through

the values of adjusted importance weights and the final relative importance ratings of each student's requirements. The top half of the ranked order student requirements pertains to available resources (AR2), course content (AR6), and culture activities of the (PR9), representing *opportunity*, and the top half of ranked order institutional requirements also directly represent these student requirements' alignment, which pertains to the same demanded quality functions viz. enrolment policies (IR1), IR2), and student conduct of the (IR8) as aspects of the quality of education services representing *strengths.* Thus, the SWOT analysis reveals a university's current situation and makes it possible to develop future action plans for the university based on the examination of internal and external factors. If the technique is used properly, it can provide a good basis for strategy formulation (Figure 6.31).

Figure 6. 31: Summary of the findings in the SWOT matrix at QUT

	Strengths	**Opportunities**	
Internal university	1. Adhere to the university's enrolment policies and procedures. 2. Have English proficiency to successfully complete university study. 3. Do not undertake unlawful activities of any kind. 4. Do not discriminate, bully or harass when interacting with other students, staff, or other individuals visiting the university.	1. Provides sufficient access to the library resources and online database. 2. I feel welcomed and integrated into the university community. 3. The learning is conducive to my learning and research.	**External university**
	1. Follow the University's International student policy (only for students under 18). 2. Comply with requirements of intellectual property rights. 3. Comply with examination or assessment instruction. 6. Follow the student code of conduct	1. The academic staff in my area of study at the university have a good reputation. 2. Provides sufficient access to the library resources and online database. 3. The learning is conducive to my learning and research. 4. I feel welcomed and integrated into the university community.	
	Weaknesses	**Threats**	

Source: Developed for this research.

6.6.3. SWOT matrix of Kano-QFD in the USQ case

The major findings of the Kano-QFD analysis for the USQ case are included in Tables 6.21 and 6.22, and results obtained from the review of these results are presented in Figure 6.34: SWOT matrix. As discussed previously, the comparative analysis of the Kano-QFD model outcomes first determined the necessary information about the 'critical-success parameters' from the student and institutional perspectives. The final Kano-QFD matrix provides the final relative importance weights of each student requirement as well as the final priority scores of each institutional requirement. Carrying out a comparative analysis on the results provided by the final Kano-QFD matrix with SWOT on the final relative importance weights (student data) and final priority scores (institutional data), the following inferences can be drawn. Tables 6.21 and 6.22 show the weights and scores in a sorted rank-order format.

Figure 6.32 shows the student satisfaction factors which are representing the *opportunities* in the SWOT matrix. Among 14 requirements, the following results are obtained:

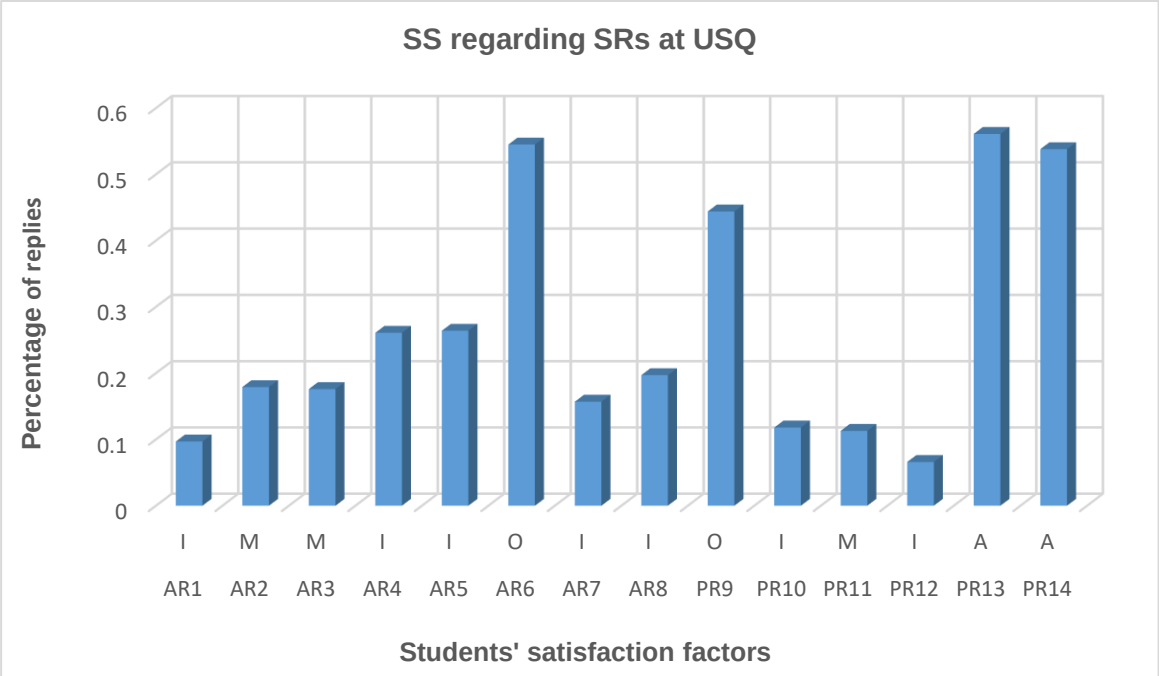
a. There are seven indifferent (I) requirements (AR1, AR4, AR5, AR7, AR8, PR10, and PR12). There is no need for the university to focus on them in the first instance, though they should not be ignored.

b. The university should instead focus on providing requirements (PR13and PR14) that fall under the attractive (A) category, as these will immediately enhance student satisfaction

c. Also, there are two requirements (AR6 and AR9) under one-dimensional (O) where the university needs to increase its performance to maintain satisfaction, while simultaneously decreasing dissatisfaction.

On the other hand, Figure 6.33 indicates the student dissatisfaction factors that represent the *threats* in the SWOT matrix. Requirements (AR2, AR3, and PR11) are under the must-be (M) category, so the university must ensure that students are provided with these requirements, as failing to fulfill them will dissatisfy students. One-dimensional (O) requirements include (PR9 and PR6) and what the university should do about these.

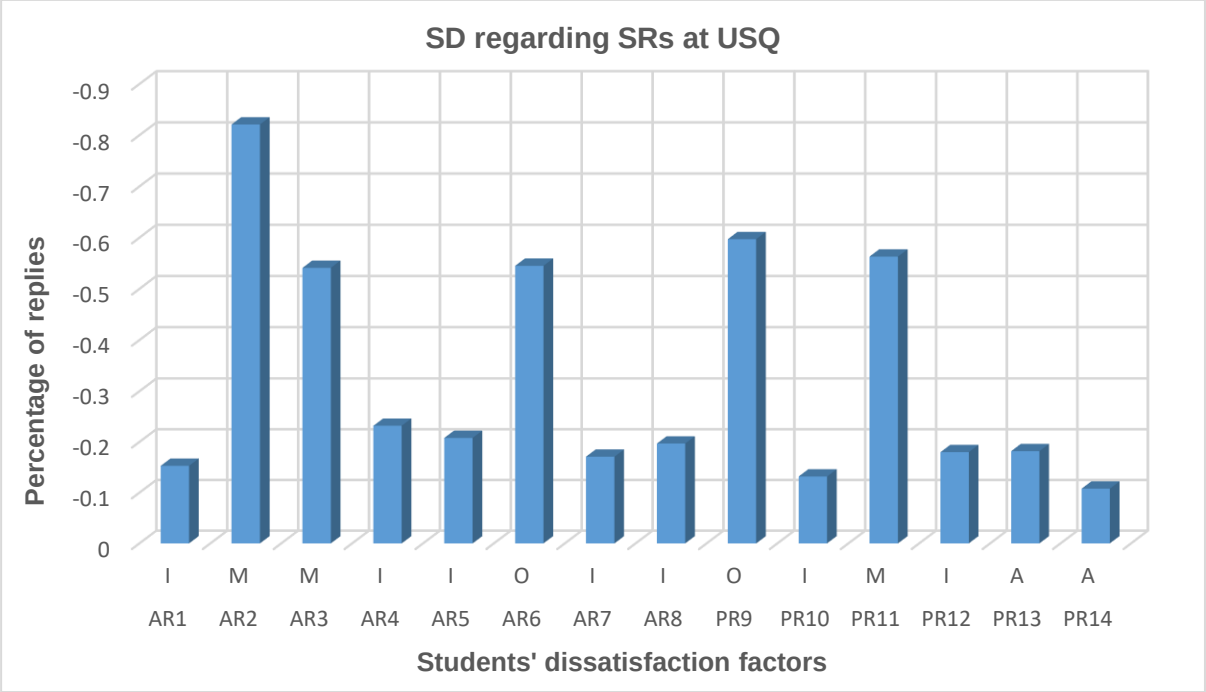
Figure 6. 32: Students' satisfaction factors regarding ARs and PRs at USQ



Source: Developed for this research.

As per the final matrix of the Kano-QFD analysis, which tried to calculate the variables and values of rank amongst student requirements, the critical-success-parameters for the SWOT matrix have been determined through consideration of the sorted values of student requirements and relative importance weights. The critical success parameters presenting *opportunities* were 'Support is available for my family if required' (RIW = 13.055), and 'Support is available for students who have financial hardship' (RIW = 12.290), which were the highest importance and attractive (A) quality requirements, followed by 'I feel welcomed and integrated into the university community' (RIW = 9.192), and 'Provides sufficient access to the library resources and online database' (RIW = 6.365), which were rated one-dimensional (O) quality requirements. However, the apparent *threats* were from 'The learning is conducive to my learning and research' (RIW = 7.498), 'Student support services made immigration regulations easy to understand and manage' (RIW = 6.185), and 'My university degree provides me with more job opportunities' (RIW = 8.648), which were rated must-be (M) quality requirements, followed by 'I feel welcomed and integrated into the university community' (RIW = 9.192), and 'Provides sufficient access to the library resources and online database', which were rated one-dimensional (O) quality requirements (Table 6.21).

Figure 6. 33: Students' dissatisfaction factors regarding ARs and PRs at USQ



Source: Developed for this research.

Similarly, the critical success parameters concerning the institutional design aspect of quality educational services and institutional characteristics can be interpreted from the absolute priority scores below the central relationship matrix in each of the columns. When investigated column-wise, as per the value of final priority scores, the significance and contribution of each institutional requirement in satisfying overall student needs can be seen in Table 6.22, which depicts the magnitude of final priority scores - calculated with the relationship cell values and final institutional relative importance weights (%IRIW).

Table 6. 21: Sorted rank-order final list of SRs for USQ

Rank	Student Requirements	S. No.	KC	ACI	% RIW
1	Support is available for my family if required	14	A	12.214	13.055
2	Support is available for students who have a financial hardship	13	A	11.499	12.290
3	I feel welcomed and integrated into the university community	9	O	8.600	9.192
4	My university degree provides me with more job opportunities	3	M	8.091	8.648
5	The learning is conducive to my learning and research	2	M	7.015	7.498
6	Provides sufficient access to the library resources and online database	6	O	5.955	6.365
7	Student support services made immigration regulations easy to understand and manage	11	M	5.787	6.185
8	Courses are delivered effectively at my university	1	I	5.433	5.807
9	Logistics and facilities support my learning experiences	8	I	5.375	5.745
10	The academic staff in my area of study at university have a good reputation	4	I	5.263	5.625
11	Able to meet with supervisor and lecturer, and receive feedback	5	I	4.964	5.306
12	Student services adequately enhance my learning experiences	7	I	4.570	4.885
13	I feel welcomed and integrated into the wider community	10	I	4.427	4.731
14	I usually have no difficulty paying for education and living expenses	12	I	4.367	4.667
	Total			**93.559**	**100.00**

Source: Developed for this research.

The final output of the USQ case has shown that the institutional requirements, as presented in Table 6.22. Of the total 18 institutional requirements, rates revealed that the ‘Be prepared for classes, which includes doing required readings, preparatory tasks and positively engaging in class discussions and activities’, with a final institutional relative importance weight (IRIW = 7.557), followed by ‘Not undertake unlawful activities of any kind’ (IRIW = 7.506), ‘Have English proficiency to successfully complete university study’ (IRIW = 7.474), and ‘Attempt to resolve issues through informal discussion before taking a formal action’ (IRIW = 7.285), respectively, were the highest contributors in the overall success of the service and therefore represent *strengths* of the university. On the other hand, the technical *weaknesses* of the university were exposed in the form of ‘Follow the university's international student's policy’ (only for students under 18) (IRIW = 2.468), ‘Students shall not collude or plagiarize’ (IRIW = 3.729), ‘Comply with examination or assessment instruction’ (IRIW = 3.946), and ‘Maintain/uphold the reputation of the university’ (IRIW = 4.196), respectively, as they were the lowest contributors to the overall success of the service and also represent *weaknesses* of the university.

Table 6. 22: Sorted rank-order final list of IRs for USQ

Rank	Institutional Requirements (IRs)	S. No.	IAIW	% IRIW
1	Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities	12	483.74	7.56
2	Not undertake unlawful activities of any kind	8	480.51	7.51
3	Have English proficiency to successfully complete university study	2	478.47	7.47
4	Attempt to resolve issues through informal discussion before taking a formal action	15	466.32	7.28
5	Do not discriminate, bully or harass when interacting with other students, staff, or other individuals visiting the university	7	463.21	7.24
6	Adhere to the university's enrolment policies and procedures	1	448.37	7.05
7	Ensure safety and the respect of the property (University's and of others)	18	420.72	7.00
8	Have the capacity to pay university fees	3	387.41	6.05
9	Comply with the course and program requirements	13	347.25	5.42
10	Follow university requirements in the use of university-provided ICT, other resources, and infrastructure	16	344.94	5.39
11	Maintain principles of academic research integrity and honesty (ethics)	14	305.67	4.77
12	Have access to a computer with minimum technical specifications for university study	17	300.7	4.70
13	Comply with rules of the academic misconduct	11	282.75	4.42
14	Follow the student code of conduct	6	273.61	4.27
15	Maintain/uphold the reputation of the university	4	268.6	4.20
16	Comply with examination or assessment instruction	10	252.6	3.95
17	Students shall not collude or plagiarize	5	238.69	3.73
18	Follow the university's international student's policy (only for students under 18)	9	157.96	2.47
	Total		**6401.52**	**100.00**

Source: Developed for this research.

The institutional requirements, highlighted by the sorted top-ranked maximum priority scores, are the true reflection of demanded quality characteristics. These rankings came not only from the student viewpoint but were also judged through the values of adjusted importance weights (ACI) and the final relative importance ratings of each student's requirements. The top half of the rank ordered student requirements pertain to other supports (SR14, SR13, SR6, and SR9) and represent *opportunities*. It is interesting that the top half of rank-ordered institutional requirements directly align and are representative of these same student requirements. This adds credibility and justifiably pertains to the same demanded quality functions that need to be catered for. Enrolment policies (IR12), student conduct (IR8) and (IR2) aspects of the product represent the *strengths*.

Conversely, the bottom half of the student requirements pertain to performance – student conduct (SR2, SR3, and SR11), conformance - student services (SR6), and educational facilities (SR9), which are the aspects representing *threats.* Again, these corresponded with the bottom half of the institutional requirements so that they directly relate to these requirements viz. performance (IR9), conformance (IR5) and enrolment policies (IR10), which are aspects

representing the *weaknesses*. The institutional requirements with higher importance weights, in the form of final priority scores, are governing the student requirements represented through the final raw weights. Thus, this outcome manifested a representation of all of the important factors affecting and leading to the revision of the importance of the weightings of student needs. These SWOT analyses influenced values of importance, their rankings and order, and they are more precise and accurate, leading to better informed decision making. Thus, the SWOT analysis of the post-matrix university allows for an overview of the quality requirements of the students' and institutional activity as well as of the performance in the management of the resources and the implementation of modern systems necessary for strategic and decision-making management (Figure 6.34).

Figure 6. 34: Summary of the findings in the SWOT matrix at USQ

	Strengths	**Opportunities**	
Internal university	1. Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities 2. Do not undertake unlawful activities of any kind. 3. Have English proficiency to successfully complete university study. 4. Attempt to resolve issues through informal discussion before taking formal action.	1. Support is available for my family if required. 2. Support is available for students who have financial hardship. 3. Provides sufficient access to the library resources and online database. 4. I feel welcomed and integrated into the university community.	**External university**
	1. Follow the University's international student policy (only for students under 18). 2. Students shall not collude or plagiarize. 3. Comply with examination or assessment instruction. 4. Maintain/uphold the reputation of the university.	1. The learning is conducive to my learning and research. 2. I feel welcomed and integrated into the university community. 3. Student support services made immigration regulations easy to understand and manage. 4. Provides sufficient access to the library resources and online database. 5. My university degree provides me with more job opportunities.	
	Weaknesses	**Threats**	

Source: Developed for this research.

6.7. Summary

This chapter has presented the analysis procedures and findings obtained from the main data collected using focus group interviews and survey questionnaire techniques. Firstly, the chapter discussed the demographic profiles of Queensland universities and the profile of the respondents and then proceeded to report the findings at length. The objective was to provide insights for executive management of HEIs when focusing on the parameters to satisfy students and attract more students to their institution. This chapter has also provided a detailed methodology for the applicability of the Kano-QFD approach in the Australian higher education sector, which will assist new QFD researchers and practitioners in applying it in their projects. The Kano-QFD analysis has been conducted in three public universities in Queensland: USQ, QUT, and UQ. SWOT analyses were carried out and shown to be an important tool for universities to use in their strategic planning process, as well as in a comparative study for the case universities. The strengths, weaknesses, opportunities, and threats for each of these universities were identified and presented in this chapter. The findings were confirmed in two ways by determining the critical success parameters/factors of the SRs and IRs in the SWOT matrix. A summary of the main findings extracted from the Kano-QFD model and SWOT analysis was presented in Table 6.23. The results showed that the Kano-QFD model, used in conjunction with SWOT analysis, provided a methodology that is fit for use to conduct a more rational post-matrix analysis and perform an internal and external assessment of HEIs. In this analysis, this research process is guided by the ISO 16355 standards, however this is used for a QFD process while integrating QFD with the QFD model and SWOT analysis. Furthermore, by carrying out a SWOT analysis this work enables better interpretation of all available information for effective decision making. From a technical process perspective, using a SWOT post-matrix analysis enriches methodology, making the QFD model analysis even more complete and comprehensive.

The next chapter (Chapter 7) provides a detailed discussion of the implications of the results from the Kano-QFD approach and SWOT analysis in this study. The chapter also reports on the theoretical contributions and practical implications for the higher education sector. The study's limitations and areas of future research are also proposed, followed by a conclusion.

Table 6. 23: Summary of coded findings from the Kano-QFD and SWOT matrices for the three Queensland universities

Type of QLD University	University Institutional Requirements (IRs) Priorities		Arabic International Students (AIS) Requirements Priorities					
			Most important factors of SRs & SS coefficients (*opportunities*)	Less important factors of SRs & SD coefficients (*threats*)	Kano Categorizations			
	Highest importance (*Strengths*)	Lowest Importance (*Weaknesses*)			Attractive (A)	One-dimensional (O)	Must-be (M)	Indifferent (I)
UQ (Go8)	1. IR2 2. IR17 3. IR8	1. IR9 2. IR18 3. IR10 4. IR6	1. SR13 2. SR14 3. SR3 4. SR2 5. SR4 6. SR5	1. SR10 2. SR8 3. SR11 4. SR2 5. SR3 6. SR 7. SR5	1. SR13 2. SR14	1. SR3 2. SR2 3. SR4 4. SR5	1. SR8 2. SR11 3. SR10	1. SR9 2. SR6 3. SR7 4. SR12 5. SR1
QUT (Indep.)	1. IR1 2. IR2 3. IR8	1. IR9 2. IR18 3. IR10 4. IR6	1. SR6 2. SR2 3. SR9	1. SR4 2. SR6 3. SR2 4. SR9	-	1. SR6 2. SR2 3. SR9	1. SR4	1. SR3 2. SR8 3. SR11 4. SR7 5. SR12 6. SR13 7. SR5 8. SR10 9. SR14 10. SR1
USQ (RUN)	1. IR12 2. IR8 3. IR2	1. IR9 2. IR5 3. IR10	1. SR14 2. SR13 3. SR9 4. SR6	1. SR2 2. SR3 3. SR11 4. SR6 5. SR9	1. SR14 2. SR13	1. SR6 2. SR9	1. SR2 2. SR3 3. SR11	1. SR1 2. SR4 3. SR5 4. SR7 5. SR8 6. SR10 7. SR12

CHAPTER 7: DISCUSSION AND CONCLUSIONS

7.1. Introduction

This chapter is the final part of the thesis and provides a discussion of the findings derived from the investigation that was presented in Chapter six and draws conclusions in relation to each of the three participating universities, in addition to more general recommendations regarding higher education institutions in Australia. The chapter commences with an overview and a summary of all the previous chapters in Section 7.1, including a brief summary of the research process, and the findings from the qualitative and quantitative stages of the study. Whilst the scope of this research was three case study universities in Queensland, the Kano-QFD matrix methodology can be replicated to investigate the student and university institutional requirements for any cohort of international students within any university environment within the Australian higher education sector or internationally. It therefore discusses broader implications in regards to academic and social experiences of international students who come to study in Australia, including reflections on the impacts of the COVID-19 pandemic on the number of international students and how these can have an adverse or positive effect on factors highlighted in the three case studies, and for the Australian higher education sector more broadly. Finally, this chapter presents key research findings, key contributions to theory and practice, limitations of the study, recommendations of findings, and a concluding statement.

This study has investigated the implications of the Kano-QFD model processes and subsequent SWOT analysis for each of three cases representing different types of universities in Queensland. The first chapter, Introduction, provided an overview of the internationalisation of higher education and the background to the issues impacting international students studying in Australia and the higher education sector overall. It outlined the research problem and specifically scoped the research to focus on Arabic international students studying at three types of universities in Queensland that formed the cases for this research study. The research questions were stated and the significance of trialling the unique methodology, which combined the Kano model

survey with the development of a QFD matrix House of Quality for each participating university. The second chapter, the literature review, reviewed the extant literature in relation to relevant theories and identified gaps in the literature. It discussed theoretical developments in terms of internationalisation and globalisation of higher education. Additionally, the background of the Kano model and QFD were reviewed. It then developed the models in relation to the international students. This chapter, reviewed Kano-QFD studies in the context of higher education sector and addressed recent developments in terms of total quality management. The review of the current literature uncovered some important research gaps in terms of the implications of the Kano-QFD approach in the context of higher education institutions. Finally, a summary of the literature review was discussed at the end of the chapter.

The third chapter discussed the research framework in detail. The research framework was based on the integration of the Kano model into the QFD technique, an approach developed by Gangurde and Patil (2018). This chapter opened with a discussion on undertaking data collection techniques and the sequenced steps required in integrating the Kano model into QFD. Based on the literature review, focus group discussion findings, Kano questionnaire results, and in-depth interviews were integrated, and a comprehensive model in the Australian higher education context was presented in this chapter. This chapter also defined and discussed the constructs of the strategy in a SWOT analysis. The definition and scope of the research methodology relating to identifying AIS requirements and institutional requirements in the Kano-QFD approach were also explained. Finally, this chapter outlined the pragmatic mixed methods approach adopted for data collection and analysis to meet the requirements of integration of the Kano model and QFD matrix application.

The fourth chapter discussed the procedure for the development of Kano questionnaire items employed to capture what the Arabic students believe are minimal, as well as optimal (attractive) aspects within a university that influenced their decision to attend the university in which they are currently enrolled. In this chapter, qualitative data were analysed, and the main fourteen requirements obtained from AIS were explained. The validity and reliability of the survey instrument were also presented. Finally, a summary of the Kano model survey instrument concluded this chapter.

The fifth chapter presented the institutional requirements items collected from staff member interviews, experts, and policy and procedures of the university. Items were also developed by setting up QFD cross-functional teams in the three Queensland university cases to obtain the institutional requirements portion of the Kano-QFD matrix. Finally, a list of the institutional requirements for each of the three university cases were confirmed at the end of the chapter.

The sixth chapter analysed the priority results from both students and universities presented in chapters four and five to be examined together. It also presented analyses of the implementation of the Kano-QFD matrices regarding the social and academic experiences of AIS who came to study in Australia at the three participating Queensland universities. Furthermore, the chapter discussed the demographic profile of the respondents and the three types of university cases. This chapter also analysed the main findings obtained from the HOQ applications within the SWOT analysis matrix for the three university cases. Finally, the chapter presented a summary of coded findings from the Kano-QFD and SWOT matrices for the three participating Queensland universities.

The final chapter is divided into nine sections. The outline of this chapter is presented in Figure 7.1. Sections 7.2, 7.3, and 7.4 present a summary of the research findings, and discuss implications arising from the implementation of the Kano-QFD model in each of the USQ, QUT, and UQ cases. Understanding these implications is vital both for AIS consideration prior to leaving their home countries to study in Australia, and for the universities they attend in Australia, as the factors identified as requirements significantly impact their ability to make a successful transition to studying in a Western context and completing their enrolled programs. Through discussing these implications for each case university, Sections 7.2, 7.3, and 7.4 address the first, second, and third research questions: (1) “Which institutional requirements are the most important and which are the least important as per the requirements of the Australian HEI sector in regard to the recruitment and retention of AIS at the three universities?”; (2) “What are the needs of AISs at the three Australian universities? Which student needs require more attention and/or resources to improve the recruitment and retention of AIS at these universities?”, and (3) “What are the strengths, weaknesses, opportunities, and threats identified by the Kano-QFD analysis

regarding each of the three universities' students and institutional requirements relating to the recruitment and retention of AIS". Which student needs require more attention or resources to improve the recruitment and retention of AIS at these universities?".

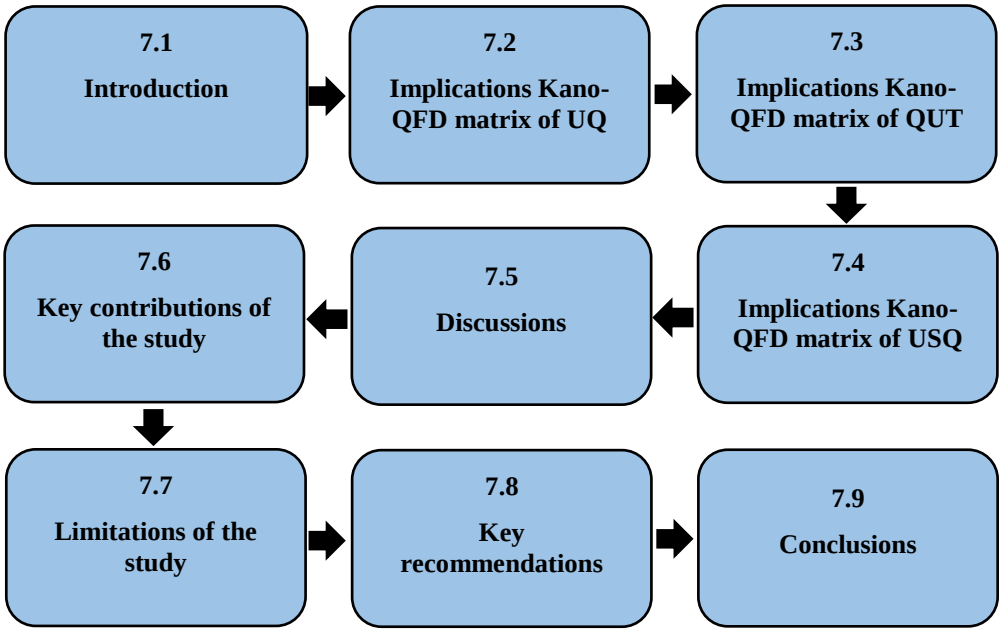
The overarching discussion presented in Section 7.5 includes the implications of the Kano-QFD analysis in both the stable environment pre-COVID-19, when the study data was collected, and the potential implications of the new post-COVID-19 crisis. The discussion includes assessment of the implications of the Kano-QFD analysis in relation to two types of strategies, i.e. proactive strategy and reactive strategy (Ali et al., 2021). In this sense, universities use proactive strategies to determine opportunities that can be developed effectively to achieve total student satisfaction and for providing competitive benchmarks to enable the university to compare its service quality to that of their competitors, thus helping them establish a competitive edge through the Kano-QFD application (Thakkar et al., 2006). By contrast, a reactive strategy may be used as a formula to assist in overcoming disruptions caused by an unanticipated crisis, in this discussion the COVID-19 pandemic.

Following on from Section 7.5, Sections 7.6., 7.7, and 7.8 address the fourth research question: "What potential strategies emerge for the three universities as a result of the Kano-QFD analysis of AIS?". In Sections 7.6 and 7.7, the strategic implications for the universities arising from these investigations which exemplify the contributions to practice are discussed. This is followed by a presentation of the theoretical contributions of the study, the study's limitations, and proposed areas for future research. The key recommendations of the study, including recommendations for each of the three cases of Queensland universities and general recommendations applicable for all universities, are presented in Section 7.8. The chapter ends with concluding remarks regarding the study, its findings, and implications in Section 7.9.

This research developed and conducted a Kano questionnaire to specify student requirements and priority aspects of service to specify institutional requirements. Integrating Kano's model and QFD presents an effective approach and powerful tool to determine students' needs to enable design of targeted services in each of three university cases. Since neither of the two methods can separately fully determine the

needs to satisfy students, in combining the two models, customers' needs-levels can be analysed more precisely. The team or unit consensus view of these needs and what the university can provide, assisting in developing the HOQ matrix (Coates, 2005; Seyedi et al., 2012; Urban & Palmer, 2016; Woodall et al., 2014).

Figure 7. 1: Outline of Chapter 7 on the research discussions and conclusions



Source: Developed for this research.

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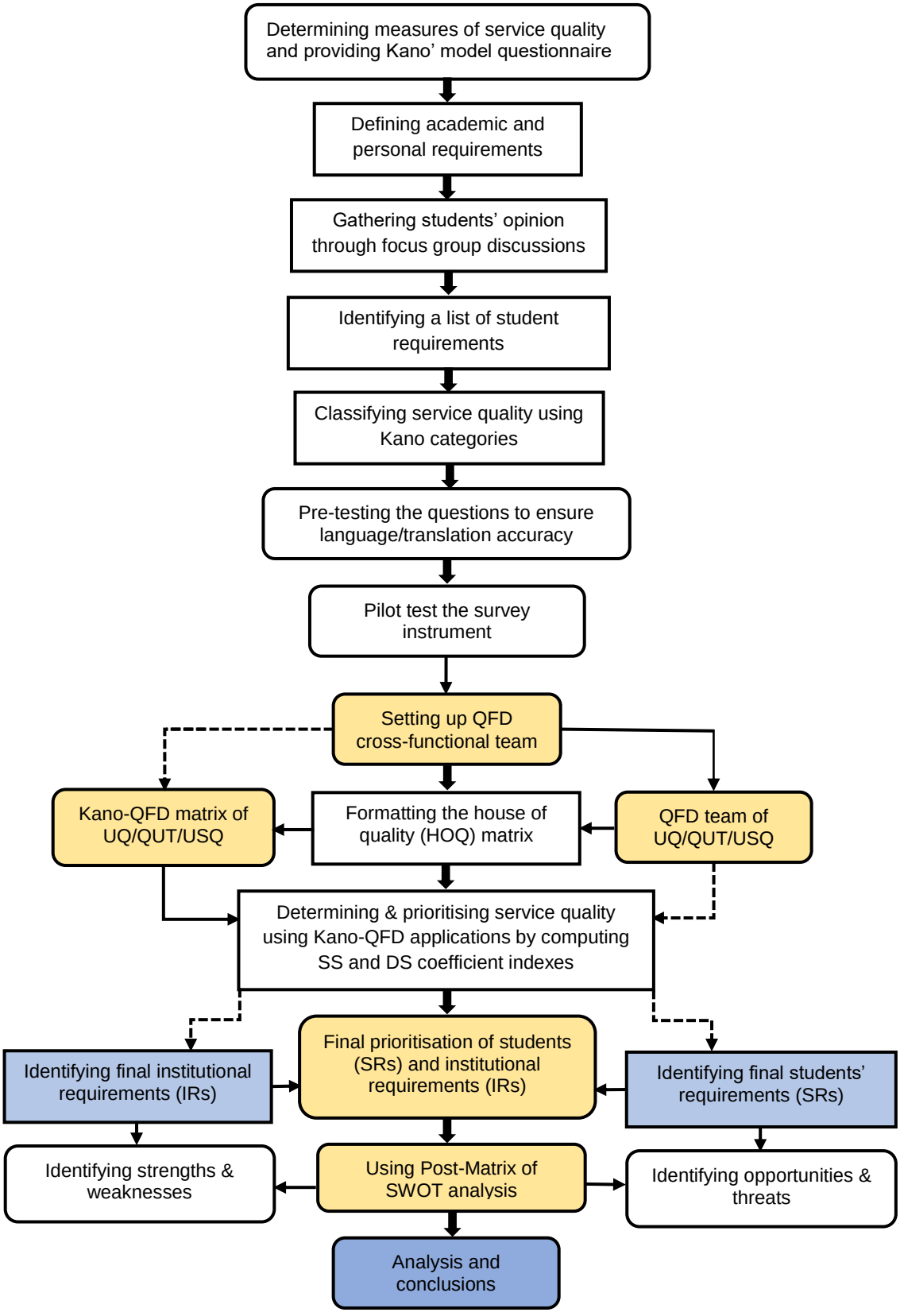
Kano's model to identify and evaluate institutional and students' requirements. Consequently, any university, through implementing the combined approach, can identify the degree of importance of identified needs from the perspective of services. Doing this allows the university to focus its attention and resources on improving those specifications, considered more important to students or where the university has weaknesses. The research process, including the main steps of applying the Kano-QFD approach in three types of Queensland universities, is shown in Figure 7.2.

Figure 7. 2: Flowchart process used for integrated Kano-QFD analysis



Source: Developed for this research.

7.2. Implications of the Kano-QFD matrix for UQ

The first case of UQ is a large Go8 university with a strong international reputation for teaching and research which are attractive aspects impacting the decisions of international students when selecting a university at which to study, as discussed in Chapter 1. The QFD matrix provides significant detail regarding the most attractive qualities for current AIS and also identifies areas that this cohort of students sees as the weakest aspects in relation to what the university offers them as student. Understanding student perceptions of services offered can assist the university focus their corporate strategies to achieve the greatest impact in marketing to AIS going forward. The key aspects of quality-of-service provisions and the implications for the university are outlined below.

The result of combining Kano and QFD is presented through a house of quality (HOQ) matrix, as shown in Figure 6.2. From the results of data processed within the HOQ, priorities for the improvement of quality of service in the UQ case can be seen in the weightings of institutional responses. Based on the weight of the IRs, the highest priority to meet student needs is “Have English proficiency to successfully complete university study”. The next three highest priorities for UQ are:

(1) The ability to work and learn independently and effectively.
(2) Not undertake unlawful activities of any kind.
(3) Adhere to the university's enrolment policies and procedures.

In the Kano model, requirements are categorised based on the relationship between the level of student satisfaction and the level of fulfillment of service requirements. The purpose of this process is to find the impact of each requirement on meeting student satisfaction. Based on the results of the Kano Questionnaire (Table 6.6), the following results were obtained:

a) **Attractive quality**: There were two requirements that met the criteria of the attractive category: [1] “Support is available for students who have a financial hardship”; and [2] “Support is available for my family if required”. These two requirements therefore represent a high competitive edge because when these quality requirements are lacking, students do not feel satisfied. However, if these

requirements are met, students will be pleased, or their satisfaction significantly enhanced.

b) **One-dimensional quality:** By referring to where quality characteristics are located on the Kano model diagram, four requirements were identified as one-dimensional quality requirements: [1] "The learning is conducive to my learning and research"; [2] "My university degree provides me with more job opportunities"; [3] "The academic staff in my area of study at university have a good reputation"; and [4] "Able to meet with supervisor and lecturer and receive feedback". When these quality requirements are lacking, students are dissatisfied. Conversely, the presence or enhancement of these requirements will increase student satisfaction.

c) **Must-be qualities:** Three requirements were identified: [1] "Logistics and facilities support my learning experiences"; [2] "I feel welcomed and integrated into the wider community"; and [3] "Student support services made immigration regulations easy to understand and manage". When the University lacks these quality requirements, students feel very dissatisfied. It is important for the university to focus on these quality requirements if they want to generate or increase student satisfaction. In other words, these requirements must be met to achieve student satisfaction.

d) **Indifferent qualities:** Five requirements were found to be indifferent qualities for AIS: including [1] "Courses are delivered effectively at my university"; [2] "Provides sufficient access to the library resources and online database"; [3] "Student services adequately enhance my learning experiences"; [4] "I feel welcomed and integrated into the university community"; and [5] "I usually have no difficulty paying for education and living expenses". Students do not feel dissatisfied when the University lacks these quality requirements. Providing these requirements does not positively or negatively impact student satisfaction, yet the University should not ignore these requirements. Simply because students may not have any specific feelings about these quality requirements, it does not mean that student satisfaction will not change if these are dealt with in a different manner than at present (Borgianni, 2018; McDowall, 2016). It can be argued that these indifferent qualities are considered as "given" and may not be paid much

attention to these as the current University environment does not challenge AIS assumptions and expectations.

7.2.1. Identified SWOT outcomes for UQ

The perceptions of students and universities remain very important in the adoption and implementation of the Kano-QFD approach and SWOT analysis. The following points illustrate the key findings of the SWOT analysis for UQ. Consideration of these identified outcomes in each of the SWOT analysis quadrants can be used to inform strategy development for recruitment and retention of AIS at UQ.

7.2.1.1. Strengths

The findings from the SWOT analysis of UQ are indicated as the strengths in Table 6.28. The reader will note that these are the same as the highest priority IRs to meet student needs identified above:

1) Have English proficiency to successfully complete university study. This result is logical for the AIS study.
2) The ability to work and learn independently and effectively. The result enhances the learning of the student's experience for assisting foster self-independently in their studies.
3) Not undertake unlawful activities of any kind.
4) Adhere to the university's enrolment policies and procedures.

7.2.1.2. Weaknesses

The SWOT weaknesses are also based on IRs. The first weakness is not a real weakness because it applies to very few students. It was captured in the HOQ because this is a requirement based on the *HESA Act of 2003,* as noted in Chapter 1, and what was found based on the analysis described in Chapter 5 was that the University policy and procedures were framed with the requirements from this Act and subsequent rules in mind.

1) Follow the University's International student policy (only for students under 18).
2) Comply with requirements of intellectual property rights.
3) Comply with examination or assessment instruction.
4) Follow the student code of conduct.

7.2.1.3. Opportunities

Unlike the strength and weakness quadrants of the SWOT, the identified opportunities refer to SRs. These external factors suggest that AIS engagement can be enhanced if more of these non-academic influences on student engagement with and student identity in the University community (Pascarella & Terenzini, 2005a).

1) Support is available for my family if required.
2) Support is available for students who have financial hardship.
3) I feel welcomed and integrated into the university community.
4) My university degree provides me with more job opportunities.

7.2.1.4. Threats

Like the opportunity quadrant of the SWOT, the threats quadrant reflects items from the SRs. Effectively, both opportunities and threats relate to AIS's ability to integrate into the campus and surrounding community based on acceptance of their cultural differences and the resources available to ably function outside their native country. Threats encompass not only these issues but also the ability to access academic staff in pursuit of their studies and services to support their learning and possibly broader well-being concerns.

1) I usually have no difficulty paying for education and living expenses.
2) I feel welcomed and integrated into the wider community.
3) Student services adequately enhance my learning experiences.
4) Able to meet with supervisor and lecturer and receive feedback.

7.3. Implications of the Kano-QFD matrix for QUT

The results of the combination of Kano and QFD were presented in a house of quality (HOQ) matrix as shown in Figure 6.10. The results of the weights of institutional responses in the HOQ show the priorities for improvement of the quality of service for QUT. QUT should consider improving student satisfaction based on these weightings as they indicate the highest priorities to best meet the student needs. According to the IR results of the Kano-QFD matrix, the highest priority to meet student requirements is "Adhere to the university's enrolment policies and procedures". The next three highest priorities for QUT are:

(1) Have English proficiency to successfully complete university study.
(2) Not undertake unlawful activities of any kind.
(3) Do not discriminate, bully or harass when interacting with other students, staff, or other individuals visiting the university.

The results of the Kano model analyses show the 14 major requirements, categorised based on the relationship between the level of student satisfaction and the level of fulfillment of service requirements (Table 6.31). The process indicates the impact of each requirement in meeting student satisfaction. Based on these results from the Kano questionnaire, the university should optimise these service functions according to their contribution to service quality as shown in the following results:

a) **Attractive quality:** There were no requirements found that met the attractive category criteria.
b) **One-dimensional quality:** Three requirements were classified under the one-dimensional category including: [1] "Provides sufficient access to the library resources and online database"; [2] "The learning is conducive to my learning and research"; and [3] "I feel welcomed and integrated into the university community". Improvements in this category would elevate student satisfaction and lower student dissatisfaction. Thus, QUT should consider how they may help to retain current students and enhance their satisfaction.
c) **Must-be qualities:** One requirement was included: "The academic staff in my area of study at university have a good reputation". This indicates that QUT

should consider improvement to this requirement first. Improvements in academic staffing both reflect a good impression and lead to a better reputation for the university and could immediately lower student dissatisfaction. When the university lacks this quality requirement, students feel unsatisfied. However, even where these are sufficient, further focus on these must-be quality requirements will still increase student satisfaction.

d) **Indifferent qualities:** As shown in Table 6.31, ten requirements were classified under indifferent qualities including: [1] "My university degree provides me with more job opportunities"; [2] "Logistics and facilities support my learning experiences"; [3] "Student support services made immigration regulations easy to understand and manage"; [4] "Student services adequately enhance my learning experiences"; [5] "I usually have no difficulty paying for education and living expenses"; [6] "Support is available for students who have a financial hardship"; [7] "Able to meet with supervisor and lecturer, and receive feedback"; [8] "I feel welcomed and integrated into the wider community"; [9] "Support is available for my family if required"; and [10] "Courses are delivered effectively at my university". When the QUT lacks these quality requirements, students do not feel unsatisfied. However, providing these requirements does not enhance student satisfaction. This is because these quality requirements have less student focus and consequently the university does not need to invest resources to optimise. Rather they can be improved after other services prioritised services are improved.

7.3.1. Identified SWOT outcomes for QUT

7.3.1.1. Strengths

1) Adhere to the university's enrolment policies and procedures.
2) Have English proficiency to successfully complete university study.
3) Not undertake unlawful activities of any kind.
4) Do not discriminate, bully or harass when interacting with other students, staff, or other individuals visiting the university.

7.3.1.2. Weaknesses

1) Follow the University's International student policy (only for students under 18).
2) Comply with requirements of intellectual property rights.
3) Comply with examination or assessment instruction.
4) Follow the student code of conduct

7.3.1.3. Opportunities

1) The learning is conducive to my learning and research.
2) Provides sufficient access to the library resources and online database.
3) I feel welcomed and integrated into the university community.
4) The academic staff in my area of study at university have a good reputation.

7.3.1.4. Threats

1) Support is available for my family if required.
2) I feel welcomed and integrated into the wider community.
3) Courses are delivered effectively at my university.
4) Able to meet with supervisor and lecturer and receive feedback.

7.4. Implications of the Kano-QFD matrix for USQ

The results of the combination Kano and QFD presented in a house of quality (HOQ) matrix are shown in Figure 6.18 Chapter 6. The results of the data processing within the HOQ highlight the priority areas for improvement of quality of service for the USQ case. USQ should consider improving student satisfaction based on the weightings of the institutional responses. The highest priorities for USQ to meet the student needs according to the IR results of the Kano-QFD matrix are:

(1) Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities: This institutional element was the highest relative importance priority of IRs. Thus, USQ should greatest priority to this requirement.
(2) Not undertake unlawful activities of any kind.
(3) Have English proficiency to successfully complete university study.
(4) Attempt to resolve issues through informal discussion before taking formal action.

The Kano model results categorises the requirements based on the relationship between the level of student satisfaction and level of fulfillment of service requirements to determine the impact of each requirement in meeting student satisfaction. Based on the results of the Kano Questionnaire the following results were obtained for USQ (Table 6.34):

a) **Attractive quality:** Two requirements: [1] "Support is available for my family if required"; and [2] "Support is available for students who have a financial hardship" were classified as attractive. When these types of quality requirements are lacking, students do not feel unsatisfied. However, if these requirements are met, students will be pleased as they exceed their expectations, or their satisfaction will be significantly enhanced. Therefore, if USQ increases or upgrades such services, it will generate greater attraction and quickly improve student satisfaction.
b) **One-dimensional quality:** Two requirements were one-dimensional quality requirements, including: [1] "Provides sufficient access to the library resources

and online database"; and [2] "I feel welcomed and integrated into the university community". When these quality requirements are lacking, students are dissatisfied. Providing one-dimensional quality requirements increases student satisfaction.

c) **Must-be qualities:** Three requirements included: [1] "The learning is conducive to my learning and research"; [2] "My university degree provides me with more job opportunities"; and [3] "Student support services made immigration regulations easy to understand and manage". When the university lacks these quality requirements, students feel unsatisfied, but where these are sufficient further focus on these must-be quality requirements will not increase student satisfaction.

d) **Indifferent qualities:** As shown in Table 6.34, seven requirements were indifferent qualities, including: [1] "Courses are delivered effectively at my university"; [2] "The academic staff in my area of study at university have a good reputation"; [3] "Able to meet with supervisor and lecturer, and receive feedback"; [4] "Student services adequately enhance my learning experiences"; [5] "Logistics and facilities support my learning experiences"; [6] "I feel welcomed and integrated into the wider community"; and [7] "I usually have no difficulty paying for education and living expenses". When the university lacks these quality requirements, students do not feel unsatisfied, and conversely, providing these requirements does not enhance student satisfaction. Therefore, the university has no need to pay significant attention to these requirements.

In considering these four Kano categories, the universities should give priority to must-be qualities, followed by one-dimensional qualities, then attractive qualities, and finally indifferent qualities. In strategically developing the quality of the educational services, priority should be given to optimizing those services that will contribute more to improving service quality and student satisfaction. Therefore, to improve student satisfaction and service quality, universities should give priority to improving service items with higher coefficients based on the preceding analysis in order to improve service quality purposefully in a short time minimum cost ensuring that must-be

quality service quality has met the requirements, in order to improve service quality purposefully in a short time with minimum cost. Use of this methodology to guide strategic decision-making will assist universities to make better decisions concerning service quality that are specific to their university and to targeted cohorts of students.

7.4.1. Identified SWOT outcomes for USQ

7.4.1.1. Strengths

1) Be prepared for classes, this includes doing required readings, preparatory tasks and positively engaging in class discussions and activities.
2) Not undertake unlawful activities of any kind.
3) Have English proficiency to successfully complete university study.
4) Attempt to resolve issues through informal discussion before taking formal action.

7.4.1.2. Weaknesses

1) Follow the University's International student policy (only for students under 18).
2) Students shall not collude or plagiarize
3) Comply with examination or assessment instruction.
4) Maintain/uphold the reputation of the university.

7.4.1.3. Opportunities

1) Support is available for students who have financial hardship.
2) My university degree provides me with more job opportunities.
3) The academic staff in my area of study at university have a good reputation.

7.4.1.4. Threats

1) I feel welcomed and integrated into the wider community.
2) Student support services made immigration regulations easy to understand and manage.
3) Student services adequately enhance my learning experiences.
4) Courses are delivered effectively at my university.

7.5. Discussion

In this section, the results of the research are discussed according to the main research questions and application of the results of the Kano-QFD analysis. Comparison of the results for the three different types of Queensland universities in the sections above make it clear that attention to student's voice and their major needs can lead to strategic improvement in service quality which would in turn increase student satisfaction. To do this, it is necessary for universities to identify the important functions from student's needs and perspectives and to deliver the identified perceived values for different groups and cohorts of students. The results and methodology of this study, Kano-QFD, can be applied for strategic planning and management at any higher education institution (Killen et al., 2005). The research provides a detailed description and justification of the major steps for strategic planning using the Kano-QFD approach and SWOT analysis in accordance with Martins and Aspinwall (2010). This study discusses two main strategies related to the implications of the Kano-QFD approach. These strategies are proactive strategy and reactive strategy. A proactive strategy refers to activities such as preparedness that are planned and conducted when the environment stable, whereas response and recovery activities conducted during and after a crisis represent a reactive strategy. Thus, strategic orientations can be either proactive or reactive. both proactive and reactive strategies would most likely lead to improved or more effective overall approach stakeholders in managing crisis risks.

7.5.1. Proactive strategy: Stable environment

A proactive strategy refers to activities such as mitigation and preparedness that are planned and conducted when the environment stable, whereas response and recovery activities conducted during and after a crisis represent a reactive strategy. The main focus of this section is to evaluate the results of implications of Kano-QFD analysis pre COVID-19 at the three Queensland university cases. In this context, this study can be used to strengthen the implementation of proactive strategies with regard to marketing, cost-cutting (Alonso-Almeida et al., 2015), and dynamic of the QFD team. Thus, in this section, the results of the research are discussed according to the main research questions and application of the results of the Kano-QFD analysis.

7.5.2. Reactive strategy: Recovery in current times

The Covid-19 pandemic has resulted in an economic, financial, and medical crisis around the world. These are difficult times for individuals and organisations, including higher education institutions. However, history indicates that it is possible for communities and economies to recover and emerge from such setbacks in a stronger position than prior to the crisis event. To revive the economy and boost business, a well-considered recovery plan is essential.

For example, the country may need to focus on attracting foreign investments and reduce the importation of products. Tough times but humankind is known to be tougher and will bounce back from this stronger than ever.

Australia's higher education sector makes a major contribution to the Australian economy by offering educational services to students across the world. With the outbreak of COVID-19, the sector was affected financially since most of its financial revenues are generated from the international market (Crawford et al., 2020; Thatcher et al., 2020). Australian universities, in particular, are now dealing with the prospect of losing up to $19 billion AUD in revenue by 2023 as a result of their reliance on tuition fees from international students, many of whom are currently unable to travel to Australia (Hurley & Dyke, 2020) as evident from the statistics that indicate a major

decline in the international student enrolment across all education sectors from 4,608,520 to 708,671 between 2019 and May 2020 (DESE, 2020). As such, the immediate impact of COVID-19 is already being felt by Australian universities and has the potential to cause long-term losses depending on how long current international travel restrictions remain in place. Additionally, the outbreak of COVID-19 and its adverse effects on the economy further compelled the Australian universities to generate more revenue for the country not only by exporting educational services but also by developing the potential human resource for the country. Before the spread of COVID-19, Australia generated about $40.4 billion AUD from international students and the educational sector was considered the fourth-largest export sector in Australia in 2019. Universities act as a key to both Australia's current and future economic fortunes and therefore warrant an extensive investigation into the potential impacts of COVID-19 (Thatcher et al., 2020).

Existing research documents the challenges faced by Australia's university sector in relation to governance issues and the dependence on international students (Howes 2018; Goodwin 2018). The latest studies have also highlighted the outbreak of the virus and the efforts invested on the national level by the government for mitigation of the virus (Del Rio & Malani 2020; Duckett & Stobart 2020).

This section aims to assess the changes caused by COVID-19 that impact the results presented from the application of Kano-QFD in the three Queensland university cases prior to the pandemic. The main changes include revenue, international student enrolments in Australian universities, and the number of full-time equivalents (FTE) position provided by Australian universities. We can refer to earlier studies published during the period from 2008 to 2018 and map out the variables involved in these studies in a correlation matrix to detect and study the seasonal changes. This data is the most recently released by the Australian Government's Department of Education, Skills, and Employment (DESE) prior to the impact of COVID-19. The data gives an indication about the variables associated with total revenue generated from Australian universities as well as the FTE jobs at Australian universities. By using a linear regression model, it is possible to use the actual number of current international student enrolments in Australian universities for 2020 to estimate the predicted effect that COVID-19 would have on total Australian university revenue and FTE jobs at

Australian universities. This study sheds light on the impact of COVID-19 on Australian universities which may prove helpful for the researchers, legislators, and university decision-makers.

Given the recency of the COVID-19 pandemic, this current study did not include an investigation using such a linear regression model as the major focus of this study was not to assess the impact of COVID-19. However, it is necessary to briefly review the state of coronavirus in Australia and to provide an overview of the strategic importance of Australia's education industry to give context to reviewing the current governance and business models of Australian universities. This then provides the basis for identifying the 'pressure points' of Australian universities that are most likely to be impacted by COVID-19 since the data for this study was collected.

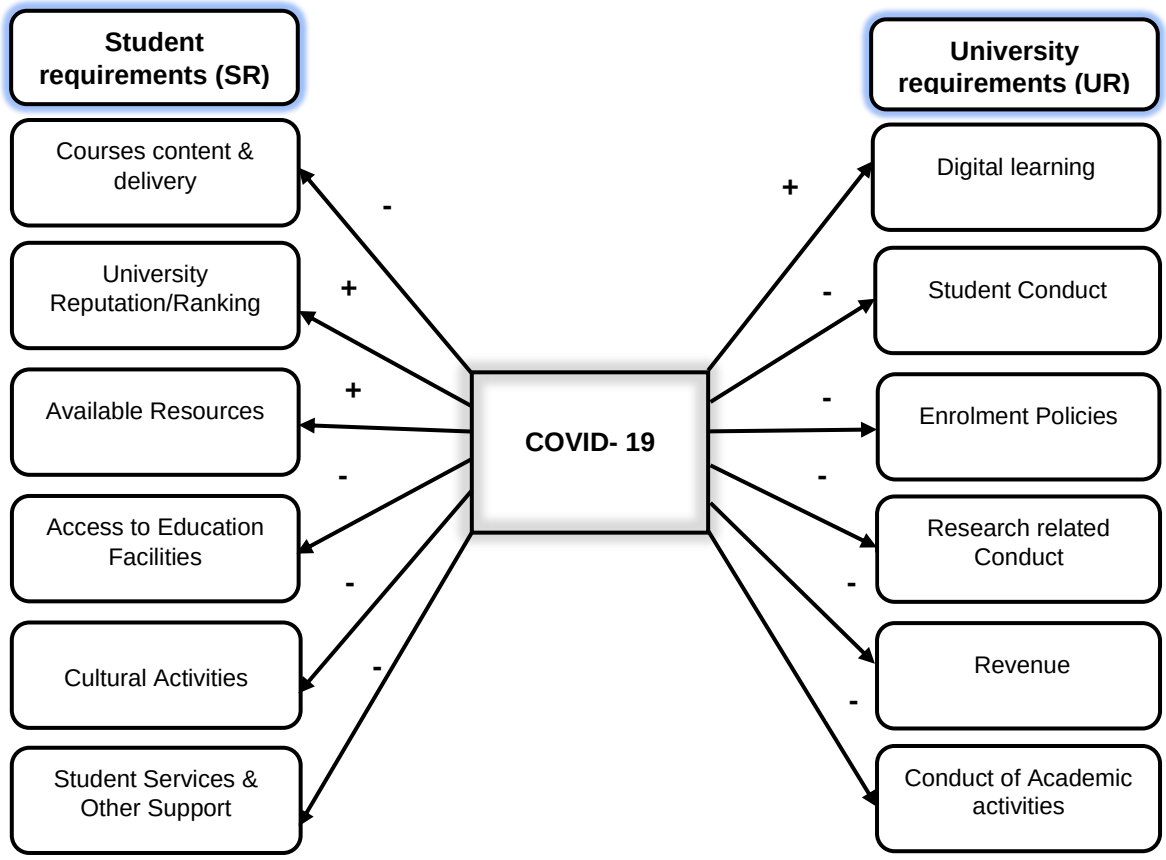
Since commencing this research study and collecting the data in each of the three case universities the global pandemic of COVID19 has impacted people and organisations across the world. Higher education institutions and students with aspirations to attend international universities have been significantly impacted. In the context of COVID-19, the collapse in international student numbers is currently forecast to cost the sector up to $4.8 billion AUD in 2020, and $16 billion AUD by the end of 2023. Casually employed academics, who comprise about 40 percent of staff and perform around 70 percent of undergraduate teaching, have already been jettisoned (Doidge & Doyle, 2020). Universities have also made permanent academic and professional staff positions redundant the latter impacting on the provision of services required by students.

In the context of Australia, other critical events leading up to COVID19, including both bushfires and floods, that resulted in State and Federal governments announcing State of Emergency status, were already impacting businesses in affected areas across the country. At the height of the bushfires and floods, COVID-19 was taking hold in China, a country that Australia has had very close economic ties with, in regards to exports, tourism and the provision of higher education. According to Cranston in the Financial Review (2019), Australia conducted nearly 40% of its trade with China. As the floodwaters receded, the virus was spreading at a rapid rate around the world. Countries responded differently, some with swift closure of borders as in Denmark

and New Zealand, and others more slowly, like the UK and USA. The World Health Organisation (WHO) declared a pandemic on the 11th of March 2020. Increasingly, most people in the world recognised this was an exceptional situation few had faced before and there was a need for immediate action to reduce infection, disease, and deaths. Locking down borders was the order of the day for most countries and Australia was an early adopter of this strategy. The Federal Government started to close national borders in mid-March (Murphy & Karp, 2020) and borders were also put in place to restrict movement across larger States such as Western Australia where movement was restricted within nine regional areas. With new restrictions of movement being implemented on a rolling basis, significant life changes impacted on most people and for many that was, and continues to be, accompanied by fear, uncertainty, anxiety, and for others, apathy and denial. Work, school, parenting, business, security, relationships, friends, family, finances have all been impacted and the situation is still changing as this thesis concludes. Given the enormous impact that has occurred and continues, it is imperative to consider the impacts both for the universities who were cases in this study and for Australian higher education more broadly. Figure 7.3 illustrates key student requirements and institutional requirements that have been or may still be impacted by the COVID19 pandemic. These impacts, some of which could be seen as positive business outcomes, are shown in Figure 7.3.

Finally, reactive strategies have a positive effect on reducing the costs of a university's activities. These types of strategies can be profitable in some contexts, but not in times of COVID-19 (Alonso-Almeida et al., 2015). Moreover, although these types of strategies succeed in reducing a university's cost position in the short term, their long-term effect might not be equally beneficial (Alonso-Almeida et al., 2015). Therefore, reactive strategies should be well planned and should avoid direct effects on student service. However, dynamic capabilities may still have a direct effect on a university's competitive advantage.

Figure 7. 3: Impacts of COVID- 19 on ISs and university requirements



Source: Developed for this research.

7.6. Key contributions of the study

This study contributes significantly to existing research in the HE sector. Specifically, it is a study that uses empirical quality measurement tools to examine the issues and experiences of one identified group of international students in Australia with the aim of determining the requirements of this cultural group in relation to institutional requirements. Using this methodology, it subsequently identifies strategies that can be targeted to improve their experiences of provision of educational and support services at the target university. The rigorous methodology included the calculation of quantitative measures based on three qualitative investigation methods with three

groups of specialists in fields of student needs and institutional requirements. These three multi-method studies constituted the first part of the methodology adopted in a design to link the Kano model and QFD matrix approaches and subsequently apply SWOT analysis in the Australian higher education sector. Thus, this study offers major contributions for both practice and theory in regards to quality provision for international students in higher education. Details of these contributions are described below:

7.6.1. Practical implications for the higher education sector

Practically, the study has collected rich and original qualitative and quantitative data regarding student requirements and institutional requirements in the three Queensland universities. Whilst the research findings validate what has already been found by Ömürgönülşen et al. (2020) and Gangurde and Patil (2018) this study adds to the extant literature as it collected data from both current students and university staff through discussions with experts in regarding both student needs and institutional requirements. This was strengthened through the in-depth analysis of data for three different types of university cases. Specific contributions to practice are provided below.

1) Establishing the viability for HEIs' use of QFD in proactively acquiring data for planning and deployment purposes to provide AIS with high-quality educational environments.

2) Providing a practical approach for HEIs to analyse the needs of different groups of IS through the adaptation of the study's methodology.

3) It is expected that the research will directly contribute to objectives to employ evidence-based quality practices that ensure individual student needs are met and support for students from a diverse range of backgrounds and locations is in place to foster their success.

4) The study assists in clarifying issues related to intercultural communication and identifies Arab students' experience of intercultural communication in

Western higher education institutions. Similarly, it also contributed to an understanding of challenges in maintaining one's own religious and cultural values and norms when moving into a dominant culture, and encountering new culture's norms that potentially clash with one's own values in the context of intercultural communication. The study revealed that students were managing new norms and values through the process of navigation and negotiation between home and host values and norms, with the main objective of achieving adjustment and integration and to enhance interaction and communication with others.

5) Provides insight into the best possible learning experience for Arabic background international students.

6) Provides a practical and useful approach for HEIs to analyse the needs of different groups of IS through the adaptation of the study's methodology that is applicable for both national and international institutions that will assist individual universities to acquire data for planning and development purposes to provide a high-quality educational environment for IS thereby:

    a. Increasing the university's reputation (increase students' intake).
    b. To retain the students enrolled.
    c. Increase IS satisfaction.

The research findings have validated what had already been found by Mustafa and Kelesbayev (2018); Gangurde and Patil (2018); Ömürgönülşen et al. (2020) but also built significantly on it because the current study relates to practical, rather than theoretical data, Ömürgönülşen et al. (2020) which was gathered through discussions with experts in both student needs and for institutional requirements. This study therefore strengthens the theory through the application to the in-depth case study where the quantitative measures of this study were based on three qualitative investigation methods with three groups of specialist practitioners in the fields of student needs and institutional requirements. These three multi-method studies constituting the first part of the methodology were embedded in practice, but utilised

within a quantitative measurement design to link both the theoretical approaches of Kano-QFD and SWOT analysis in the Australian higher education sector.

7) The study has highlighted the issue of intercultural communication by focusing on Arab students' experience of intercultural communication in a western country. Similarly, it contributes to an understanding of maintaining religious and cultural values and norms, when moving into a dominant culture, and encountering new cultural norms that clash with the student's own values. In this context, intercultural communication, and managing new norms and values need to be navigated by students through a process of negotiation between home and host values and norms. A key objective of this process is to achieve adjustment and integration and to enhance interaction and communication with others to enable positive transition to study and course completion.

8) Establishing the viability for HEIs' use of QFD in proactively acquiring data for planning and deployment purposes to provide AIS with high-quality educational environments.

9) Provide the best possible learning experience for Arabic background international students.

10) Providing a practical approach for HEIs to analyse the needs of different groups of IS through the adaptation of the study's methodology.

11) It is expected that the research will directly contribute to objectives to employ evidence-based quality practices that ensure individual student needs are met and to ensure support for students from a diverse range of backgrounds and locations is in place to foster their success

12) Provides a theoretical approach that is applicable to HEI's nationally and internationally that can lead to:

    a. Increasing the university's reputation, with consequent increase in student intake.

    b. Higher retention of the students enrolled.

    c. Increase in IS satisfaction metrics.

In addition to these contributions for the HE sector, this study has the following eight methodological contributions:

a. Acquire data for planning and development purposes to provide a high-quality educational environment for IS.
b. Providing a practical and useful approach for HEIs to analyse the needs of different groups of IS through the adaptation of the study's methodology.
c. Adding to an existing theory about the relationship between International Students (IS) and Australian HEI
d. This study provided an insight for the top management of three Queensland universities when focusing on the parameter to delight students and attract more international students to their university. This study also gave a detailed methodology for the applicability of QFD and the Kano model in the service sector, especially in the higher education sector, which will help new Kano-QFD researchers and practitioners to use it in their projects.
e. Establishing the viability for HEIs' use of QFD in proactively acquiring data for planning and deployment purposes to provide AIS with high-quality educational environments.
f. Providing a practical approach for HEIs to analyse the needs of different groups of IS through the adaptation of the study's methodology.
g. This research contributes to improving the academic performance of international students because the findings are based on the views of students who are the real and direct stakeholders-real-life application.
h. Finally, this study helps decision-makers to prioritise and direct their competitive strategies towards creating the loyalty and satisfaction of students to help them raise their competitiveness among universities. The results of this study should contribute to raising the quality of services provided in the studied department and priorities should be set. From this study, it is hoped that decision-makers will take the outcomes into account and establish an implementation plan to improve the quality of services provided to their students (Ayat, 2020).

7.6.2. Theoretical contributions

The outcomes of this research make valuable additions to the existing literature on the combined use of the Kano model and QFD analysis. The information arising from this combined methodology provides valuable information in regard to scope and depth of intercultural literacy necessary for AIS to transit smoothly into study in Western society. This research is focused on investigating a particular category of international students. The Australian higher education institutes experienced a huge influx of this category of IS; hence, the research aims to obtain the views of both international students and university management regarding the experience of international students in Australia. Unlike other studies, it has allowed in-depth consideration of these students' experiences and the impact on social and academic requirements. Implications of the findings highlight the need to conceptualise the journey of IS as a transitional pathway that should be considered prior to their arrival. The metaphor of transitional pathway is used in this study to determine the route of the student's educational journey in Australia, the challenges faced by them, the suggestions, and different stopovers for a positive and productive experience. Subsequently, the data indicates the key requirements for every step involved in the transition. The recommendations that flow from the research can help focus evaluation of current policy and practices in the area of international students studying in Australian institutions. This is particularly an issue for groups such as AIS who are susceptible to culture shock due to the significant and often difficult cultural and pedagogical challenges they face when moving to study in a western HEI. These suggestions were proposed for AIS for facilitating informed decision-making on their part and a better learning experience overall. The suggestions help the international students to easily get acquainted with the local society and educational lifestyle.

Through the consideration of social identity theory and sociocultural theory, the research shows how these students were initially challenged in their need to preserve their social identity while at the same time they experienced acculturation demands necessary for their social and educational success in the new culture. The research outcomes indicate that the international students can refer to Hofstede's four dimensions of culture for analysing the cultural and educational differences.

Identification of these differences allows international students to better cope with cultural disparity and overcome the challenges that confront their educational journey in a host country and to better adjust to Australia's constructivist approach of student-oriented learning in comparison to the teacher-centred learning applied back in their homeland.

Moreover, the research adds to the body of knowledge in terms of understanding why these students need to reconceptualise their beliefs about teaching and learning and make a cognitive shift to understand the constructivist approach to learning and the idea of learning independently. The study also indicates that international students are faced with the challenge to be familiar with the English language. The study indicates that English is a foreign language to these international students and they were not as fluent in English as required by Australian universities despite their eligibility for the course. The research showed that there are three areas of English demands, including using Standard Australian English for academic purposes, acquiring the new language and concepts for learning related to the constructivist approach to pedagogy and online learning, and the Australian colloquial English that they met when conversing with locals and even used by their teachers in class. This calls for enhancing intercultural awareness corresponding to the research objectives. The research also emphasises that the teachers and colleagues of AIS must also have an idea about their local educational and social culture to facilitate better interaction of IS with host country teachers and students.

In academic research, theoretical contributions serve as a paramount objective; however, practitioners may also develop strategies to apply the learnings derived from academically based theory and research outcomes. Both academics and practitioners in the industry can take advantage of the qualitative and quantitative findings related to this study through:

1) Application of the methodology and process of application of the combined QFD with the Kano model and SWOT analysis in an Australian HE context.
2) Empirical research that builds an understanding of the needs of IS to successfully improve their quality of education at Australian HEIs.

In this regard, the literature review showed that the QFD was applied together with the Kano model in specific aspects of HE (Garibay et al., 2010) and (Ömürgönülşen et al., 2020). The SWOT analysis has also been applied in the context of HE including (Mapulanga, 2013; Gebei and Vincze, 2019; Das, 2019; Albelbisi & Yusop, 2020; Mushkarova et al., 2021).

However, this research used a combination of all these techniques including the Kano model, QFD, and SWOT analysis together, which is neglected in the earlier literature in the field of HE. Therefore, this study is the first empirical study in the literature that integrates the aforementioned methodologies in the field of Australian higher education, and it therefore adds to the QFD literature and provides a unique approach that contributes to theory. As a result, a combination of these three techniques is recommended in future QFD applications.

7.7. Limitations of the study

This section is divided into three parts and outlines the limitations of the current study and proposes important areas for future research. The first and second parts highlight the limitations of the study. The third part includes suggestions for future research.

7.7.1. Limitations with the sample of participants

1) As noted in chapter 1, the study was conducted at campuses of three Queensland universities and involved a relatively small sample of AIS (n=401). Although this number and group of the students was representative of the Arabic students in these university cases, it is too small a sample to enable the study to make findings that are generalisable to the broader population of Arabic international students. Similarly, whilst these findings have applicability to other international student groups, particularly those from language and cultural backgrounds that are different from Western English-

speaking language backgrounds, the methodology is specific to the cohort of AIS and the specific universities that were cases in this study.

2) A second limitation was associated with the participant response rate to the primary data collection instrument for AIS at UQ and QUT. Although the researcher invited many participants from each target university, only USQ had a high response rate of participants and it was difficult to elicit sufficient responses from the UQ and QUT students.

3) The study included approaches to more universities than the three included, but lack of response, university's declining to participate, and delays in response times, meant that the study was limited to these three cases of different university types.

4) As was noted in the literature review in chapter 2, students from different countries, whilst having many cultural similarities, also bring a diverse set of cultural values and experiences when they arrive to study in Australian universities. Even within Arab countries, there is much cultural diversity (e.g., ethnic Arab, religion, values, and customs). Therefore, it could be argued that there a more detailed analysis of the data from the Arabic students based on ethnic background and linguistic factors was required.

5) Although there were some female students from different Arabic countries who answered the focus group discussion questions, there is a limitation to the study in that no females were interviewed. This was due to cultural restrictions, as it is not culturally appropriate in Muslim culture for a male researcher to interview female students. As mentioned in Chapter 3, the researcher did not have funding to appoint a female person to interview female students in the three different Queensland universities. Thus, in-depth views of female Arabic background students would be worthy of future investigation particularly because they may experience additional challenges such as their needs regarding dress and cultural norms. Therefore, the researcher notes that there is a need for future research by female researchers to include the views of female Muslim students studying overseas.

7.7.2. Limitations with the data collection experts' interviews

A further possible limitation of this study is connected with my position as an insider. I too am an Arab international student who has faced a number of issues in studying and living in Australia. In addition, I have both a bachelor's and master's degree in business administration. This background, together with my knowledge of cultural views in responding to specific issues, may lead me to interpret the data in a particular way. Awareness of this limitation meant that I was conscious of possible bias and this was ameliorated by having non-Arabic supervisors.

Access to any organisational data was limited to what was publicly available on the websites of the three case institutions.

7.7.3. Future research

This study trialled the Kano-QFD approach in three Queensland universities and future research is required to replicate the study in other universities, with other cohorts of international students, and in other countries.

1) Future studies could address one or more of the limitations above to include larger sample sizes, and different types of universities internationally. In addition, studies could incorporate additional TQM techniques and tools which are used to manage team performance and solve specific problems, such as benchmarking, continuous improvement process, variation risk management, analytical hierarchy process (AHP), and six sigma.

2) Despite the usefulness provided by the application of Kano-QFD to the AIS, this study considered solely students as the customers. In addition to replication with other cohorts of international students, future research may consider examining the experiences of other customers' expectations, focusing on internal and external stakeholders such as employees, alumni, international parents, lecturers, service staff, members from different communities, and governing bodies, or industries. However, it would also be valuable to

incorporate the students' opinions in any further study to holistically assess the quality and impact of HEIs toward the university and all its stakeholders.

3) To enhance comprehensive continuous quality improvement at the university, it is recommended to conduct a further three stages of employment of QFD in the study. The first stage would determine the priority of the institutional requirements developed using the QFD first iteration, house of quality (HOQ). The second stage could develop alternative concepts chosen for the investigation by the university. The third stage would then determine the critical priorities based on the QFD second iteration, to determine service elements and complete the other houses of the QFD processes including the service planning, element planning, and operations planning matrices. The Three-Phase model of QFD would allow HEIs to prioritise the student's requirements and optimise those service aspects to achieve a competitive advantage. Also, it would enhance understanding of their business operations and quality management practices.

4) Adoption of the integrated approach software of the Kano-QFD analysis instead of much manual work both for data input and output. A developed program by the computer that will help the developers/designers to calculate the scores of the relative importance, determine the appropriate Kano categories, and have them in a format ready for input a HOQ. Besides, that can overcome a time-consuming process and spending more effort instructing and designing the charts of HOQ matrices.

5) In addition, appropriate quantitative methods are required to improve the reliability of the QFD process given the subjective decisions made in the use of the QFD technique often rely on the decisions of design developers/engineers and researchers. In this study, the researcher used a qualitative and quantitative approach along with Kano's model to obtain an optimal educational services design to make the process more robust. Applying other quantitative methods that are better suited to identifying unexpected requirements is also recommended.

6) It can be difficult to obtain credible results from the application of the Kano-QFD approach, without an effective QFD cross-functional team (technical and managerial), as some necessary data may be lost. Successful application of the Kano-QFD analysis model requires the cooperation of a range of people from different fields and divisions.

7) The scope of this study could be extended to determine service elements and complete the other houses of the QFD process including the service planning, element planning, and operations planning matrices. The Three-Phase model of QFD allows HEIs to prioritise the student's requirements and optimise those service aspects to bring additional competitive advantage. Also, it can help HEIs understand their business operations and quality management practices.

7.8. Key recommendations

Based on the research findings arising from the implementation of the Kano-QFD approach and SWOT analysis, recommendations emerge for Australian universities, and other educational institutions to enable them to better support AIS and potentially other groups of international students. The findings from this research study have important implications for future practice in the field. In particular, they have many important implications for the developers and executive management at universities in Australia and other Western countries who enrol a significant proportion of students from Arab counties. Recommendations below include general recommendations arising from the study that are applicable to each of the university cases in this study and will be of interest to other HEIs. In addition, recommendations are made that are specific to each case university:

7.8.1. Recommendations for the UQ case

1) The planning and implementation of programs to familiarise Arab students with Australian/Western culture and language. The Arab students should be encouraged to participate in the new student orientation programs so that they could mingle with other international students in the university. UQ could also consider setting up clubs/societies for the Arab students to get to know other students who share the same interest. With all the social activities implemented in the university, the Arab students will not feel isolated and they will have enjoyable study experiences in the Australian universities. To ensure the English proficiency of the Arab international, UQ should consider the following:

    - facilitating the successful integration of culturally mixed groups in class, on campus, and online;
    - putting in place strategies (professional development) that will help academic staff to make their lectures clearer, especially in terms of delivery;
    - publicising information regarding the services available, (for example, via websites and orientation programs);
    - promoting high self-efficient learning habits especially for non-English speaking background students;
    - encouraging collaboration between academic subject staff and English as a Second Language (ESL) specialist staff to promote an awareness of the specific language and learning difficulties faced by Arab international students.

2) Provision of adequate levels of assistance and sets of recommendations for Arab students. As exemplified by UQ's action to assist international students throughout the COVID-19 period, UQ should provide services and support to assist Arab international students with financial assistance when problems arise and help students resolve family-related concerns. UQ should consider

providing a range of services and support to assist Arab international students with financial assistance when problems arise and help students resolve family-related concerns. To support students through especially this difficult time:

- Offering discounts for student tuition and accommodation fees;
- Continuing to offer a range of financial help and advice including student loans;
- Dedicating COVID-19 online support hub;
- Designated international student advisers;
- Student tuition Fee due-date extensions; and
- Assisting in a number of other areas (from landlords, utilities provider, and more).

3) The planning and maintenance of a high international reputation through rankings UQ should continue its rankings strategy to at least maintain its high international reputation via rankings, focusing on the quality of learning, research opportunities and capabilities, and employability in Australia, other countries, and home country.

4) The provision of adequate levels of assistance and sets of recommendations to Arab students to facilitate their effective use of online learning resources. UQ should provide Arab international students with assistance and support that ensures the effective use of online learning resources, especially in circumstances found under COVID-19 limitations that have required the cancellation of on-campus lectures and other face-to-face activities in favour of online learning experiences.

5) The involvement of international parents in assisting the university in its recruitment of Arab international students studying online. When recruiting Arab international students, UQ should seek guidance from the Australian government to ensure international partners assisting the university in its recruitment of Arab international students can ease the burden of these students in preparing to come to Australia or, because of COVID-19, assist with these students while studying online. UQ can also coordinate and collaborate with

the international student recruitment and marketing team as they have experts in the provision of international student admissions solutions for universities. The strategy will build on these achievements. New modes of education delivery and new national and international partnerships will allow more students to have access to Australian education. Although onshore learning in Australia will remain a core component of Australian international education, learning will increasingly occur in-market and online.

7.8.2. Recommendations for the QUT case

1) The provision and implementation of clear and simple procedures for Arab students to enroll in programs and course requirements at the university. QUT should provide clear information that enables Arab international students to manage their enrolment programs and comply with course requirements.
2) The provision applications of acceptance and learning experiences process to Arab students.
3) QUT should continue to make more professional in fulfilling facilities and infatuation improving the quality of lecturers.
4) The creation and development of a positive university brand image and reputation among students and other stakeholders.

QUT is required to be more professional by prioritising student satisfaction. The QUT should focus on how to attract, develop, and maintain international students including AIS through building a positive reputation as a powerful strategic resource for the functioning of a competitive business model, which, along with other key factors and some initiatives can be outlined for reputation building and strategic management in a university information environment, such as:

- The presence of market-oriented specialties.

- The quality of vocational training, the opportunities for student professional realisation, and so on activate student's behavioural intentions when choosing and recommending a university and/or specialty.
- Developing an attractive and informative website, reflecting academic events in social and professional networks, and considering that the university websites are the best platform to transmit the institution's services to potential international students.

5) Activating and adopting a continuous quality improvement
6) Emphasising a continuous quality improvement culture to cope with Arab student's needs.
7) Providing sufficient support for the effective use of online learning resources, especially during COVID-19 limitations.
8) Reputation had become essential for higher education institutes, and universities have been working harder to improve their reputation.

7.8.3. Recommendations for the USQ case

1) Consideration of specific strategies to ensure the integration and acceptance of Arab international students.

2) Provision of adequate levels of assistance for Arab students.

3) USQ should consider providing Arab students with focused opportunities to participate in the orientation and other activities to ensure that they feel welcomed and promote their integration into the university community. This could include:

    - Promoting the involvement of international students in clubs/associations for recreational with other international and domestic students.

    - Improvements to the learning environment and marketing tools could include.

    - Services that are considered must-be, such as the presence of internet points, should be viewed as critical since their absence causes

dissatisfaction. Other services, such as the possibility of evening opening, online consultation of the resource catalogue, interlibrary loans, natural lighting, desk reservation in reading rooms, a dedicated section for business newspapers and magazines, text acquisition by students, live chat service, and copying facilities are all appealing, and would therefore generate satisfaction if available.

- Designing a focussed staff education and training service development plan library and support staff. AIS students believe that qualified and competent staff members ensure that high service quality is delivered to students. A formal training plan could assist librarians and support staff in further improving their functional and technical skills.

- Planning and maintenance of systems and processes for contacting and marketing to Arab international students through USQ's International Office.

As part of the University's marketing activities throughout Arabic countries, USQ's International Office (directly or through partners) should establish and maintain contact with international students throughout the admissions process to provide them with assistance and identify supports these prospective new students may need to enhance their capacity to be successful students. Although, USQ already using these activities high attention needs to be paid to them through the reform of attractive students since some students first seek to improve their English from a very low level.

- Understanding the increase in demand in the developing market is critical and would encourage HEIs to be pioneers in using uncommon techniques in the services industry such as Kano and QFD.

7.8.4. Overall suggestions to three Queensland universities

Recommendations are applicable to all three case universities. Some of the recommendations in future research can be considered as recommendations applicable to three Queensland universities.

(1) In this study, the priorities of institutional requirements were calculated and shown in the results. These priorities can be determined as the basis for precedence quality improvement programs in the organisation. University planners who focus on higher priority requirements can use resources more effectively.

(2) Provide service quality standards. To improve service quality in higher education, it is recommended that according to the expectation and opinions of students and the continuous evaluation of the quality and student satisfaction, service quality standards of higher education should be developed.

(3) Planning and maintaining student support systems that focus on human and technical factors affecting their learning through sets of recommendations to international students to facilitate their effective use of online learning resources, setting up an informative welcome to students to be able to access the services they require, and implementing programs to familiarise international students with Australian/Western culture and language.

(4) The international office needs to make contact with students and assist them in extending services by establishing new agencies located around the world including Arab countries. To recruit more students, they need also to activate the marketing division.

(5) The university must set up an informative welcome to students that explicitly orientate them to be able to access the services they require.

(6) The university should respond to the requirements (indifferent) that seem to be closed to both one-dimensional and attractive requirements. That means, not responding to these requirements results in dissatisfaction in the students, and

responding to those requirements results in a positive contribution to the satisfaction coefficient.

(7) The university must consider not only their reliance on international student fee revenue and market concentration, but also should draw strategies to understand and define their appetite for risk related to COVID-19. This will underpin their financial sustainability and prevent risks to quality.

The findings from this study have important implications for future practice in the field. In particular, they have many important implications for the designers and implementers of blended online learning courses at universities in Australia and other Western countries with a significant proportion of students from Arab countries. For example, the findings from this study provide the designers and implementers with the knowledge to inform: HE institutions on issues related to the quality of service for Arabic and other cohorts of international students.

7.9. Conclusions

Unlike most previous research studies in this field that utilised quantitative research methodologies based around Kano questionnaire surveys, this research study applied a mixed-method approach that involved the gathering and comprehensive analysis of both quantitative and qualitative data. The focus of this thesis was to determine the AIS requirements and corresponding institutional requirements in the three Queensland university cases to obtain the priority factors that enhancing of the Kano-QFD application. A house of quality (HOQ) was then developed from the data collected by the Kano survey instrument and the processes used to identify university requirements that prioritize the institutional requirements corresponding to the student requirements. These prioritised factors also contribute to improving service quality and student satisfaction through post-matrix SWOT analysis. The results of this study demonstrate that the priorities from students and different university matrices perspective, attractive quality, and priority findings from the Kano survey were separated into two general categories in the HOQ based on the survey items: academic requirements and personal requirements. The use of internal and external evaluation

results in a more strategic and targeted decision-making process. Accordingly, this study tried to fulfill this gap in the literature by using the QFD methodology in combination with the Kano technique in promoting the quality of educational services and experiences of AIS who are studying in Australian universities.

Specifically, the first research objective was to identify and understand the experiences of AIS studying at Australian universities in order to establish the proactive capacity of Australian HEIs to improve AIS experiences and satisfaction. In this study, the Kano model was integrated with the QFD technique in helping to build the first phase matrix in the HOQ, namely the SRs matrix. The priority of SRs was identified from 14 items that have been classified into Kano categorises based on the results of each of the three case universities. This matrix together with other matrices then forms an intact building of the HOQ matrix which is the hallmark of QFD. This research finds the Kano-QFD approach in the three Queensland university cases to elicit diverse student needs associated with institutional requirements can drive the continuous quality improvement of educational services. The findings confirm that integration of the two antecedents, information, and past experience combine to provide a strategic source of valuable data for university strategic planning. The findings confirm that the application of the Kano model is useful for improved comprehension of student needs and expectations, while its integration in the QFD matrix will assist the university to determine the most important elements needed to improve educational services quality design.

The second objective was the determination of the parameters of the institutional requirements, including which are the most important and the least important as per the requirements of the Australian HEI sector concerning the recruitment and retention of AIS at the three universities. The findings of this study through applications of the Kano-QFD matrix confirm that priorities of institutional requirements corresponding to the student requirements in each of three Queensland university cases play a vital role in improving the quality of services. In this context, the higher the relative weight of the institutional requirements, the more attention to the requirements is a necessary consideration to achieve student satisfaction.

The third objective was the effectiveness of Kano-QFD analysis in capturing student needs and university requirements to identify and potentially predict how AIS-HEI interactions improve or maintain a positive campus environment (experience). The study proved that the integration of the Kano-QFD approach is applicable to fulfill AIS requirements from both qualitative and quantitative viewpoints. This study provided an insight for the top management of HEIs when focusing on the parameter to delight students and attract more students to their institution. This study also gave a detailed methodology for the applicability of Kano-QFD in the service sector, especially in the education sector, which will a tool for continuous improvement, problem-solving, and help Kano-QFD researchers and practitioners to use it in their projects.

Finally, the fourth objective used the study of AIS as the basis of determining the applicability of QFD by HEIs in their planning for and support of IS from different target cultures. The study has achieved this demonstrating that it is worthwhile for HEI to allocate resources to attempt to understand the customer. QFD provides the institution with a means to understand customer needs and provides strategic direction for continuous quality improvements based on the voice of the student during the academic design process and also throughout the implementation process to achieve enhanced outcomes for students and the university sector. Although this study applies the Kano-QFD analysis to improve experiences of AIS, this approach can be applied to other groups of international students. Then, the integration of the Kano model in the QFD opens new perspectives for the development of products/services with innovative features. Thus, the results and methodology of this study, Kano-QFD, can be applied for strategic planning, international student, and management at any HEI.

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APPENDICES

Appendix A: Applications of the Kano model and QFD in higher education

A summary of some identified literature reviews about Kano-QFD applications in higher education.

No.	Year/ Author	Method / Aapproach	Country	Felid of application	Findings identified
1.	Bayraktaroğlu & Özgen (2008)	QFD, AHP and planning matrix of HOQ	Turkey	To identify the user requirements of the central library services of Dokuz Eylul University (DEU) and EU in Izmir, Turkey.	The paper reveals marketing strategies for a non-profit organization, and a state university library, and helps the library find out its competitive position by applying all these techniques together.
2.	Garibay et al. (2010)	QFD-Kano model	Mexico	To evaluate a digital library at the University of Guadalajara (Mexico)	Outcomes are even more relevant when they are integrated into the QFD-Kano model to clearly show customer desires and perceived qualities of the University of Guadalajara's digital library.
3.	Hashim & Dawal (2012)	Kano model and QFD	Malaysia	To improve the School workshop's workstation design for adolescents in terms of ergonomic and user's need	This paper presents a combined method of the Kano model and QFD to improve workstation design in terms of ergonomics and user requirements. A survey was conducted of 336 respondents to identify current workstation problems. The collected data was translated into Kano questionnaires and answered by 255 respondents. Then clarify and build a House of Quality matrix. The result is that both of these methods can be implemented into a new workstation that is designed ergonomically by prioritizing modification elements.
4.	Taifa & Desai (2015)	QFD and Kano model	India	Development and improvement of classroom furniture	This paper uses QFD and Kano integration. The integration of these techniques enhances customer-oriented classroom furniture design.

					The integration between the Kano model, QFD, and ergonomics principles can help to understand user needs, satisfy students who spend six to eight hours per day and solve ergonomic design problems in the long-term use of classroom furniture.
5.	Hamzah & Kadir (2018)	Kano model and QFD	Indonesia	Quality evaluation on private HEIs	The results of this research found nine priorities of need, they are student's achievement index which is more than 3.00, research supervising by the lecturer, discipline, ability of the use technology, lecturer's assessment method, academic staff's passion and patience in delivering service, English proficiency, teaching and learning atmosphere, academic information effectiveness.
6.	Hafidzah et al. (2020)	Kano model and QFD	Indonesia	Optimising the quality of HE in Indonesia	The outcomes of this study found eight priority needs, including the availability of e-library access, the ease in using the internet, adequate computer labors, lecturers adhering to the predetermined lecture schedules, an easy filling in online KRS, academic staffs who were responsive to complaints, academic staffs who serve patiently, and the communication of academic staff which runs smoothly in serving the students. In addition, the college management can take several steps to optimize the quality like monitoring the learning process.
7.	Kelesbayev et al. (2020)	Kano model and quality planning scheme	Kazakhstan	Re-designing and improving the quality of AYU's education and training activities by taking into account the wishes and needs of the students	The universities can reveal their differences thanks to the Kano model and become superior to their competitors in a rapidly developing competitive environment. With the findings obtained from the Quality Planning Scheme, which is one of the important stages of QFD, student requests and priorities can be determined, these existing ones can be

					restructured according to the determined requests and needs.
8.	Ömürgönülşen et al. (2020)	Kano and QFD	Turkey	Improve the quality in higher education of a specific course in a state university in an emerging country, Turkey.	The combined framework may help educational decision-makers to identify and satisfy the main student requirements to enhance the quality of educational service processes. The outcomes show that a focused quality house was generated which includes only prominent student and technical requirements. The interaction of the course with the industry, such as technical trips and invited speakers, which are called as attractive needs, are found to increase student satisfaction by creating delight. The prominent technical requirements are found to be budget/funds, number of students enrolled, lecturer workload, industry trip, good communication/ empathy, lecturer qualifications, and competency in teaching.

Appendix B: Ethical letter HREC approval

OFFICE OF RESEARCH
Human Research Ethics Committee
PHONE +61 7 4687 5703| FAX +61 7 4631 5555
EMAIL ethics@usq.edu.au

UNIVERSITY OF SOUTHERN QUEENSLAND AUSTRALIA

11 August 2016

Mr Ahmed Al-Makssoossi
Unit 54D
537 - 561 West Street
Student Village
Toowoomba Qld 4350

Dear Ahmed

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.	**H16REA166**
Project Title	Using the Quality Function Deployment (QFD) matrix to improve the social and academic experiences of Arabic international students in Queensland universities, Australia
Approval date	11 August 2016
Expiry date	11 August 2019
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: 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

Please note that failure to comply with the conditions of approval and the *National Statement (2007)* may result in withdrawal of approval for the project.

You may now commence your project. I wish you all the best for the conduct of the project.

Samantha Davis
Ethics Officer

Copies to: ahmed.ml-mousawi@usq.edu.au

Appendix C: Demographics of the focus group discussion participants

No	Age	Gender	Nationality	Level of Study	Program of Study	Duration of Study at the university
R1.	22	Female	Saudi Arabia	Undergraduate	Arts	07 Months
R2.	23	Male	Oman	Undergraduate	Information Tech	>01 year
R3.	23	Female	Saudi Arabia	Undergraduate	Education	06 Months
R4.	27	Male	Kuwait	Undergraduate	Accounting	07 Months
R5.	24	Male	Kuwait	Undergraduate	Law	>01 year
R6.	34	Male	Saudi Arabia	Undergraduate	Business Studies	09 Months
R7.	37	Male	UAE	Undergraduate	Information Tech	10 Months
R8.	28	Male	Saudi Arabia	Undergraduate	Education	>03 years
R9.	36	Male	Iraq	Postgraduate	Business Studies	09 Months
R10.	38	Male	Libya	Postgraduate	Business Studies	>01 year
R11.	41	Male	Libya	Postgraduate	Business Studies	07 Months
R12.	26	Male	Libya	Postgraduate	Business Studies	>03 years
R13.	42	Male	Jordan	Postgraduate	Business Studies	>02 years
R14.	44	Male	Iraq	Postgraduate	Business Studies	07 Months
R15.	30	Male	Iraq	Postgraduate	Education	07 Months
R16.	33	Female	Jordan	Postgraduate	Business Studies	>03 years
R17.	34	Female	Iraq	Postgraduate	Business Studies	>03 years
R18.	38	Male	Saudi Arabia	Doctoral	Accounting	>03 years
R19.	33	Female	Iraq	Doctoral	Information Tech	>01 year
R20.	38	Male	Lebanon	Doctoral	Information Tech	>03 years
R21.	38	Male	Iraq	Doctoral	Information Tech	>03 years
R22.	38	Male	Iraq	Doctoral	Information Tech	>03 years
R23.	35	Male	Saudi Arabia	Doctoral	Business Studies	>03 years

Appendix D: The Kano survey questionnaire (English version)

Appendix D: The Kano survey questionnaire (English version)

The survey will be developed using USQ Custom Survey System

University of Southern Queensland
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West Street, Darling Heights
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Australia
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Using the integrated Kano-QFD approach to improve the social and academic experiences of Arabic International Students at three Queensland Universities

(USQ Human Ethics Approval Number: H16REA166)

The following instrument is intended to assess the perceptions and experiences of Arabic international students enrolled at Queensland universities. The instrument will assess the social and academic experiences of students for a better understanding of Arabic international students while studying and living in Australia. It is a planning tool that focuses on student needs for the purpose of translating these requirements into appropriate institutional requirements. The findings in this research will be valuable to educational institutions, especially Australian universities seeking to understand how Arabic international students behave and act when studying and living in Australia. Additionally, this research will also provide prospective students an overall understanding of what to expect when they choose to study in Australian universities.

Section A

1) **Basic Information:**

1- Interview name: .....
2- The interview date: .....
3- The length time of interview: .....
4- Other people attend the interview:

Note:

This pilot study contains two main parts: introduction and interview questions related the Kano model.

Appendix D: The Kano survey questionnaire (English version)

The survey will be developed using USQ Custom Survey System

2) Demographic Questions:

Please provide the following demographic information. This information is necessary for validation of the questionnaire. Please select one option from the dropdown list for each of the following demographic issues. Please click on the "NEXT" button to go to the next page.

1. What is your gender? ☐ Male ☐ Female
2. How old are you?

   ☐ 15-19 ☐ 20-24 ☐ 25-29 ☐ 30-34 ☐ 35-39 ☐ 40-44
   ☐ 45-49 ☐ 50-54 ☐ 55-59 ☐ 60-64 ☐ 65 and over
3. What is your marital status?

   ☐ Single

   ☐ Married

   ☐ Divorced/ Separated/ Widowed
4. Do you have any children?

   ☐ Yes

   ☐ No
5. What country did you came from? ☐

   ☐ Algeria ☐ Bahrain ☐ Comoros ☐ Djibouti ☐ Egypt ☐ Iraq
   ☐ Jordan ☐ Kuwait ☐ Lebanon ☐ Libya ☐ Mauritania ☐ Morocco
   ☐ Oman ☐ Palestine ☐ Qatar ☐ Saudi Arabia ☐ Somalia ☐ Sudan
   ☐ Syria ☐ Tunisia ☐ United Arab Emirates ☐ Yemen

   ☐ Other: ☐
6. What is your highest educational qualification before to Australia?

   ☐ Diploma ☐ Advanved Diploma ☐ Bachelor Degree ☐ Masters Degree
   ☐ Doctoral Degree ☐ Other ☐
7. Are you here alone or with your family? If with family, which family members do you have living with you? (Chose as many as apply)

   ☐ Alone ☐ With partner ☐ With children
   ☐ With extended family ☐ Other ☐
8. What type of accommodation are you currently living in?

   ☐ Hostel ☐ Homestay ☐ Residential hall/Residential college
   ☐ Apartment/Flat ☐ House

Appendix D: The Kano survey questionnaire (English version)

The survey will be developed using USQ Custom Survey System

9. How long have you been in Australia?

□ 0-1 Year □ > 1-4 Years □ > 4-7 Years □ > 7-10 Years □ More than 10 Years

10. How long have you been studying at your university?

□ 0-1 Year □ 2-4 Years □ 5-7 Years □ 8-10 Years □ More than 10 Years

11. What are you studying?

□ Undergraduate Qualification □ Postgraduate Qualification
□ PhD / Doctoral Qualification □ Other

12. What is your university?

□ Australian Catholic University (ACU)
□ Bond University (Bond)
□ Central Queensland University (CQU)
□ Griffith University (GRIFFITH)
□ James Cook University (JCU)
□ Queensland University of Technolog (QUT)
□ Southern Cross University (SCU)
□ The University of Queensland (UQ)
□ University of Southern Queensland (USQ)
□ University of the Sunshine Coast (USC)

Section B

1) The following statements relate to your feelings about the quality of **academic and social experiences** at your university. Please **tick (✓) one box** that indicates **how much you agree** with the following statements. Each pair of items refers to your interaction with the university regarding different aspects of your university experiences. The focus is on how your experience influences your capacity to achieve academic success. Some of the item pairs are not directly related to what the university provides for you directly but are related to whether or not the university should be providing you with guidance and/or assistance in regards to the external issues (e.g., visa, community relations, and services).

Appendix D: The Kano survey questionnaire (English version)

The survey will be developed using USQ Custom Survey System

No	Detailed Requirements	1 Strongly Like Disagree	2 Disagree Mus-be	3 Neutral	4 Agree live with	5 Strongly Dislike Agree
1a	The way courses are taught by my university allows me to learn what I need to know.	☐	☐	☐	☐	☐
1b	The way courses are taught by my university does not allow me to learn what I need to know.	☐	☐	☐	☐	☐
2a	My university has learning spaces that are conducive to optimizing my learning and/or research opportunities.	☐	☐	☐	☐	☐
2b	My university does not have learning spaces that are conducive to optimizing my learning and/or research opportunities.	☐	☐	☐	☐	☐
3a	Getting a degree from my university will help me become employed in the type of job I want.	☐	☐	☐	☐	☐
3b	Receiving a degree from my university may not assist me in getting the type of job I want.	☐	☐	☐	☐	☐
4a	Learning resources (e.g., library, information technology, etc.) at my university are sufficient to meet my learning and/or research needs.	☐	☐	☐	☐	☐
4b	Learning resources (e.g., library, information technology, etc.) at my university are not sufficient to meet my learning and/or research needs.	☐	☐	☐	☐	☐
5a	I am able to meet with my advisor or supervisor as needed and I get useful feedback from my interactions with them.	☐	☐	☐	☐	☐
5b	I am unable to meet with my advisor or supervisor when I need to and the feedback I receive from my interactions with them is not helpful.	☐	☐	☐	☐	☐
6a	The reputation of the academic staff in my area of study and of the university as a whole were major reasons for my selecting to enrol at my university.	☐	☐	☐	☐	☐
6b	My choice of university was not based on the reputation of the academic staff in my area of study or my university's overall reputation.	☐	☐	☐	☐	☐
7a	Academic (e.g., academic advisement, learning support, IT support, etc.) and non-academic (e.g., career and other counselling, student health, housing, etc.) support services and outside the classroom experiences at my university have enhanced my learning experience.	☐	☐	☐	☐	☐
7b	Academic (e.g., academic advisement, learning support, IT support, etc.) and non-academic (e.g., career and other counselling, student health, housing, etc.) support services and outside the classroom experiences at my university did not enhance my learning experience.	☐	☐	☐	☐	☐
8a	I am able to integrate myself into the university because I feel welcomed and accepted by all members of the university community.	☐	☐	☐	☐	☐
8b	I am unable to integrate myself into the university because I do not feel welcomed or accepted by all members of the university community.	☐	☐	☐	☐	☐

Appendix D: The Kano survey questionnaire (English version)

The survey will be developed using USQ Custom Survey System

9a	I am accepted, understood and welcomed by the community outside my university (where it is located), which allows me to maintain a healthy and positive lifestyle based on my beliefs and values.	☐	☐	☐	☐	☐
9b	I cannot maintain a healthy and positive lifestyle based on my beliefs and values because the community in which my university is located does not make me feel welcome because they do not seem to accept and understand my different lifestyle.	☐	☐	☐	☐	☐
10a	My university makes the entry regulation requirements to Australia easy to understand and manageable, making the process of becoming a student easier.	☐	☐	☐	☐	☐
10b	My university does not make the process of completing the entry regulation requirements to Australia sufficiently uncomplicated for an international student to enrol at this university.	☐	☐	☐	☐	☐
11a	I am able to manage paying for all of my direct education expenses (e.g., tuition, books, and fees) as well as related costs to attend my university (e.g., housing, transportation, food, etc.).	☐	☐	☐	☐	☐
11b	I am not able to manage paying for all of my educational costs either direct educational expenses (e.g., tuition, books, fees) or as related costs to attend my university (e.g., housing, transportation, food, etc.).	☐	☐	☐	☐	☐
12a	I manage to meet my financial obligations through receiving financial assistance that is available through my university.	☐	☐	☐	☐	☐
12b	I manage to meet my financial obligations without receiving financial assistance that is available through my university.	☐	☐	☐	☐	☐
13a	On-campus facilities influence my learning experience.	☐	☐	☐	☐	☐
13b	On-campus facilities do not influence my learning experience.	☐	☐	☐	☐	☐
14a	My family and I are able to fit in and have our needs met because of what the community has to offer us.	☐	☐	☐	☐	☐
14b	My family and I are not able to fit in and have our needs met because of what the community has to offer us.	☐	☐	☐	☐	☐

2) Are there any other comments that you would like to add for the research to consider?

Thank you for your time and effort to complete this survey.
Your cooperation is valued and very much appreciated!

Appendix E: The Kano survey questionnaire (Arabic version)

Appendix E: The Kano survey quesionnaire (Arabic version)

The survey will be developed using USQ Custom Survey System

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Using the integrated Kano-QFD approach to improve the social and academic experiences of Arabic International Students at three Queensland Universities

(USQ Human Ethics Approval Number: H16REA166)

استخدام منهج تكامل مصفوفة اداة نشر وظيفة الجودة وانموذج كانو في تحسين الخبرات الاجتماعية والاكاديمية للطلاب العرب الدوليين في ثلاث جامعات في كوينزلاند – استراليا

تهدف هذه الاستبانة الى تقييم تصورات وخبرات الطلاب العرب الدوليين الملتحقين في جامعات ولاية كوينزلاند الاسترالية. تعمل الاستبانة وبشكل محدد على تقييم المواقف والخبرات الاجتماعية والاكاديمية للطلاب. يساعد استخدام اداة نشر وظيفة الجودة كأحد الادوات الرئيسة لادارة الجودة الشاملة من اجل فهم افضل لاحتياجات الطلاب العرب الدوليين اثناء الدراسة والعيش في استراليا. كما انها تعد اداة تخطيط ، تركز بشكل خاص على احتياجات الزبائن لغرض ترجمة هذه المتطلبات وتحويلها الى متطلبات تنظيمية مناسبة. تعد نتائج هذا البحث ذات قيمة للمؤسسات التعليمية، وخاصة الجامعات الاسترالية التي تسعى لفهم كيفية تصرف الطلاب العرب الدوليين عند الدراسة والعيش في استراليا. بالاضافة الى ذلك، يوفر هذا البحث فهما" عاما" للطلاب المحتملين لما يمكن توقعه حينما يختارون الدراسة في الجامعات الاسترالية.

ملاحظة: تتضمن هذه الدراسة الاستطلاعية ثلاث اجزاء رئيسة، هي المقدمة ، والاسئلة العامة، واسئلة الاستبانة المتعلقة بالجوانب والخبرات الاجتماعية والاكاديمية لدى الطلبة العرب في الجامعات الاسترالية.

الجزء الاول

- اسئلة المقابلة العامة:

المقابلة تتضمن المحاور الفرعية ضمن المواضيع المرتبطة بالبحث:

1. جنس المقابل ؟ ☐ ذكر ☐ انثى
2. كم عمرك ؟ ☐

☐ 19-15 ☐ 24-20 ☐ 29-25 ☐ 34-30 ☐ 39-35 ☐ 44-40 ☐ 49-45

☐ 54-50 ☐ 59-55 ☐ 64-60

1

Appendix E: The Kano survey quesionnaire (Arabic version)

The survey will be developed using USQ Custom Survey System

3. هل انت متزوج ؟ ☐ نعم ☐ كلا ☐ مُطلق / منفصل / ارمل
4. هل لديك اطفال ؟ ☐ نعم ☐ كلا
5. من اي بلد اتيت (جنسية بلدك) ؟ ☐
6. ما اعلى شهادة علمية لديك قبل مجيئك الى استراليا ؟

☐ دبلوم ☐ دبلوم عالي ☐ بكالوريوس ☐ ماجستير ☐ دكتوراه ☐ اخرى

7. هل انت هنا بنفسك ام مع عائلتك ؟ اذا كنت مع عائلتك ، أي عضو من اعضاء العائلة يعيشون معك هنا ؟

☐ بوحدي ☐ مع الزوج فقط ☐ مع الزوج والاطفال ☐ مع عائلة الزوج ☐ مع عائلة الزوج الموسعة ☐ مع الزوج واطفاله

☐ مع الزوجة واطفال اخرين ☐ مع افراد الاسرة ☐ اخرى

8. ما نوع السكن الحالي لك في استراليا ؟ على سبيل المثال: تسكن مع عائلة استرالية ، في سكن الطلاب ، في بيت معى عائلتك ، في شقة مع اصدقائك ، او في مكان أخر ؟

☐ اسكن نزيل ☐ اسكن مع عائلة ☐ اسكن في قاعة سكنية ☐ اسكن في شقة ☐ اسكن في البيت

9. كم المدة الزمنية التي قضيتها في استراليا ؟

☐ 0-1 سنة ☐ 2-4 سنوات ☐ 5-7 سنوات ☐ 8-10 سنوات ☐ اكثر من 10 سنوات

10. كم المدة الزمنية التي قضيتها للدراسة في جامعتك ؟

☐ 0-1 سنة ☐ 2-4 سنوات ☐ 5-7 سنوات ☐ 8-10 سنوات ☐ اكثر من 10 سنوات

11. ماذا تدرس حاليا؟

☐ دبلوم عالي ☐ دراسات اولية (بكالوريوس) ☐ دراسات عليا (ماجستير) ☐ دكتوراه

☐ اخرى

12. ما اسم جامعتك في ولاية كوينزلاند ؟

الجزء الثاني:

1) اسئلة الاستبانة :

العبارات التالية المتعلقة بتقيماتك المختلفة عن نوعية الخبرات الأكاديمية والاجتماعية للطلاب العرب بغرض الدراسة والعيش في استراليا ، ضمن البيانات: (أ) يشير الى تجربة ايجابية ، و (ب) يشير الى تقييم تجربة سلبية. يرجى وضع علامة (√) في مربع واحد للخيارات المتاحة يشير إلى مدى تقييمك للبيانات التالية ، وتأكد ان مشاركتك في الاستبانة وتقييمك للتجارب والخبرات يعكس مساهمتك في نجاح الجامعة واستجابتها لمتطلبات الطلبة.

Appendix E: The Kano survey quesionnaire (Arabic version)

The survey will be developed using USQ Custom Survey System

1.أ طريقة تقديم الفصول الدراسية في الجامعة يمكنني من معرفة ما اريد معرفته.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

1.ب طريقة تقديم الفصول الدراسية في الجامعة لا يمكنني من معرفة ما اريد معرفته.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

2.أ جامعتي لديها اماكن تعليم تتيح المجال لاجراء التحسين واستثمار فرص البحث.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

2.ب جامعتي لا تمتلك اماكن تعليم تتيح المجال لاجراء التحسين واستثمار فرص البحث.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

4.أ مصادر التعليم (مثل، المكتبة، تكنلوجيا المعلومات، .. الخ) في جامعتي تكفي لتلبية احتياجاتي التعليمية والبحثية.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

4.ب مصادر التعليم (مثل، المكتبة، تكنلوجيا المعلومات .. الخ) في جامعتي لا تكفي لتلبية احتياجاتي التعليمية والبحثية.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

Appendix E: The Kano survey quesionnaire (Arabic version)

The survey will be developed using USQ Custom Survey System

5.أ بامكاني الالتقاء بالمستشار او المشرف وقت الحاجة واحصل على نتائج مفيدة من خلال تفاعلاتي معهم.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

5.ب ليس بامكاني الالتقاء بالمستشار او المشرف وقت الحاجة واحصل على نتائج مفيدة من خلال تفاعلاتي معهم.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

6.أ سمعة الاساتذة والباحثين في مجال اختصاصي والجامعة بصورة عامة" هي من الاسباب الرئيسة في قرار التحاقي بجامعتي الحالية.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

6.ب قرار اختياري للجامعة والتحاقي بها لم يكن يستند الى سمعة الاساتذة والباحثين في مجال اختصاصي والجامعة بصورة عامة".

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

7.أ خدمات الدعم الاكاديمية (مثل: الاستشارة الاكاديمية، دعم التعليم، دعم تكنلوجيا المعلومات، .. الخ) وخدمات الدعم غير الاكاديمية (مثل: الوظيفة، برامج الاستشارية الاخرى،برامج صحة الطالب، السكن، .. الخ) اضافة الى خدمات الدعم الاخرى خارج تجارب الفصول الدراسية في جامعتي قد عززت من تجاربي التعليمية.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

Appendix E: The Kano survey quesionnaire (Arabic version)

The survey will be developed using USQ Custom Survey System

7.ب خدمات الدعم الاكاديمية (مثل: الاستشارة الاكاديمية، دعم التعليم، دعم تكنلوجيا المعلومات، .. الخ) وخدمات الدعم غير الاكاديمية (مثل: الوظيفة، برامج الاستشارية الاخرى،برامج صحة الطالب، السكن، .. الخ) اضافة الى خدمات الدعم الاخرى خارج تجارب الفصول الدراسية في جامعتي لم تعزز من تجاربي التعليمية.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

8.أ بامكاني الاندماج في داخل الجامعة لانني اشعر بالترحيب والقبول من كل اعضاء مجتمع الجامعة.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

8.ب ليس بامكاني الاندماج في داخل الجامعة لانني لا اشعر بالترحيب والقبول من كل اعضاء مجتمع الجامعة.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

9.أ اشعر اني مقبول ومفهوم ومرحب بي في المجتمع خارج جامعتي (في المكان التي تقع فيه)، بما يسمح لي للمحافظة على اسلوب حياة صحية وايجابية استنادا" للقيم والمعتقدات التي أومن بها.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

9.ب لا استطيع المحافظة على اسلوب حياة صحية وايجابية استنادا" للقيم والمعتقدات التي أومن بها بسبب كون المجتمع (الذي تقع فيه جامعتي) لا يشعرني انني مقبول ومفهوم ومرحب بي.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

Appendix E: The Kano survey quesionnaire (Arabic version)

The survey will be developed using USQ Custom Survey System

10.أ جامعتي تجعل من متطلبات الدخول الى استراليا سهلة الفهم وقابلة للتنفيذ، مما يجعل العملية اكثر سهولة للطالب.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

10.ب جامعتي تجعل من متطلبات تنظيم الدخول الى استراليا معقدة بما فيه الكفاية للطالب الدولي للالتحاق في هذه الجامعة.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

11.أ لدي القدرة على دفع جميع المصاريف التعليمية (مثل: الاجور والرسوم الدراسة، الكتب) اضافة الى الكلف المتعلقة بحضوري الى الجامعة (مثل: المسكن، النقل، والاكل والشرب، .. الخ).

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

11.ب ليس لدي القدرة على دفع جميع المصاريف التعليمية (مثل: الاجور والرسوم الدراسة، الكتب) او تلك الكلف المتعلقة بحضوري الى الجامعة (مثل: المسكن، النقل، والاكل والشرب، .. الخ).

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

12.أ بامكاني الايفاء بالتزاماتي المالية من خلال الحصول على المساعدات المالية المتاحة لدى جامعتي.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

12.ب بامكاني الايفاء بالتزاماتي المالية من دون الحصول على المساعدات المالية المتاحة لدى جامعتي.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

Appendix E: The Kano survey quesionnaire (Arabic version)

The survey will be developed using USQ Custom Survey System

14.أ انا وعائلتي قادرين على الايفاء باحتياجاتنا لما يقدمه المجتمع لنا.

- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

14.ب انا وعائلتي غير قادرين على الايفاء باحتياجاتنا لما يقدمه المجتمع لنا.

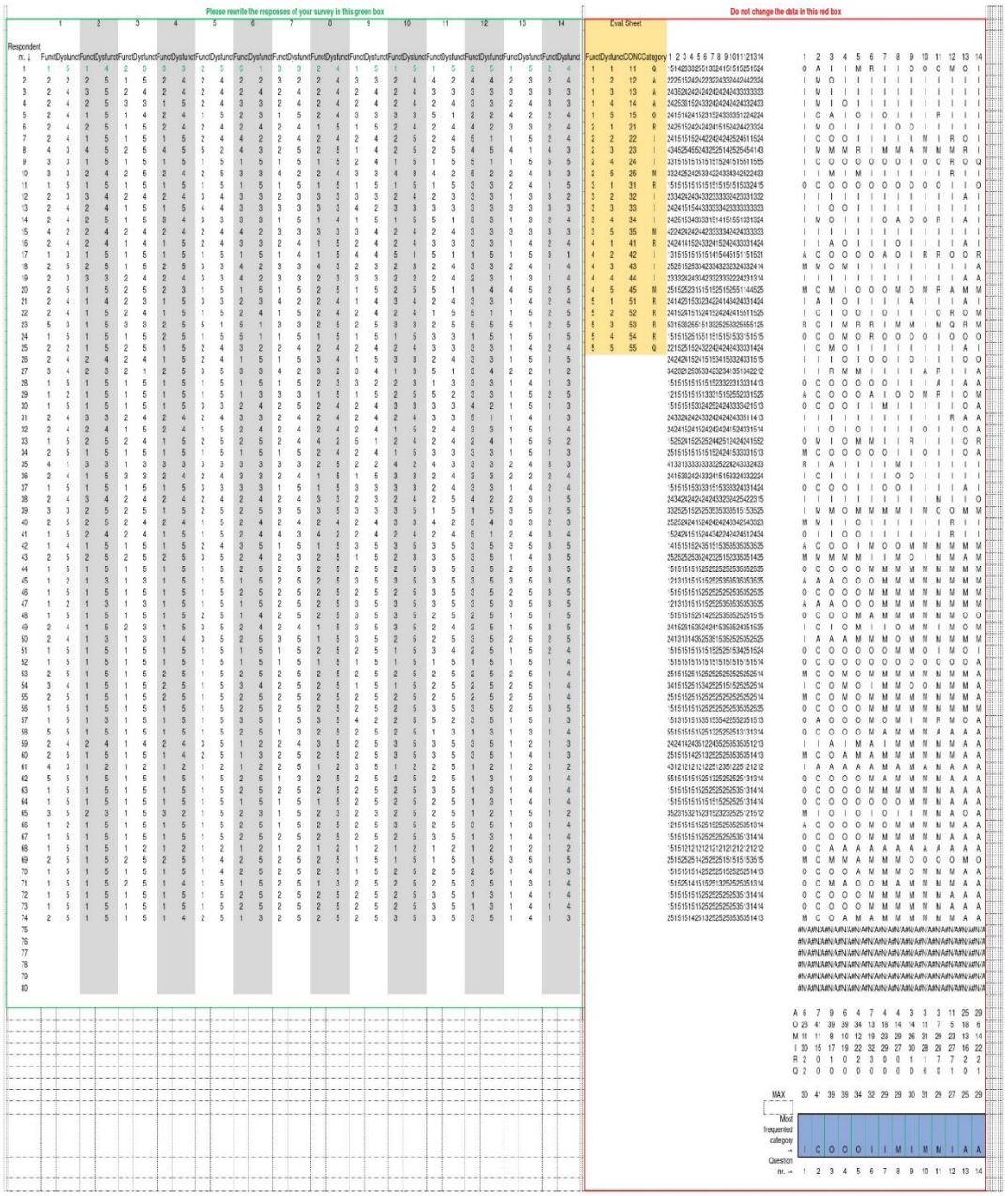
- ☐ لا اوافق بشدة (لا ارغب بهذه الطريقة)
- ☐ لا اوافق (لا استطيع التكيف معها / لا استسيغ هذه الطريقة)
- ☐ محايد (لا املك رأي او شعور بطريقة او باخرى بشأن ذلك)
- ☐ اوافق (ارغب بذلك / الطريقة مناسبة)
- ☐ اوافق بشدة (يجب ان تكون بهذه الطريقة)

2) اذا كان لديك اي تعليق يخص البحث ، بالامكان اضافتها في هذا المجال من الاستبانة :

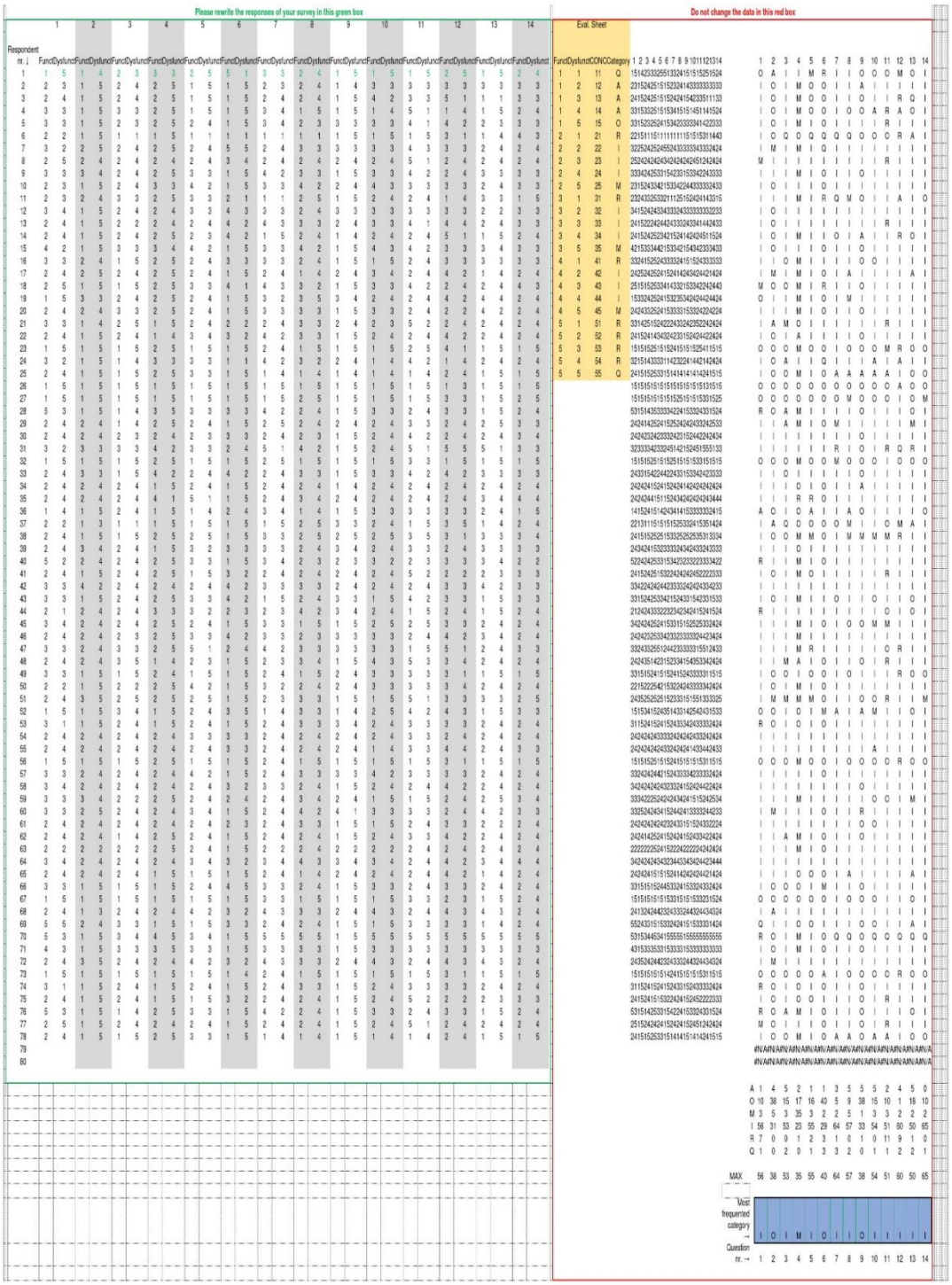
7

Appendix F: Classification Kano categories of SRs at three QLD universities

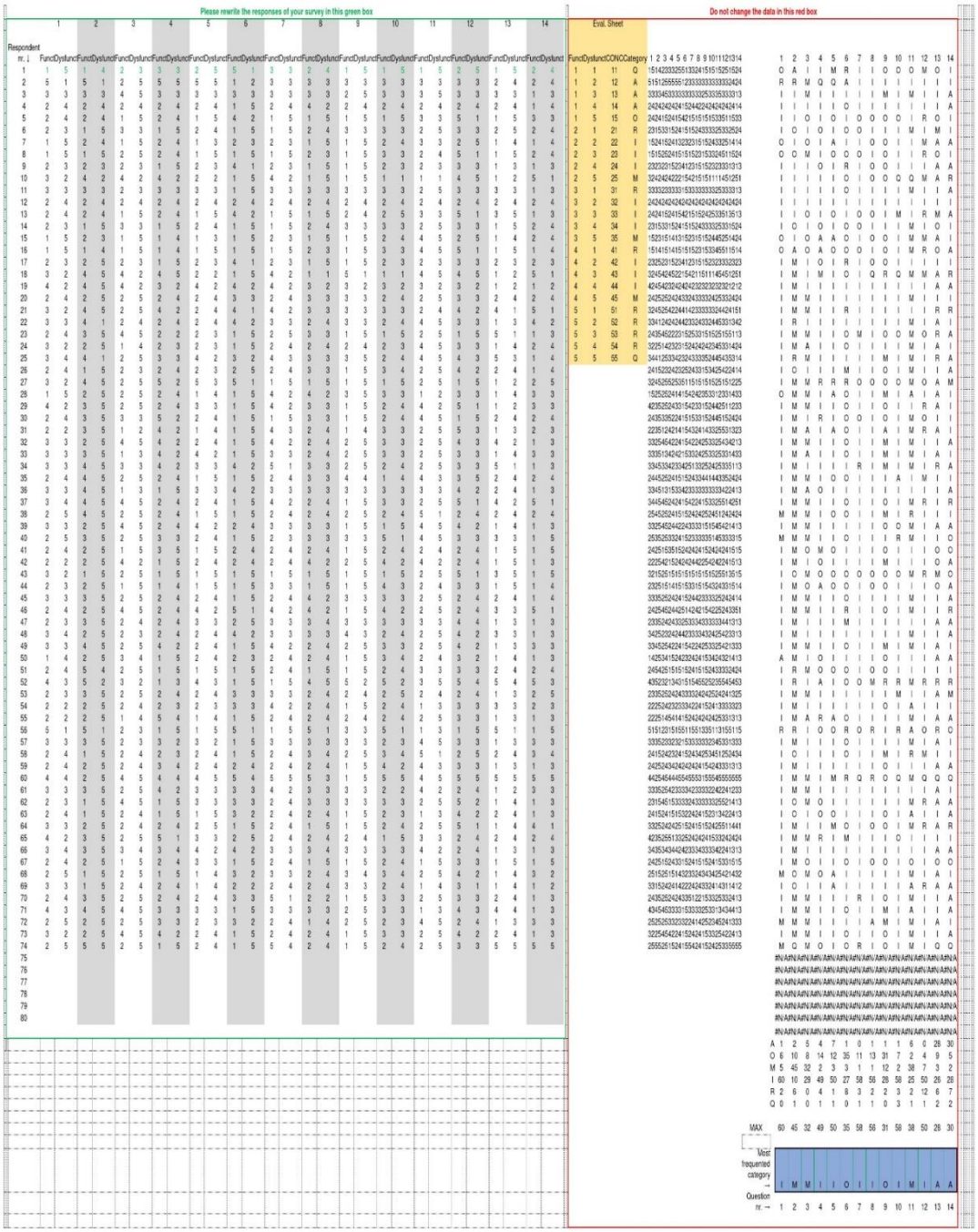
Kano excel sheet - UQ



Kano excel sheet - QUT



Kano excel sheet - USQ



Appendix G: SPSS reliability analysis of Kano questionnaire items

(1) The reliability test results of the Kano questionnaire items (Functional-positive items)

```
RELIABILITY /VARIABLES=1A_2A_3A_4A_5A_6A_7A_8A_9A_10A_11A_12A_13A_14A
/SCALE ('ALL VARIABLES') ALL/MODEL=ALPHA.
```

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	234	58.4
	Excluded[a]	167	41.6
	Total	401	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics for Positive Items

Cronbach's Alpha	Cronbach's Alpha Based on standardized Item	Number of Items
0.887	0.891	14

Item Statistics

Items	1-a	2-a	3-a	4-a	5-a	6-a	7-a	8-a	9-a	10-a	11-a	12-a	13-a	14-a
Mean	3.62	3.73	3.84	4.20	3.71	3.21	3.44	3.62	3.64	3.52	3.09	2.73	3.64	3.40
Std. Deviation	0.974	1.040	0.996	1.295	0.997	1.139	1.023	0.957	0.998	0.986	1.212	1.112	1.092	0.968
N	234	234	234	234	234	234	234	234	234	234	234	234	234	234

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
49.39	89.449	9.458	14

Inter-Item Correlation Matrix

	1-a	2-a	3-a	4-a	5-a	6-a	7-a	8-a	9-a	10-a	11-a	12-a	13-a	14-a
1-a	1.000	.518	.368	.518	.516	.387	.487	.424	.433	.366	.267	.184	.466	.361
2-a	.518	1.000	.427	.603	.430	.398	.557	.525	.455	.364	.229	.204	.606	.453
3-a	.368	.427	1.000	.334	.382	.328	.335	.413	.391	.316	.153	.171	.393	.369
4-a	.518	.603	.334	1.000	.393	.450	.520	.404	.387	.400	.265	.177	.514	.337
5-a	.516	.430	.382	.393	1.000	.430	.508	.460	.352	.427	.177	.054	.398	.275
6-a	.387	.398	.328	.450	.430	1.000	.456	.467	.353	.371	.227	.274	.477	.310
7-a	.487	.557	.335	.520	.508	.456	1.000	.447	.327	.450	.225	.208	.493	.378
8-a	.424	.525	.413	.404	.460	.467	.447	1.000	.612	.491	.265	.197	.529	.441
9-a	.433	.455	.391	.387	.352	.353	.327	.612	1.000	.446	.281	.171	.388	.543
10-a	.366	.364	.316	.400	.427	.371	.450	.491	.446	1.000	.289	.234	.362	.360
11-a	.267	.229	.153	.265	.177	.227	.225	.265	.281	.289	1.000	.068	.127	.256
12-a	.184	.204	.171	.177	.054	.274	.208	.197	.171	.234	.068	1.000	.192	.272
13-a	.466	.606	.393	.514	.398	.477	.493	.529	.388	.362	.127	.192	1.000	.413
14-a	.361	.453	.369	.337	.275	.310	.378	.441	.543	.360	.256	.272	.413	1.000

(2) The reliability test results of the Kano questionnaire items (Dysfunctional-negative items)

```
RELIABILITY /VARIABLES=1B_2B_3B_4B_5B_6B_7B_8B_9B_10B_11B_12B_13B_14B
/SCALE ('ALL VARIABLES') ALL/MODEL=ALPHA.
```

Scale: ALL VARIABLES

Case Processing Summary			
		N	%
Cases	Valid	155	38.7
	Excluded[a]	246	61.3
	Total	401	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics for Negative Items

Cronbach's Alpha	Cronbach's Alpha Based on standardized Item	Number of Items
0.819	0.828	14

Item Statistics														
Items	1-b	2-b	3-b	4-b	5-b	6-b	7-b	8-b	9-b	10-b	11-b	12-b	13-b	14-b
Mean	2.30	1.92	2.04	1.87	2.19	2.90	2.40	2.22	2.24	2.34	2.74	3.12	2.18	2.34
Std. Deviation	1.001	0,864	0.946	0.985	0.966	1.205	1.017	0.942	0.981	0.928	1.167	1.107	0.990	0.908
N	155	155	155	155	155	155	155	155	155	155	155	155	155	155

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
32.80	58.953	7.678	14

Inter-Item Correlation Matrix														
	1-b	2-b	3-b	4-b	5-b	6-b	7-b	8-b	9-b	10-b	11-b	12-b	13-b	14-b
1-b	1.000	.492	.290	.335	.318	.180	.240	.096	.179	.228	.149	-.156	.253	.259
2-b	.492	1.000	.393	.560	.321	.211	.338	.284	.321	.195	.102	-.051	.403	.348
3-b	.290	.393	1.000	.347	.248	.220	.254	.253	.319	.318	.139	-.135	.422	.234
4-b	.335	.560	.347	1.000	.340	.312	.421	.297	.321	.303	.208	.003	.390	.311
5-b	.318	.321	.248	.340	1.000	.367	.366	.305	.234	.314	.101	-.022	.304	.223
6-b	.180	.211	.220	.312	.367	1.000	.413	.334	.091	.302	.324	-.064	.249	.173
7-b	.240	.338	.254	.421	.366	.413	1.000	.369	.171	.346	.192	.060	.424	.350
8-b	.096	.284	.253	.297	.305	.334	.369	1.000	.576	.413	.324	.111	.445	.383
9-b	.179	.321	.319	.321	.234	.091	.171	.576	1.000	.461	.230	.051	.330	.477
10-b	.228	.195	.318	.303	.314	.302	.346	.413	.461	1.000	.302	-.009	.329	.380
11-b	.149	.102	.139	.208	.101	.324	.192	.324	.230	.302	1.000	-.176	.136	.433
12-b	-.156	-.051	-.135	.003	-.022	-.064	.060	.111	.051	-.009	-.176	1.000	-.020	-.048
13-b	.253	.403	.422	.390	.304	.249	.424	.445	.330	.329	.136	-.020	1.000	.364
14-b	.259	.348	.234	.311	.223	.173	.350	.383	.477	.380	.433	-.048	.364	1.000

Appendix H: Staff member and experts' interview questions at universities

Staff member and experts' interview questions at Queensland universities

University of Southern Queensland
School of Linguistics, Adult & Specialist Education
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Toowoomba, 4350 QLD
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Using the integrated Kano-QFD approach to improve the social and academic experiences of Arabic International Students at three Queensland Universities

(USQ Human Ethics Approval Number: H16REA166)

Section A

Basic Information:

1. Name:
2. Gender:
3. Workplace:
4. Position:
5. Department:
6. Length of time in job:
7. The interview date:
8. The interview date:
9. The interview's location:
10. The interview's length:

Introduction:

In this pre-interview stage, I will aim to:

- Introduce myself as an interviewer and present my name and my role.
- Explain why I chose each participant to participate in this study.
- Explain the goals of this study (information sheet).
- Assure confidentially.
- Assure participants that I will not judge them through their answers.

Staff member and experts' interview questions at Queensland universities

- Inform the participants that the interviews will be recorded.
- Discuss the consent form and have the participants sign it.
- Thank participants.
- Then, we turn on the tape recorder and test it together.

Section B

Interview questions:

1) What is the extent of your interactions with international students here at university and/or outside university (e.g., community engagement activities, recruiting sessions, etc.)?

2) What are the minimum requirements of students for admissions to this university?

3) What is your understanding of issues and requirements that international students need to address in order to be a student at your university?

4) Are there any differences between the requirements that international students must meet and those mandated to domestic students in your unit?

5) Do you monitor how international students do and compare their performance and compliance with requirements with domestic students within your unit? Are you aware if this is done at the institutional level?

6) How do you measure and/or monitor compliance with requirements in your unit? Do you measure student satisfaction as a means of demonstrating the quality of the program and services provided?

7) What are the best ways for international students to meet their requirements within your unit?

Closing the interview

8) Is there anything that else you can add that you think would be beneficial, that I have not already asked you?

Thank you for participating in this interview. I will contact you again when I have transcribed the interviews and ask if you would like to check over my transcription.

Note: Below the list of people that I will make interview them in order to create the technical or Institutional requirements (IRs) of the QFD matrix.

No.	Name	Position	Date
1.		Find the general policies and procedures at university	
2.		International Student's office	
3.		DVC Students and Community	
4.		DVC Academic	
5.		Student Services	
6.		Research Office	
7.		Enrolled management people	

Appendix I: The Four-Phase model of QFD approach