UNIVERSITY OF SOUTHERN QUEENSLAND

TOWARDS INTERNATIONAL COMPETENCE OF INDONESIAN ACCOUNTING UNDERGRADUATES: A SYSTEMS APPROACH TO IDENTIFY INTER-CORRELATES BETWEEN CONSTRUCTS OF THE EDUCATION PROCESS

A Dissertation submitted by

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SUMMARY

Increasing capital influx from foreign direct investment and international financing assistance requires Indonesian accountants to follow international standards of practices. Therefore, the Indonesian Institute of Accountants have been converging Indonesian Accounting Standards with IFRS. International standards of accounting practice also require Indonesian universities to harmonise competencies of their accounting graduates with international education competencies. This harmonisation equips accounting graduates with competencies to compete in a global market, to support multi-national investors, and to implement new accounting standards.

Building International Competency of Accounting Graduates (ICAG) needs a comprehensive approach. Input-Process-Output approach from System Theory and Input-Environment-Output model are employed as underpinning theories. The study identifies relationships among educational constructs (Inputs, Processes/Environment, and Outputs). Inputs are students' and lecturers' characteristics (Psychological, Academic, and Demographic), Comfort of Class Size, and Learning Facilities. Student Engagement, ICAG-Teaching Contents, and Student-Faculty Engagement are employed to measure Processes/Environment, while ICAG and Grade Point Average (GPA) are used for educational outputs. Moreover, the study measures ICAG based on American Institute of Certified Public Accountants (AICPA) core competencies.

The population of the study is final-year accounting students and accounting lecturers at state universities in Indonesia. The study also recruits alumni of accounting programs working in various sectors. Eight state universities were randomly selected based on accounting program accreditation levels and locations. Questionnaires were employed to collect quantitative data from students and lecturers, whilst focus group discussion collected qualitative data from accounting graduates alumni. Four hundred and eleven students and 188 lecturers completed surveys and 20 alumni participated in focus group discussion. Descriptive, Correlation, Regression, Structural Equation Modelling, Path, Non-parametric, and Qualitative analyses were employed to analyse data.

Students reported that Student Motivation, Previous Academic Achievements, Comfort of Class Size, and Learning Facilities affect Student Engagement. In turn, Student Engagement also influences ICAG and GPA. Lecturers reported that Learning Facilities affect Lecturer Job Satisfaction and Lecturer Job Satisfaction, in turn; influences ICAG-Teaching Contents and Student-Faculty Engagement. ICAG-Teaching Contents correlates with ICAG and Student Engagement. Alumni perceived AICPA core competencies are in line with competencies required by the Indonesian business context. They contended that most competencies are developed in the work places. Input-Process-Output and Input-Environment-Output frameworks are applicable for developing ICAG and GPA in Higher Education. Supporting theories (Expectancy Theory, Herzberg's Motivation Theory, and Involvement Theory) are supported by the study. To improve ICAG and GPA, a university should pay more attention to Lecturer Job Satisfaction, Student Motivation, Student Previous Achievements, Learning Facilities, Comfort of Class Size, ICAG-Teaching Contents, and Student Engagement. Alumni suggested that Lecturers should bring more real-world accounting to classrooms.

Collecting competency data using questionnaire, the exclusion of Working-Integrated Learning from Student Engagement questionnaire, the exclusion of private universities and other types of higher education institutions, and the use of non-parametric analysis to correlate lecturers' and students' data are some main limitations of the study.

Government should use the Student Engagement Survey for improvement and benchmarking purposes. Further research is required to identify the impact of Working-Integrated Learning on ICAG, to design specific Student Engagement for accounting students, to measure students' competencies using other assessment techniques, to correlate lecturers' characteristics with ICAG and GPA using Hierarchal Linear Modelling analysis, and to find the impact of Comfort of Class Size, Entrance Tests, and Lecturers' Academic Characteristics on ICAG and GPA. Future studies should also include more alumni from various industries and universities.

CERTIFICATION OF DISSERTATION

I certify that the ideas, results, analyses, and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

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Yanto, H, Mula, J.M & Kavanagh, M.H (2011) *Does student engagement matter in building students' accounting competencies: Evidence from Indonesian universities*, Submitted to the Accounting Education: An International Journal.

Yanto, H, Mula, J.M, Kavanagh, M.H. (2011) *Developing student's accounting competencies using Astin's I-E-O model: An identification of key educational inputs based on Indonesian student perspectives* (Refereed Paper), the RMIT Accounting Educators' Conference, 2011.

LIST OF ACRONYMS

ACER	Australian Council for Educational Research
AGFI	Adjusted Goodness Fit Index
AICPA	American Institute of Certified Public Accountants
AUSSE	The Australasian Survey of Student Engagement
BAN-PT	The National Accreditation Body for Higher Education
BIHECC	Business, Industry and Higher Education Collaboration Council
CMIN	Chi-Square
FGD	Focus Group Discussion
GFI	Goodness of Fit
GPA	Grade Point Average
IAI	Ikatan Akuntan Indonesia (the Indonesian Institute of Accountants)
IAS	International Accounting Standards
ICAG	International Competencies of Accounting Graduate
I-E-O	Input-Environment-Outcome
IFRS	International Financial Reporting Standards
I-P-O	Input-Process-Output
MONE	Ministry of National Education (Kementrian pendidikan Nasional)
NEM	Nilai Evaluasi Murni (Grades of Nationally-tested Subject)
NFI	Normed Fit Index
NSSE	National Survey of Student Engagement
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modeling

DEFINITION OF TERMS

Academic Challenge	One of Student Engagement dimensions measuring the intensity of student to engage in academic challenge activities.
AGFI	Adjusted Goodness Fit Index (AGFI) is used to measures model fit of proposed model using ratio degree of freedom for null model
Active Learning	One of Student Engagement dimensions that measure how much students actively engaged in active learning activities
Broad-business Perspective Competency	One International Competency of Accounting Graduate (ICAG) dimensions. This dimension relates to the context in which accounting professionals perform their service.
Broad-business Perspective Competency-Teaching Contents	This refers to how much lecturers include Broad-business Perspective Competency in their teaching-learning process.
Comfort of Class Size	Measures how much students feel comfortable with their class size.
Comfort of Class Size-Composite	Refers to composite data derived from three questions of Comfort of Class Size that have minimum factor loadings.
CFA	Confirmatory Factor Analysis. A statistical procedure to confirm observed variables in a latent construct (dimension).
CMIN	Chi-square is used to assess actual and predicted matrices.
Enriching Educational Experience	One of Student Engagement dimensions that measure how much students engage in enrichment activities.
Expectancy Theory	Expectancy Theory is a theory that measures motivation by including three perceptions of an individual (Expectancy, Instrumentality, Valence)
Functional Competency	Relates to the technical competencies, which are most closely aligned with the value contributed by accounting professionals.
Functional Competency-Teaching Content	Refers to how much lecturers include functional competency in their teaching-learning process.
FGD	Focus Group Discussion is a technique of collecting data by holding discussions with participants.
GFI	Goodness of Fit Index(Measuring the fit of the model to the whole covariance matrix)
HLM	Hierarchical Linear Modelling is a statistical

	technique to identify association between variables with nesting data. For example, the association between lecturers' education attainment with students' achievements.
HMT	Herzberg's Motivation Theory is commonly used to measure employee motivation and job satisfaction. In this study HMT is used to measure Lecturer Job Satisfaction (LJS)
ICAG	International Competency of Accounting Graduates. ICAG consists of three dimensions i.e. Functional Competency, Personal Competency, and Broad-business Perspective Competency. ICAG are derived from AICPA core competencies.
ICAGC	International Competency of Accounting Graduate Composite. This refers to composite data derived from all questions of ICAG that have minimum validity (factor loading).
ICAG-Teaching Content	This construct measure how much lecturers include ICAG in their teaching-learning process.
Lecturer Academic Characteristics	Refers to academic traits that lecturers possess such as Education Attainment, Lecturer Appointment, research Productivity, Articles Published, Book Published, Work Experience, and so forth.
Learning Facilities	This construct measure how much a university provides learning facilities (library, laboratory, and computer) for teaching and learning purposes.
Learning Facilities-Composite	This refers to composite data that derived from questions of Learning Facilities that have reasonable validity (factor loading).
Lecturer Job Satisfaction	This construct measure how much lecturers feel satisfied with their job. This construct consists of six dimensions i.e. resource for scholarship, institutional support and reward, requirement for promotion and tenure, availability of a graduate program, collegiality, and teaching environment
Lecturer Job Satisfaction Composite	Refers to composite data that derived from all questions of Lecturer Job Satisfaction that have minimum factor loading.
NFI	Index Normed-Fit Index (The comparison index between proposed and null model)
Personal Competency	Personal Competency relates to the attitudes and behaviour of individuals preparing to enter the accounting profession.
Personal Competency-Teaching Contents	Refers to how much lecturers include personal competency in their teaching-learning process.
RMSEA	Root Mean Square Error of Approximation

	(Tendency Chi-square statistic rejects the model with large sample size)
Student Achievements	Students' learning outcomes such as GPA.
Student Academic Characteristics	Academic traits that a student posses such as achievement from previous schooling, type of previous school, previous major and so forth.
Student Demographic Characteristics	Demographic trait that students posses such as Age and Gender
Student Engagement	The physical and psychological effort of student to learn in higher education. An organising construct for institutional assessment, accountability, and improvement effort (Kuh 2009)
Student-Faculty Engagement	A construct for measuring how much lecturers encourage, provide facilitations to students to engage in academic and non academic activities in a university. The questions of Student-Faculty Engagement are the mirror of Student Engagement questions.
Supportive Learning Environment	A dimension of Student Engagement that measure how much students engage in learning environment provided by a university.
SPA/PA	Student Previous Achievements (Achievements earned by students from previous schoolings).
Student-Staff Interaction	One of Student Engagement dimensions for measuring the intensity of interaction between students and lecturers.
System Theory	A network of interdependent components that work together to try to accomplish the aim of the system (Deming 1995)
Work-Integrated Learning	One of Student Engagement dimensions that measures how much a student engage in work-integrated learning activities.

CHAPTER 1: INTRODUCTION

1.1 Background	1.5 Expected Contribution of the Study
1.2 Research Objective	1.6 Scope and Delimitation
1.3 Research Questions	1.7 Structure of Dissertation
1.4 Brief Overview of Methodology	

1.1 Background

The biggest change in business environments is economic globalisation impacting almost all countries around the globe, including Indonesia. Economic globalisation enables movement of labour, technologies, capital, goods, and services across a country's boundaries (Krueger 2002). Globalisation also makes distances and boundaries meaningless (Mohamed & Lashine 2003). In fact, movements of capital run much faster than that of labour, technologies, and other resources. International investment is becoming a more interesting business, since it could allow superior investment performance (Davis 2005). Moreover, governments try to provide alluring facilities to investors to invest their money in their country (BKPM 2006), since foreign investment also provides advantages to a local economy by boosting economy growth (Choong et al. 2010). For instance, foreign direct investment in Indonesia was US$ 706 million in 1990, but jumped to US$ 10.8 billion by 2009 (BKPM 2009). This figure tends to increase every year. Similarly, in terms of financial assistance, Indonesia is one among a number of ASEAN countries receiving financial assistance from major financing institutions, which requires Indonesian accountants to follow international standards of practice (Yapa 2004).

To harmonise with international standards of practice, the Indonesian Institute of Accountants (IAI) have been converging Indonesian Accounting

Standards (SAK) with International Financial Reporting Standards (IFRS) that is expected to be fully implemented by 2012 (Halim 2010). This also means that all business entities operating in Indonesia have to follow international accounting standards. As contended by Needles (2010), the adoption of IFRS will have a great impact on business and accounting education. Despite some challenges, the adoption of IFRS provides businesses with some advantages i.e. better access to global capital markets, easier global comparability, easy cross border listing, better quality of financial reporting and elimination of multiple reporting (Jain 2011). To ensure accounting graduates have sufficient IFRS understanding and competencies, universities should adjust their accounting curriculum, teaching-learning process, and so forth to the IFRS context (Mintz 2009). Therefore, the implementation of convergence to IFRS requires progressive participation from many parties such as governments, regulators, public accountants, researchers, and other stakeholders (Nishikawa 2011). Owing to the implementation of IFRS, it is anticipated that accounting practices in Indonesia will change significantly.

The above background shows evidence that business environments as well as financial reporting standards have changed. On the other hand, Indonesia is facing impediments to implement financial reporting standards, due to some of the structural issues in society such as inadequate regulatory and enforcement mechanisms, and cronyism (Perera & Baydoun 2007). Likewise, the country has been experiencing difficulty in improving quality of accounting education for a long time. As indicated by Griffin (1996), there is pressure to accelerate accounting education and training in Indonesia. Recent findings (Mula 2007) contended that Indonesia has encountered difficulty in harmonising accounting practices with the west. Moreover, he also concluded that international harmonisation of accounting practices is critical to economic and social development as it is needed to attract foreign direct investment. Therefore, accounting education in Indonesia has to adapt to changes in business environments as well as international accounting standards.

Developing human resources through accounting education is one strategy to mitigate such issues. More specifically, in order to build human resources with an understanding of IFRS, a review needs to be undertaken of the education provided to students and educators at universities (Needles 2010). Therefore, it is posited that higher education may contribute significantly to harmonising accounting practices in Indonesia with international standards.

In view of the above, harmonising Indonesian accounting education with international standards seems to be inevitable. The main purpose of this harmonisation is to equip Indonesian graduates[1] with the required competencies that they are able to compete in a global labour market (Mohamed & Lashine 2003), to attract and support multi-national investors (Mula 2007), and to implement new accounting standards. Therefore, universities should be able to build a bridge to connect their graduates' skills and competencies with global market requirements and expectations (Mohamed & Lashine 2003). Nevertheless, strengthening internationalisation is one of the significant challenges faced Indonesian state universities (Irianto 2007). As previously mentioned, Indonesia has been experiencing difficulties in harmonising accounting practices with the west. Improvements in competencies of accounting graduates harmonised to international

[1] Throughout this Dissertation, a term of accounting graduates refers to final year undergraduate accounting students in Indonesian universities.

standards through accounting education at a university level are critical (Mula 2007; Needles 2010).

The role of accounting education in harmonising accounting practices is substantial. As contended by Nearon (2002), the education system may be a good place to start trying to understanding the failure of accounting practices. Moreover, academics in universities are among the main players to bring about innovations in accounting instruction, despite some barriers to reform the teaching of accounting (Howieson 2003).

Unfortunately, the number of research studies into graduate competencies, particularly in Indonesian universities is still limited. Most existing research has been limited in scope and not employed a more comprehensive perspective. Research into International Competencies of Accounting Graduates (ICAG) is also new to Indonesia. Moreover, most accounting competency research conducted by universities in Indonesia was mainly on auditor competencies (Christiawan 2002; Esya 2008) and skills/competencies required by Master's graduates (Irianto 2010).

1.2 Research Objective

Building accounting competencies in a university could be viewed from a broader theoretical perspective, since there are many interdependent factors affecting students' accounting competencies. The factors include students, teachers, learning facilities, teaching-learning process, curricula, funding, and so forth (Mizikaci 2006; Nearon 2002). More simply, these factors could fall into three classifications i.e. inputs, processes, and outputs (Mizikaci 2006). Likewise, Nearon (2002) also proposed the input-process-output (I-P-O) approach to improving accounting education.

In view of the above, the objective of this study is to build a holistic model comprising of input, process, and output constructs for developing students' accounting competencies in the context of Indonesian universities. In addition, accounting competencies in this study are International Competency of Accounting Graduates (ICAG)[2] using AICPA core competencies (Mula 2007; Wolcot, S. K. 2006). The study measures competencies using self-assessment technique (questionnaire). In this case, competencies are students' self-perception of the competencies they gained during their university education. Besides employing ICAG as outputs, the study also uses Student Achievements in terms of Grade Point Average (GPA) as a proxy of outputs from a university.

The study identifies some educational inputs, employs proxies of process[3] or environment[4] at a university, and uses ICAG and Student Achievements as educational outputs. By examining relationships among three educational constructs namely inputs[5], processes, and outputs, the study will build models for developing ICAG and GPA in Indonesian universities.

1.3 Research Questions

Based on System Theory, inputs affect processes and processes, in turn, affect outputs (Mizikaci 2006). In comparison, the Input-Environment-Outcome (I-E-O)

[2] These competencies are based on AICPA core competencies consisting of functional, personal, and broad-business perspective competencies.
[3] System Theory recommended by Bertalanffy (1968) consists of three elements i.e. Input, Process, and Output.
[4] I-E-O model developed by Astin (1993) comprises three constructs Input, Environment, and Output.
[5] Educational inputs are input transformed resources and input transforming resources.

model (Astin 1993a) contends that inputs affect environments and environments, in turn, affect outputs. Moreover, the I-E-O model contends that the impact of environment on outputs cannot be understood without considering the effects of inputs on outputs. The study will build a conceptual model consisting of inputs, processes/environments, and outputs. Moreover, the study also employs System Theory and I-E-O model as underpinning theories. Based on these theories, the study identifies the following relationships: (1) relationships between inputs and processes/environment; (2) relationships between processes/environments and outputs; and (3) relationships between inputs and outputs. Based on the above, the study formulates a main research question:

Are there any relationships among educational inputs, processes/environments, and educational outputs in terms of International Competency of Accounting Graduate (ICAG) and Student Achievements?

In addition, the study also formulates research questions (RQ) and research sub-questions (RSQ). Chapter 3 (Research Design) discusses more detailed formulations of RSQ. Based on the main research question, study formulates the following research questions.

RQ1: What educational inputs have significant relationships with educational processes?

RQ2: What are the educational inputs that have association with educational outputs in terms of ICAG and Student Achievements?

RQ3: Is there any significant association between educational processes and educational outputs in terms of ICAG and Student Achievements?

RQ4: What is the model for improving ICAG using the input-process-output approach in the Indonesian University context?

RQ5: What is the model for improving Student Achievements (GPA) using input-process-output approach in the Indonesian University context?

In addition, since there are many types of educational inputs, the study will correlate identified-inputs with processes and outputs. Consequently, some research sub-questions will be developed. More detailed research sub-questions are discussed in Chapter 3, Research Design.

As previously mentioned, the study employs International Competency of Accounting Graduates (ICAG) based on the American Institute of Certified Public Accountants (AICPA) core competencies. Some academics and education institutions have already established accounting competency frameworks that are applicable in certain countries. AICPA core competency framework developed in the American business setting may or may not be applicable in the Indonesian business environment. Therefore the study undertakes triangulation with alumni who have substantial work experience to assess the applicability of AICPA core competency framework in the Indonesian business settings. In line with this, the study formulates the following research question:

RQ6: Based on alumni perceptions, to what extent are AICPA core competencies applicable in the Indonesian business context?

1.4 Brief Overview of Methodology

The study uses a quantitative method to measure, collect, and analyse variables. In addition, the study also uses a qualitative approach to enrich the quantitative analyses as well as for triangulating data from ICAG. Focus Group Discussions (FGD) were undertaken to collect qualitative data from alumni of accounting programs who have significant experience working in their sectors.

The population of this study is all final-year accounting students as well as accounting lecturers at 37 state universities in Indonesia. The study uses two-stage sampling. The first stage involves choosing universities randomly by considering accreditation levels[6] of programs and location i.e. Java[7] and non-Java universities. The second stage involves choosing students randomly from sampled universities—included in the first stage--to become participants. In addition, the study also collects data from lecturers at sampled universities. Since the study employs input-process-output, the recruitment of final-year students to be respondents is most appropriate. Final-year students still clearly remember details of inputs and processes, because they are still in the process stage. They do not have to recall long-term data in completing the survey. At the same time a final-year student would graduate from an accounting program in less than a year.

The study used two types of questionnaires i.e. Questionnaire for Students (QS) and Questionnaire for Lecturers (QL). QS consists of questions relating to inputs, transforming processes, and outputs based on student perceptions. QL, on the other hand, comprises questions about inputs and transforming processes based on lecturer perceptions. Moreover, the study also employed Focus Group Discussions (FGD) by inviting alumni of accounting programs as participants. FGD guide was used to ensure the process of discussion generated usable qualitative data.

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[6] There are three levels of program accreditation granted by National Accreditation Body for Higher Education (BAN-PT) in Indonesia, A: Very Good; B: Good, and C: Fair
[7] Java is one of main islands in Indonesia; its population makes up 60% of overall Indonesian population.

Newly-developed items in questionnaires are tested to non-sample students and analysed using item analysis (corrected item-total correlation) and Cronbach alpha for validity and reliability respectively. Factor loading analysis was also undertaken to select valid questions for Structural Equation Modelling (SEM) analysis purpose. Descriptive Statistics, Correlation, Regression, SEM type Confirmatory Factor Analysis (CFA) with single indicator, Path analysis, non-parametric analysis, and qualitative analysis (constant comparison) were employed to analyse data obtained from respondents through questionnaires and focus group discussions.

1.5 Expected Contributions of the Study

System Theory has been broadly adopted by other disciplines such as Education, Information System, Physics, and Mathematics (Bertalanffy 1968), but research relating to the adoption of System Theory to accounting education appears to be limited. The research is expected to provide evidence about the applicability of System Theory to accounting education. In relation to building accounting competencies or improving student achievements as educational outputs, current literature on accounting education mainly focuses on relationships of certain inputs and outputs or correlating processes and outputs, without involving all three constructs of the educational system (inputs, processes, and outputs) in holistic model.

Since System Theory was not exclusively designed for the education sector, the study also utilises Input-Environment-Outcome (I-E-O) model (Astin 1993a). The research attempts to combine the above theories and applies them to accounting education. Therefore, the study expects to provide evidence about the possibility of using the above theories in one model. In other words, the study provides information about the compatibility of System Theory and I-E-O models.

Besides employing System Theory and I-E-O as underpinning theories, the study also uses Expectancy Theory, Herzberg's Motivation Theory (HMT) and Involvement Theory as supporting theories. Expectancy Theory is intended to measure Student Motivation, HMT is to gauge lecturer motivation and job satisfaction (Lecturer Job Satisfaction), and Involvement Theory is used as the theoretical foundation for measuring Student Engagement and Student-Faculty Engagement. Henceforth, the study could contribute some findings about the efficacy of these supporting theories in influencing competencies of accounting graduates.

In addition, the study expects to build a model for developing competencies of accounting graduates within a broader perspective by employing System Theory and the I-E-O model. These theories have similar constructs (inputs, processes/environments, and outputs); therefore, the study attempts to identify relationships among educational constructs resulting in International Competency of Accounting Graduate (ICAG) and Student Achievements.

More practically, the research may provide detailed information about the extent of Indonesian students' competencies based on international standards of accounting competencies. The information could also be used as a benchmark by accounting programs in Indonesian universities. The study builds a conceptual model to test the relationships among variables in the educational system. The tested model may contribute meaningful evidence about key variables that Indonesian universities should consider in their attempt to meet globalisation pressures.

The accounting profession also may benefit from the study. The study will provide detailed information about the extent of ICAG among accounting graduates of Indonesian universities, from which institutions can formulate necessary strategies to provide education programs for graduates entering the accounting profession. In other words, institutions training graduates for the accounting profession are provided with important information about variables they should consider in order providing better professional education programs for accounting graduates.

More importantly, the study provides information for the Indonesian Ministry of National Education particularly the Directorate of Higher Education (DHE). *First*, the extent of ICAG could be useful information for the DHE for decision making relating to accounting education in the higher education sector. *Second,* the information about Student Engagement and Student-Faculty Engagement is valuable in order to gauge the extent engagement in sampled universities. This Information could be useful for decision making, since until now Indonesia has not yet implemented a national survey on Student Engagement in Higher Education Institutions for development and benchmarking purposes. *Lastly*, the study may also benefit DHE in terms of Lecturer Job Satisfaction and Lecturer Academic Characteristics. DHE might need this information in designing policies to enhance lecturer performance in Indonesian universities.

1.6 Scope and Delimitation

The study investigates state universities in Indonesia that have an accounting program. Private and religious universities are not covered by this study. The study uses indicators of ICAG released by the American Institute of Certified Public

Accountants (AICPA) (Foster, Bolt-Lee & Colson 2002; Mula 2007; Wolcot, S. K. 2006). Final-year students as respondents were asked to self-assess how much they learned the international competencies of accounting at their universities. Likewise, lecturers were also asked to self-assess how much they include accounting competencies, based on AICPA core competencies, in their teaching and learning processes (ICAG-Teaching Content[8]). This form of data collection could be affected by negative or apathetic attitudes (Kavanagh & Drennan 2008), but self-assessment of competencies is still considered effective (Hansson 2001).

Even though the study employs System Theory and I-E-O model as underpinning theories, the study includes important inputs to educational systems. In relation to funding, some research found that there were three kinds of correlation between school funding and student achievement i.e. positive correlation (Barrow & Rouse 2005; Ellinger & Wright 1995), weak correlation (Tow 2006), inconsistent correlation (Cook 2001; Klick 2000; Neymotin 2008). Because of these inconsistent findings between schools' funding and student achievements, the study sets aside the funding variable.

Since accounting curricula are developed based on ministerial decree (Depdiknas 2000), there is a tendency that curricula implemented by universities has some similarities. Moreover, Hamzah (2009) contended that accounting curricula in some universities were adopted and replicated from reputable universities. However, the study collected data on ICAG-Teaching Content from lecturers to assess the inclusion of AICPA core competencies in the teaching-learning processes.

[8] International Competency of Accounting Graduate-Teaching Content refers to the extent of AICPA core competencies included by lecturers in their teaching and learning processes.

1.7 Structure of Dissertation

The dissertation consists of six basic chapters that have been broadly accepted i.e. Introduction, Literature Review, Research Design, Research Methodology, Analysis and Result, and Discussions and Conclusions. Chapter 1 outlines the background of the study, research objectives and research questions, contributions of expected study, and scope and delimitation.

Chapter 2 deals with the literature review relating to the theoretical discussions that provide the research background and to inform the research problems. The literature review starts with underpinning theories (System Theory and I-E-O model) followed by discussion of supporting theories (Expectancy Theory and Herzberg's Motivation Theory) and previous findings to support variables included in the model. This Chapter also discusses theories for gauging educational processes (Involvement Theory and Student Engagement). The discussion ends by identifying gaps in the literature.

The Research Design is presented in Chapter 3. This Chapter begins with the main research questions presented in Chapter 1 followed by more detailed research questions. In addition, this Chapter also presents two conceptual models i.e. a model based on student and lecturer perceptions. Lastly, this chapter ends with development of detailed hypotheses.

Research Methodology employed by the study is discussed in Chapter 4. This Chapter starts with population size determination and the method of sampling (two-stage sampling). Questionnaire administration consisting of some issues such as instrument measurement, validity, reliability, and data collection method are discussed in this Chapter. Besides discussing statistical test requirements and analysis techniques, this Chapter also discusses data triangulation and qualitative analysis.

Since the study collects data from students, lecturers, and alumni, Chapter 5 presents analyses of data collected from three types of participants. Descriptive, Parametric, Non-parametric Statistics are employed to reach results. More specifically, Correlations, Regressions, Structural Equation Modelling (SEM) with single indicator, and Path Analysis are employed to analyse quantitative data. Likewise, the results of the qualitative analysis are also presented in this Chapter. Lastly, this Chapter ends with the summary of hypothesis tests.

Discussion and Conclusion are presented in Chapter 6. This Chapter presents discussion on data analysis and its interpretation to answer research questions. Results are discussed by comparing and corresponding the empirical findings (presented in Chapter 4) with theories and previous findings (presented in Chapter 2). This Chapter also presents conclusions drawn based on the six main research questions presented in Chapter 1 (Introduction). This Chapter also discusses theoretical and practical implications, limitations, and directions for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Competency is becoming more popular in 21st century replacing previous education paradigms that emphasized content (Azemikhah 2006). Since then, competency-based education and training-based education are broadly implemented at all education levels including higher education. In line with this paradigm change, accounting education in universities also moved to accounting-based education to ensure that graduates will meet stakeholders' requirements. Moreover, professional organisations such as AICPA have established minimum competencies university graduates require to enter the accounting profession (Bolt-Lee & Foster 2003; Mula 2007; Wolcot, Susan K. 2006).

As business becomes more complicated and competitive, employers also become more demanding for graduates with competencies or skills. Kavanagh and Drennan (2008) find that employers are expecting graduates entering the profession to have as the top ten skills (1) Analytical skills/problems solving, (2) Business awareness/'real life' experience, (3) Basic accounting skills, (4) Ethics/fraud awareness/ professionalism, (5) Communication: oral/face to face, (6) Communication: written, (7) Interdisciplinary: able to work across/knowledge of other disciplines, (8) Teamwork/cooperation/participation, (9) Interpersonal/

facilitation skills, and (10) Continuous learning/keeping up to date/refresh basic skills. Likewise, Irianto (2010) identifies 20 skills/competencies required by employers in the Indonesian company context. In addition, he contends the five most important competencies i.e. Leadership skills, Interpersonal skills, Problem-solving skills, Creativity and ability to think outside the box, and Decision making.

Building accounting competencies in higher education to meet the expectation of the profession, organisations, and employers needs a long timeframe, since there are many constructs that should be taken into account. Based on System Theory originally developed by Bertalanffy (1968) and operationalised by Deming (1995), an educational system has three main elements i.e. input, process, and output. System Theory contends that Input affects process and process, in turn, affects output. Similarly, Input-Environment-Output (I-E-O) developed by (Astin 1993a), based on higher education research, also has three elements i.e. input, environment, and output. The I-E-O model has the same model structure as System Theory, but I-E-O draws a direct relationship between input and output. In addition, the theory uses the environment as a term rather than process as employed by System Theory. With respect to the components, both System Theory and the I-E-O model have almost the same framework. Since the two theories have some similarities, the study employs both theories as underpinning theories. Before discussing these theories, it is important to understand the context in which they will be applied i.e. accounting education in Indonesia.

2.2 Accounting Education Context in Indonesia

Education development in Indonesia has a long history from the era of Dutch colonisation moving through what are called Old Order, New Order, and Reformation eras. Not surprisingly, each era had its own problems that were faced by students, parents, government, and other education stakeholders. Under Dutch colonial rule, the biggest problem was access to education for indigenous students. Native people had no equal access to education, since education was designed for aristocratic people (Dutch). Soenarta (2005) explained that during this era there were only three higher education institutions established and all of them were located in Java. In addition, students of these noble institutions were dominated by Dutch nationals.

During the Old Order era, access to the education became a little better. There were five higher education institutions located in Java. Moreover, to increase access to education, the government built a university in every province without adequate preparation. This resulted in the quality of graduates from these new universities being relatively low compared to previously-established universities. In general, the quality of higher education was growing; political practice, on the other hand, was also blooming rapidly inside universities. Sudaryono (2008) contended that political conflicts among students and academics became very common in university life. Thus, the attention of students and academics was not focussed on the process of education.

Under the Suharto administration (New Order), there was a considerable leap improvement in education as a result due to increased access to education for all citizens. In terms of quantity, there was significant improvement. Unfortunately, a quantitative increase in places available was not matched by enhanced quality. During this period the number of public and private universities jumped very sharply, but quality was still the main issue. Another main problem was having a standardised tests for elementary, junior high, and high schools graduates. As mentioned by Nugroho (2008), the implementation of these high-stake tests was that students, teachers, schools, and other stakeholders paid too much attention to the results of education instead of process.

Government policies on education in the Reformation era changed significantly, since the responsibility for education is now with central and district government authorities. Decentralisation, budgets, and standardisation are among the important education issues during this era. In relation to Higher Education, management of state universities shifted from pure-state-university management into more autonomous state-university management with opportunities and challenges (Irianto 2007). Government policies are focused on enhancing quality of education at all levels. For example, the government has already launched many programs for improving education quality such as providing scholarships and certification for teachers. On the other hand, high-stake-final examinations for elementary, junior secondary, and high schools are still implemented in spite of many criticism about their negative impacts.

As a developing country, Indonesia has undergone accounting reformation before and after Soeharto's administration. Compared to socialist developing countries such as China and Vietnam, the accounting reformation in Indonesia has gone further and tends to continue by adopting more western accounting regulations, particularly IASs (Rosser 1999). Even though accounting reforms outside the classrooms is occurring very quickly, accounting education improvements inside the classrooms seem to be slower. This phenomenon was found by Griffin (1996) that Indonesia has received approximately US$16 million from the World Bank to develop accounting education and training, but there is pressure to accelerate 'teaching the teacher'. In the reformation era, after Soeharto's regime, the same problem was still faced by accounting education in Indonesia as contended by Mula (2007) that Indonesia has encountered difficulty in harmonising accounting practices with the west.

Accounting is taught in High Schools particularly for students majoring in Social Studies. The number of hours for studying accounting in High School is however limited, since hours have to be shared with Economics. In addition, accounting is also taught in Vocational Schools of Economics but the number of hours is diverse among majors. Generally, there are three majors in the Vocational School of Economics, Accounting, Marketing, and Secretarial. Students majoring in Accounting have to study accounting from first year until graduation. In contrast, students majoring in marketing and secretarial studies have to study accounting in their first year only. Vocational schools can add more majors based on the school's resources and the demands of graduates.

Higher Education in Indonesia comprises 37 state and approximately 222 private universities that offer undergraduate accounting programs (DIKTI 2009). For the purpose of quality assurance, the Ministry of National Education established a National Accreditation Body for Higher Education (BAN-PT) to assess the quality of all study programs in both state and private universities. In total there are 46 state universities, but nine universities have yet to offer an accounting program (BAN-PT 2009).

Degrees offered by Indonesian Universities are D3 (Vocational), S1 (BA/B.Com), S2 (Master’s), S3 (PhD). A D3 degree is a three-year vocational education program after high school graduation; S1 degree is a four-year program after high school graduation; S2 degree is a two-year program after S1 graduation, and S3 is at least three-year of education after S2 graduation. The Directorate of Higher Education (DIKTI) issues a permission letter to a university permitting it to offer a certain study program upon completion of requirements.

In relation to lecturers’ qualifications, there are three kinds of lecturers i.e. lecturers with Undergraduate, Master’s, and/or Doctorate degrees. DIKTI have already issued a regulation that all Indonesian university lecturers have to have at least a Master’s degree (S2) by 2015. This Office also provides opportunities to all university lecturers to continue their study both in their country and overseas.

Generally, all state university lecturers are government officials (public servants) whose salaries are paid by the central government based on public servant ranks, lecturer certifications, and appointments—assistant, lecturer, senior lecturer, and professor. In addition, almost all lecturers tend to stay in the same university from the beginning of their career until retirement, even staying in the university from which they took their undergraduate degrees. There are three main roles that Indonesian lecturers should perform i.e. teaching, research, and community service (DIKTI 2010).

Given the parochial nature of academics, internationalisation of accounting education and graduates in Indonesian universities has encountered difficulties. As contended by Irianto (2007), internationalisation is a significant challenge for state universities in Indonesia. On the other hand, internationalisation of business and the influx of foreign capital, dictate a set of competencies that are recognised globally. To what extent competencies in existing accounting programs meet international standards is the focus of this study. To address this focus it is necessary to have a clearer understanding of how systems of education apply to Indonesia by drawing on models and theories of systems and education.

2.3 Underpinning Theories

As previously mentioned, the study employs two underpinning theories (System Theory and I-E-O Model) to build International Competency of Accounting Graduates (ICAG). The study adopts a research framework consisting of three constructs i.e. input, process/environment, and output. In addition, the study also uses other related theories i.e. Expectancy Theory to measure student motivation, Herzberg's Motivation Theory (HMT) to gauge lecturer motivation based on Lecturer Job Satisfaction, and Involvement Theory to measure processes/ environment in a university.

2.3.1 System Theory

System Theory was originally developed by a biologist, Ludwig von Bertallanfy in the 1920s, and then the theory was broadly applied to other disciplines such as education and computer science (Bertalanffy 1968). A system is a network of interdependent components that work together to try to accomplish the aim of the system (Deming 1995). Moreover, he also hypothesised that System Theory is applicable in the education sector. Therefore, some academia contended the application of System Theory into education as a social system.

Cromwell and Scileppi (1995) suggested idea that education could be viewed as a social system. More practically, the implementation of System Theory into colleges or schools is considered as a social-technical system (Johnson 1984; Mizikaci 2006). In view of this, Kessel et al. (1971) propositioned that university can be studied usefully as an open system model. College as a social system composed of interdependent parts which work in more or less complementary way towards more or less compatible goals (Pervin 1967). As a comparison, Bowen (2007) explained that schools exists to achieve objectives through the collective efforts of individuals and groups in the system.

System Theory has two types of inputs namely input transformed resources and input transforming resources. Inputs are materials and or non-materials from outside (environment) that go into the system's boundary while outputs are the result of the system that go to outside (environment) the system's boundary. Process is the transformation of inputs into outputs that takes place inside the system's boundary. The internal process can be visible (white box) and invisible (black box) (Heylighen 1998). Moreover, Barnett (1995) considered the process of education in higher education is a black box of the institutional space, since there are many intentional and unintentional happenings that change students in various ways. Nevertheless, some higher education researchers tried to provide potential explanation of the black box by using many tools such as approach to learning (Biggs, Kember & Leung 2001) and student engagement (Astin 1999; AUSSE 2010b; Kuh 2009). For a clearer picture, Slack, Chambers, and Johnston (2004) developed a model called Input-

Transformation-Output derived from System Theory. Moreover, Mizikaci (2006) provides a more detailed analysis of inputs, processes, and outputs of educational system in higher education.

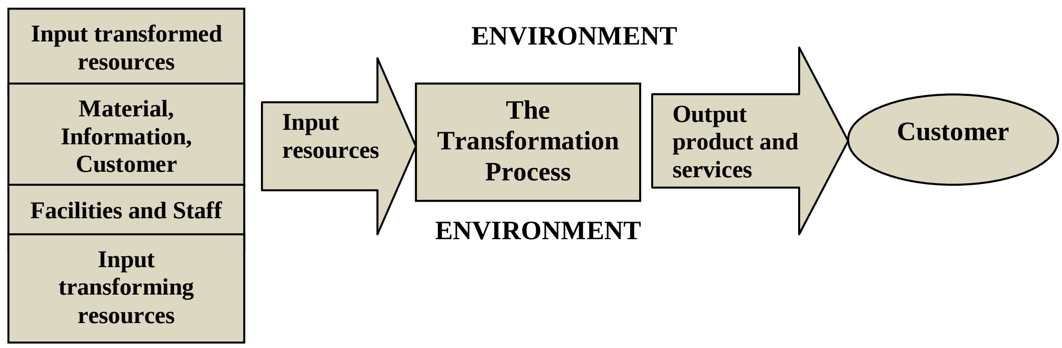

Figure 2.1: Input-Transformation-Output Processes

Source: Slack et al. (2004)

The application of System Theory to education should be adjusted to the characteristics of an educational institution. As indicated by Barbe (1975) that application of System Theory to education based on engineering and management perspectives was criticised for its failure to achieve its objectives and inappropriateness of objectives. Therefore, the application of System Theory in education is considered a social-technical system consisting of five subsystems i.e. goals and values subsystem, technical, psychosocial, and structural subsystem (Johnson 1984). Moreover, Mizikaci (2006) contended that higher education institutions have three sub-systems i.e. social sub-system, technical system, and managerial system. Unfortunately, the research on education employing System Theory appears to be limited (Cromwell & Scileppi 1995). Therefore, Pervin (1967) suggested a research that focuses on identifying the correlations among parts in a college system and the relations of various degrees of integration among the parts with achievement of education goals. Accordingly, this study employs System Theory as one of underpinning theories to explain correlations among constructs of the educational system.

Like other systems, a college or school as a social system has three components i.e. input, process, and output (Becket & Brookes 2006; Bushnell 1990; Heylighen 1998; Nearon 2002). The application of the Input-Process-Output framework to the education sector has been widely accepted especially in assessing the quality of education. Almost all researchers agree upon employing this framework in implementing Total Quality Management (TQM) in higher education institutions (Barnett 1995; Becket & Brookes 2006; Chua 2004; Lewis & Smith 1994; Madaus, Airasian & Kellaghan 1980; Mizikaci 2006; Owlia & Aspinwall 1996).

Identically, a university as a social-technical system also consists of the same components. As Lewis and Smith cited in Mizikaci (2006) contended that technical system includes transformation processes as the “interaction” among inputs, resources, and outputs. A university, as a social system, has many kinds of inputs, but the most important inputs are students and teachers. As Owlia and Aspinwall (1996) contended that in the case of higher education, groups of students and lecturers participate a great deal in the process, but other groups deal mainly with the final product of the system. Moreover, Mizikaci (2006) listed student characteristics, lecturer characteristics, financial resources, facilities, and curriculum as inputs of a higher education system. Likewise, Nearon (2002) almost arrived at the same list.

As previously mentioned, transformation or process is the interaction among inputs inside a system boundary. In the case of higher education, the transformation process encompasses the interaction between a lecturer and students supported by other inputs to produce outputs. Lastly, outputs could be in the form of academic achievement, graduation, graduate employment, and so forth (Mizikaci 2006). To provide a clearer picture, Figure 2.2 shows the relationships between the elements of inputs, processes, and outputs.

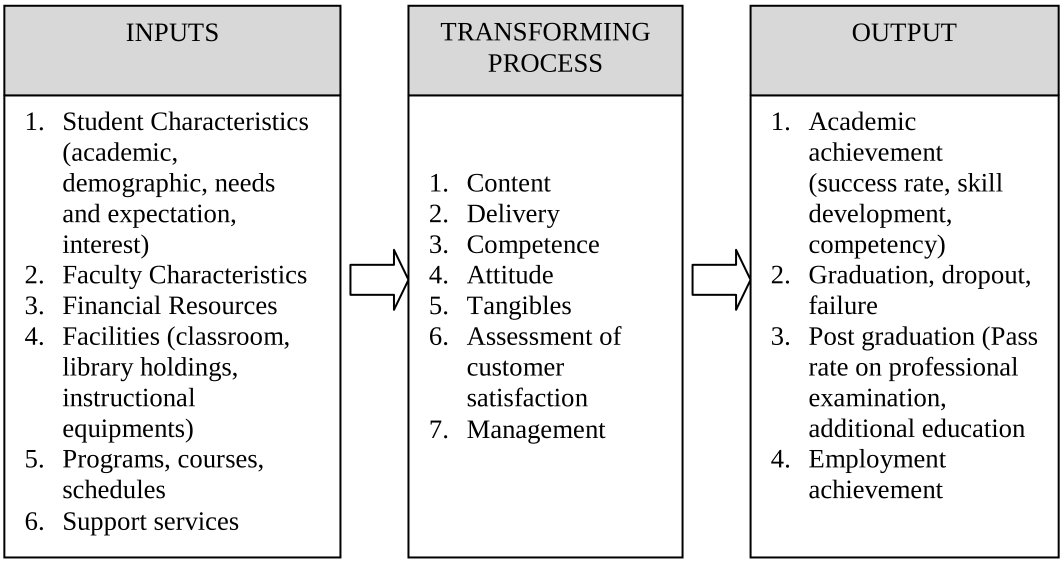

Figure 2.2: Education Technical System

Source: Mizikaci (2006)

Besides having three elements, a closed system consists of an additional element called a loop or feedback. The function of a loop or feedback is to control quality and/or quantity of outputs. If outputs do not meet the required quantity and/or quality, a system will send feedback to adjust inputs. In relation to feedback, Kessel et al. (1971) differentiated between positive feedback and negative feedback. Positive feedback is a good sign that an input, process, and output are in line with an environments where a system operates. Conversely, negative feedback is an indication that a system should make adjustments to ensure its outputs are in line with its environments. Accordingly, if accounting graduates' competencies are not in line with their environments such as employers' requirements, employers will provide feedback to universities. Conversely, if accounting graduates' competencies are very much in favour with employers' requirements, they will not complain to universities. System Theory is a general theory that can be applied to some other disciplines. Therefore, System Theory is not specifically built for Higher Education. Input-Environment-Outcome (I-E-O) Model contended by Astin (1993a) was developed based on the Higher Education context.

2.3.2 Input-Environment-Output (I-E-O) Model

As previously mentioned, the I-E-O model based on higher education research has three elements inputs, environment, and outcome. In relation to higher education, Astin (1993a) defined inputs as personal qualities students bring initially to an educational program, while environment is defined as students' actual experiences during an educational program. Lastly, he defined outcome as talent that lecturers are trying to develop in their educational programs. The theory contends that outcomes in terms of student development are determined by both inputs and learning environments.

Figure 2.3 shows relationships among the three constructs of I-E-O model. Outcome is a dependent construct influenced by the other two independent constructs. In other words, both environment and input influence outcome. In addition, the input construct also influences environment. Effects of inputs on outcome can be direct or through the environment construct. The model also provides a clear understanding that environment could function as a mediating construct. Moreover, Astin (1993a) explains that the relationship between environment and student outcome cannot be understood without taking into account student inputs.

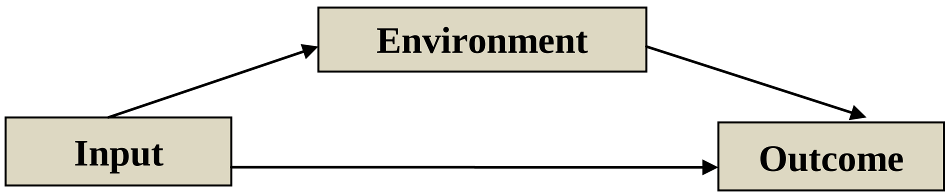

Figure 2.3: I-E-O Model

Source: Astin (1993a)

Some research has been conducted by employing I-E-O model. Kelly (1996) tried to identify relationships among inputs, environment, and student persistence. Findings show that hypotheses of the I-E-O model were empirically valid meaning that the relationship between input and environment was found to be statistically significant. Likewise, the relationship between environment and student persistence shows a significant coefficient. Despite being small in magnitude, inputs also correlate with student persistence.

However, other research provides different results from the application of the I-E-O model. Norwani (2005) conducted a study to identify relationships among inputs, environments, and learning outcome in terms of Cumulative Grade Point Average (CGPA) and competency development. She found that the biggest predictor of student CGPA was student inputs, while competency development was mainly influenced by environment factors. Thurmond et al. (2002) employed I-E-O model to scrutinise relationships among student satisfaction, web-based environments, and student characteristics. The results show that student satisfaction was influenced by web-based environment. Unfortunately, they could not provide enough evidence about the correlation between student characteristics and student satisfaction; thus the influence of student characteristics on web-based environment is also insignificant. It seems that the research does not have enough evidence about the relationship between inputs and environments.

In summary, inputs and environment have significant correlation (Kelly 1996); environment correlates significantly with output (Kelly 1996; Thurmond, Wambach & Connors 2002); and inputs were the biggest predictor of output (Norwani 2005). Therefore, the study employs the I-E-O model together with System Theory as underpinning theories.

In relation to System Theory and I-E-O model, Mohamed and Lashine (2003) provide a general framework how to bridge graduates' skills with global market requirements and expectations. Based on Figure 2.4, the flow of education process starts with a High School education and finishes with graduates from universities who master skills and competencies required and expected by a global market. Building international competencies of accounting graduates needs to employ a more comprehensive and integrated approach by including a number of inputs, processes, and outputs. In addition, Mohamed and Lashine (2003) provide a list of skills to meet global markets (Figure 2.4). These skills are in line with core competencies of accounting graduates established by AICPA.

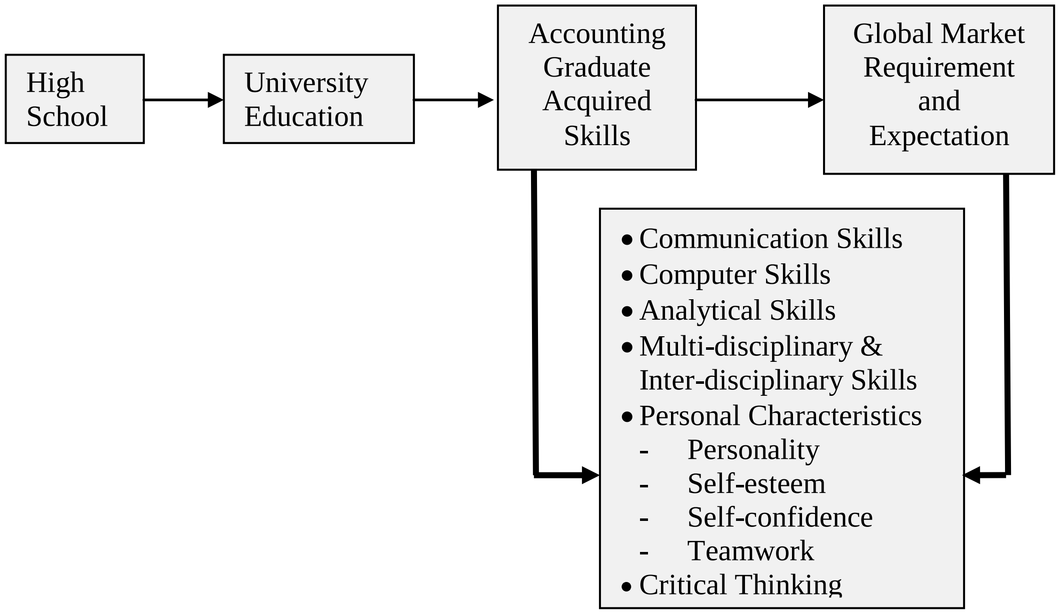

Figure 2.4: Bridging the Gap between Acquired and Required Skills

Source: Mohamed and Lashine (2003)

2.4 Education Input

Input is an important construct in the frameworks of underpinning theories—System Theory and I-E-O Model. In relation to other theories, Tinto's Theory on Student Departure (Tinto 1993) includes Pre-Entry Attributes as inputs and Pascarella's General Model for Assessing Change (Pascarella & Terenzini 1991) also includes Student Background/Pre College Traits as a set of educational inputs.

Research has already identified a set of education inputs. Student characteristics, lecturer characteristics, financial resources, facilities, and support services are important inputs of an educational system (Lewis & Smith 1994; Mizikaci 2006). However, other research also found that educational inputs are not limited to the above items (Gupta 1993). Learning facilities are also important to enhance quality of learning outcomes (Dolan, Jung Jr & Schmidt 1985; Mohamed &

Lashine 2003). Likewise, Nearon (2002) arrived at a shorter list of inputs of an accounting educational system i.e. accounting professors, students, subject matter, and funding. In line with the above, the study includes students' characteristics, lecturers' characteristics, teaching contents, class size, and learning facilities as inputs of accounting education in universities. There are other educational inputs not included in the study. It doesn't mean other inputs are not important to education, but those inputs may be important to attain other education output (Madaus, Airasian & Kellaghan 1980).

Curricula consisting of subject matter are an important input into the educational system. The Ministry of National Education (MONE) has already enacted a decree number 232/U/2000, Guidelines for Developing Higher Education Curricula and Assessing Student Learning Outcomes. In developing accounting curricula, a university should include national core content that account for 40% to 80% (Depdiknas 2000). Nonetheless, accounting curricula used by Indonesian universities are similar, since the curricula are adapted and adopted from the curricula developed by reputable universities (Hamzah 2009). Therefore, the study uses the perception of lecturers on competency teaching content to deal with accounting curricula.

Even though funding is a salient input in an educational system, it has inconsistent correlations with student achievements. Some research has found that there are three correlation findings between school funding and student achievements i.e. positive correlation (Barrow & Rouse 2005; Ellinger & Wright 1995), weak correlation (Tow 2006), inconsistent correlation (Cook 2001; Klick 2000; Neymotin

2008). The following section discusses in more detail educational inputs that have potential correlation with both processes and outputs.

2.4.1 Student Characteristics

As the most important input, a student will be transformed into an output through the transforming process in a university. A student has certain characteristics, the quality of which can affect processes and outputs (achievements). In this case, Hattie (2003) propositioned that student characteristics account for about 50% of the variance in achievements. Lewis and Smith (1994) included student characteristics as inputs of the educational system. Astin (1971) identified twelve students characteristics that cover academic, psychological, demographic, and socio-economic characteristics. Likewise, Mizikaci (2006) arrived at shorter list of student characteristics i.e. academic, demographic, need and expectation, and interest. Mizikaci's lists on students' characteristics fall into three dimensions i.e. psychological, academic, and demographic. This study, therefore, employs students' motivation, students' previous academic achievements, and students' demographic characteristics as proxies of psychological, academic, and demographic dimensions respectively.

Psychological Dimension

As Mizikaci (2006) contended that interest, need, and expectation are some student characteristics. To deal with this dimension, this study employs Expectancy Theory to measure student motivation. As Vroom cited in Geiger and Cooper (1996) explained, motivation to act is a combination of the perceived attractiveness of future outcomes and the likelihood that one's action will lead to these outcomes. Furthermore, Expectancy Theory also contends that motivational force for a behaviour, action, or task is a function of three distinct perceptions i.e. expectancy, instrumentality, and valence (Chiang et al. 2008).

In consonance with the above definition, Expectancy Theory is a process motivation that requires three perceptions of an individual. Moreover, Chiang et al. (2008) defined the three individual perceptions as follows: expectancy as perception of an individual that his or her efforts will result in good performance. Instrumentality is a perception of an individual that good performance will provide her or him with expected outcomes or rewards. Lastly, valence is an individual's perception about expected outcome or rewards. In other words, motivation force based on Expectancy Theory is a function of expectancy, instrumentality, and valence. The following equation depicts the formula of motivation force.

Motivation Force = Expectancy x Instrumentality x Valence (Chiang & Jang 2008; Chiang et al. 2008)

Since its inception, Expectancy Theory has been broadly used to measure motivation of employees (Chiang & Jang 2008; Chiang et al. 2008) and students (Campbell, Baronina & Reider 2003; Geiger & Cooper 1995; Geiger & Cooper 1996; Geiger et al. 1998; Harrel, Caldwell & Doty 1985; Tyagi 1985; Yining & Hoshower 1998). In the context of the study, a student will put more effort into improving his or her performance in terms of competencies or achievements. Good competencies or achievements, in turn, will lead to desired outcome or rewards e.g. a good job that can satisfy his or her personal goal.

Expectancy Theory has two related models i.e. valence model and force model. Expectancy Theory is effective in predicting academic performance (Geiger & Cooper 1996). Likewise, Harrel, Caldwell and Doty (1985) concluded that the force model of Expectancy Theory is a very useful conceptual framework for understanding students' motivation to strive for academic success. Lastly, Yining and Hoshower (1998) also used Expectancy Theory to assess student motivation to participate in teaching evaluation and they arrived at the same results.

In relation to motivation and student engagement, there are two main points of view about these concepts. Some academics believe that motivation and student engagement are the same concept, but others contended that the concepts were different in nature. To understand the difference between the two concepts, the following definitions may be useful. Russel et al. (cited in Ainley 2004) defined motivation as energy and direction, the reason for behaviour; why we do what we do. Student engagement, on the other hand, describes energy in action; the connection between person and activity.

The relationship between motivation and student engagement is causal, meaning that motivation will influence student engagement. Students' motivation and effort coupled with learning climate impact engagement (Heller et al. 2010). More specifically, Walker et al. (2006) contended that an important outcome of increased motivation is cognitive engagement in learning task. Moreover, students lacking in motivation and connectedness, have a higher potential to deteriorate into despondency and disengagement from the university community (Krause 2005). Based on the aforementioned definitions of student motivation and student engagement as well as based on previous research results, the study uses student motivation and student engagement as different concepts.

To deal with student motivation, the study uses Expectancy Theory by adapting the works of Chiang and Jang (2008) who have already developed concise questionnaires with good reliability and validity. The questionnaire consists of five factors i.e. expectancy, extrinsic instrumentality, intrinsic instrumentality, extrinsic valence, and intrinsic valence. Overall, these factors, except extrinsic instrumentality, have very significant influence on work motivation of hotel employees. Adaptations have been made to ensure all questionnaire items fit into students' context.

In summary, motivation has an important role in determining both student engagement and student achievements. Consequently, Expectancy Theory may be useful in predicting student engagement, students' accounting competencies as well as student achievements.

Academic Dimension

In addition to the psychological dimension, this study also includes an academic dimension as an input of the system. To enter an accounting educational system, a student must meet academic requirements that are in line with accounting education to ensure the process will run as planned and outputs also meet required quality as well as quantity. To deal with academic dimension, the study uses previous academic achievements as proxies of academic performance of students prior to entering accounting education in a university. Previous academic achievements are achievements earned by students from previous schoolings.

Research to identify the correlation between high school grades and college Grade Point Average (GPA) has been conducted by Astin (1971). By employing 2,439 male and 2,445 female students, he found that the correlation between high school grades and freshmen students' GPA are 0.519 and 0.498 for male and female students respectively. Moreover, he also concluded that high school grades are becoming stronger predictors of students' achievements (Astin 1993a). Therefore, previous grades were predictors of academic performance (Credé & Kuncel 2008).

The above findings are still very general, since the sample used in the research was students from all majors. Some research has been conducted to find the relation between previous academic achievements with students' performance in accounting major. Duff (2004) found that previous academic achievement was the strongest predictor of accounting students' performance. Likewise, Rohde and Kavanagh (1996) arrive at more specific result that first year tertiary accounting results obtained by a student who studied accounting previously was between one and two grades higher than that of a student who did not study accounting at high school. Another finding shows that there was a significant but not particularly strong relationship between high school achievements (as measured by TER or Tertiary Entrance Rank) and academic achievements (Dickson & Fleet 2000). Lastly, Agronow (2008) identified that pre-college academic/demographic characteristics have correlation with student GPA 0.508. It means that these variables contribute 26% of student achievements.

The above findings discuss the influence of previous academic achievements on student achievements. To see the influence of previous academic achievements on student engagement, this study considers the following propositions. The first proposition was contended by Alvermann (2001) that the level of student engagement is the mediating factor through which classroom instruction influences student outcomes. The second proposition was proposed by researchers from University of Victoria, Canada that student engagement can be a good proxy for overall educational quality (UVic 2006). These propositions imply that previous academic achievements could influence student engagement. Research conducted at the University of California, Berkeley arrived at more specific results that demography/pre-college academic success correlates significantly with academic engagement (Agronow 2008). Therefore, previous academic achievements may correlate significantly with student achievements and student engagement.

Demographic Dimension

Student demographic characteristics and their influence on students' achievements have been scrutinised for a long time, even though their influence was relatively small. In general, race, student's religious preference, parents' income, and parents' education correlate with student achievements, but the correlation coefficients were small (Astin 1971). More current findings also show that student demography characteristics correlate with student achievements, but the coefficient was minimal. Likewise, AUSSE (2010a) reported that sex has direct positive effect on average overall grades. The report also emphasises that female students tend to have higher grades than male students. In view of this, Strayhorn (2008) found a different effect of age and sex on personal/social gains as learning outcomes. Sex correlates positively with learning outcomes, female students tend to have higher outcomes than their counterparts, while age correlates negatively with learning outcomes.

In summary, demographic dimensions in term of gender correlates with student achievements. On the other hand, age may correlate negatively with student achievements. Therefore, age and gender may correlate with student achievements as well as students' accounting competencies. The following are discussions about the relationship between demographic characteristics and student engagement.

In an Australian university setting, there is different engagement between male students and female students. Male students tend to be more engaged in academic challenge and interaction with staff. Female students, on the other hand, were reported to be more engaged in work integrated learning (AUSSE 2010a). Different pictures of student engagement based on gender were drawn from the American university setting. Female students are more likely to be more engaged in academic challenge activities than their counterparts. The differences of engagement in active and collaborative learning, student-faculty interaction, experience in diversity, and supportive campus environment between male and female students are trivial in magnitude (Kinzie et al. 2007).

The relationship between age and student engagement are positive and significant, meaning that older students tend to be more engaged in academic-purposeful activities. Age is positively correlated with faculty-student interaction and active learning respectively, but age is negatively correlated with peer interaction (Strayhorn 2008). This study, therefore, includes age and gender as predictors of student engagement, student achievements, and student accounting competencies.

2.4.2 Lecturer Characteristics

Another very important input to an education system, in addition to student inputs, is lecturer input (Mizikaci 2006; Nearon 2002), since lecturers impact on students' achievements considerably (Hoffmann & Oreopoulos 2009a). The influence of lecturers on students' achievements makes up 30 percent of the variance (Hattie 2003). Albeit a smaller influence compared to elementary and secondary school teachers', lecturers still significantly influence student achievements (Hoffmann & Oreopoulos 2009a).

Based on System Theory and I-E-O model, there is a mediating or intervening construct between lecturers' characteristics and student achievements. Therefore, the study employs student-faculty engagement and student engagement for mediating constructs and as proxies for education processes in a university. Student engagement in academic and non-academic activities is committed by students in a university. Student-faculty engagement, on the other hand, is the activities of faculty members or lecturers in joining activities with students, providing facilitation, and encouraging students to be involved in academic and non academic activities in a university. Therefore, the indicators for gauging student engagement and student-faculty engagement are exactly the same.

The questions of student-faculty engagement are the mirror of student engagement questions (Kuh, Nelson Laird & Umbach 2004). This also implies that both engagements require active roles from two parties, students and lecturers. Moreover, the roles of lecturers are critical to make students engage in academic and non-academic activities. Basically, students tend not to interact with faculty because they are not aware of the potential benefits of engaging faculty (Cotten & Wilson 2006). Therefore, faculty members and other related parties have to provide progressive and sustained assistance to ensure that students stay enrolled and graduate from college (Rendon 2002).

Since each faculty member has their own constraints, she or he would have different intensity in participating in activities with students and providing progressive and sustained assistance to students. In other words, the extent to which lecturers engage physically, cognitively and emotionally, in the roles they perform will vary (Hermsen & Rosser 2008). The study identifies some variables that correlate with lecturers' performance in carrying out student-faculty engagement. Unfortunately, most of research in this area focused mainly on student engagement while research on student-faculty engagement appears to be limited.

Besides employing student-faculty engagement as a proxy for processes in a university, the study also includes accounting-competency teaching contents as a proxy of curricula. Accounting-competency teaching contents measures how much lecturers include international competency of accounting in their teaching-learning processes. Curricula consists of subject matters (Toombs & Tierney 1993) and instruction (Frey 1998). In this case, accounting-competency teaching contents cover curricula and its implementation in teaching-learning processes. Previous studies found that students gain accounting competencies during teaching-learning process (Azemikhah 2006; Bonner 1999; Jayaprakash 2005; Tigelaar et al. 2004; Weil, Oyelere & Rainsbury 2004; Wu 2008). Therefore, the study includes accounting-competency teaching contents as a part of transforming process in a university. Section 2.4.3 provides further discussion about accounting-competency teaching contents.

As has been noted, student characteristics fall into three dimensions i.e. academic, demographic, and psychological (Mizikaci 2006). In addition, Knowles (1999) classified lecturer characteristics into two dimensions i.e. lecturer knowledge and motivation. In other words, the classification falls into academic and psychological dimensions. The study, therefore, uses the same dimensions that apply to student characteristics. Since demographic dimension in term of lecturer gender plays a minor role in determining student achievement (Hoffmann & Oreopoulos 2009b), the main focus of the study is psychological and academic dimensions. The data about demographic dimensions such as age and gender are collected to support other dimensions. Therefore, lecturers' characteristics fall into three dimensions namely psychological, academic, and demography.

Owing to limited research that identifies predictors of student-faculty engagement and accounting-competency teaching contents, the study uses student-faculty engagement and accounting-competency teaching contents as lecturers' job performance (lecturer performance in carrying out student-faculty engagement). In this case, student-faculty engagement is the intention of the lecturer to perform student-faculty engagement physically, cognitively, as well as emotionally. In addition, accounting-competency teaching contents measures how much lecturers include students accounting competencies (ICAG). Therefore, student-faculty engagement and competency teaching content are parts of lecturer's job performance.

Psychological Dimension

To deal with the psychological dimension, the study employs lecturers' job satisfaction and motivation measured by Herzberg's Motivation Theory (HMT)[9]. In business and industrial entities, HMT is commonly used to measure employee motivation and job satisfaction. The correlation between job satisfaction and job performance among industrial workers is positively significant (Zhang & Zheng 2009), even though this correlation is subject to criticism (Bowling 2007). In

[9] Herzberg's Motivation Theory (HMT) is commonly used to measure employee motivation and job satisfaction.

addition, HMT was developed more than 50 years ago, but the theory still has power to gauge job satisfaction (Bassett-Jones & Lloyd 2005). Herzberg’s Motivation Theory comes with two dimensions namely motivation and hygiene. This theory posits that hygiene issues (company policy, salary, working condition, and interpersonal relation) cannot motivate employees, but they can minimise dissatisfaction, if handled properly. On the other hand, motivators (achievement, recognition, the work itself, responsibility and advancement) lead to individual’s satisfaction (Syptak, Marsland & Ulmer 1999).

Herzberg’s Motivation Theory is not only measuring motivation and job satisfaction of employees in industrial and commercial organisations, but also measuring the same psychological inventories of employees in educational institutions such as teachers or faculty members (Ololube 2006; Sudiro 2008; Woods & Weasmer 2004). In relation to teacher motivation, Knowles (1999) identified that teacher motivation impacts on students’ motivation and grades. In the area of education, some academics show that job satisfaction is significantly-correlated with job performance. In view of this issue, job satisfaction reduces attrition, enhances collegiality, improves job performance, and has impact on student outcomes (Woods & Weasmer 2004). Moreover, job satisfaction of lecturers influences work engagement (Hermsen & Rosser 2008). Similarly, by recruiting lecturers from certain universities in Indonesia as samples, Riduwan (2006) found that motivation is very important predictor of lecturers’ performance.

Research to identify the effect of job satisfaction and its influence on teaching performance was conducted in the River State of Nigeria. The finding shows that a teacher’s job satisfaction seems to have a greater impact on teaching performance

Ololube (2006). By recruiting lecturers from three Indonesian state universities as samples, Sudiro (2008) arrived at more specific results that job satisfaction correlates significantly with job performance. Moreover, he also found that job performance correlates with lecturers' career. Conklin and Desselle (2007) contended that lecturers' job satisfaction may be an important mediator or organisational commitment and certain aspect of productivity. These findings also imply that the proposition about the correlation between lecturers' job satisfaction and their job performance is fully applicable to the context of Indonesian universities.

In summary, lecturers' job satisfaction may impact student-faculty engagement and accounting-competency teaching contents. To measure lecturers' job satisfaction, this study uses items and factors developed by Conklin and Desselle (2007) based on Herzberg's Motivation Theory. The questionnaire consists of six factors namely resource for scholarship, institutional support and reward, requirements for promotion and tenure, availability of a graduate program, collegiality, and teaching environment. The items have been validated in measuring pharmacy faculty work satisfaction. In addition, some items were adapted to ensure they are in line with the Indonesian university context.

Academic Dimension

Besides considering the psychological dimension, this study also includes an academic dimension as a characteristic of lecturers. Even though, this dimension consists of many factors, the study includes the most important factors in the Indonesian university context. The study classifies factors into education attainment, teaching experience, research productivity, lecturer appointment, article publication, and lecturer certification.

As has been noted, the study analogises student-faculty engagement and accounting-competency teaching contents as lecturer performance indicators. A handful of research on the effect of education attainment on lecturers' performance has been conducted in Indonesian universities, since there are three classifications of university lecturers based on their education attainment i.e. Undergraduate, Master's, and Doctorate. Education attainment of lecturers does not significantly influence their teaching performance (Verceles & Rivera 2010). Nevertheless, other research found that the effect of education attainment on lecturers' performance is positive and significant (Riduwan 2006). Likewise, Yusuf (2006) conducted research in a different university and the results are very similar, education attainment has a direct and significant influence on lecturers' performances. Generally, lecturers improve their pedagogical skills and subject matter mastery through teaching experience, training, and formal education. Lecturers' pedagogical skills and subject matter mastery impacts on students' motivation and grades (Knowles 1999) as well as lecturers' performance in the teaching and learning processes (Yusuf 2006). Therefore, lecturers' education attainment may affect student-faculty engagement and accounting-competency teaching contents.

In term of teaching experience, De Paola (2009) contended that the effect of lecturers' experience and research productivity on students' achievement is significant. For lecturers from a social science course, research productivity in term of number of publications also correlates with student rating of instructor effectiveness (Centra 1983). Like education attainment, teaching experience also leads to improvement of pedagogical and subject matter skills as well as knowledge. In turn, lecturers' skills and knowledge affect students' achievement and motivation (Knowles 1999) as well as lecturers' performance in classes (Yusuf 2006). Experience also provides opportunities to teachers to become more effective lecturers by developing best practice in teaching and learning processes. Nevertheless, research conducted in elementary school found the correlation between teachers' experience and student achievement are weak (Buddin & Zamarro 2009). Effective teachers consciously work to become fully engaged in the learning processes and improve their teaching skills over time (Kennedy 1998). In line with this, Kuh (2004) also found that faculty members who implement effective educational practices will encourage students to be more engaged in productive learning activities. Moreover, Wang et al. (2006) found that the relationship between teacher experience and teaching effectiveness is non-linear. Even though, there are manifold findings about the effect of experience on teaching effectiveness, this study concludes that teaching experience correlates significantly with student-faculty engagement and accounting-competency teaching contents.

The Ministry of National Education (MONE) of Indonesia has been implementing certification to enhance teachers' quality on all education levels including higher education. A certified teacher is a teacher who has already met requirements as a professional teacher. Since this program is quite new, the research on this issue in the Indonesian context is still very limited. However, some research has been conducted in some countries. Teacher licensure test scores and advanced degrees had no impact on student achievement (Buddin & Zamarro 2009). On the other hand, certification provides a positive signal of a teacher's contribution to student achievements in a few isolated cases (Harris & Sass 2009). Likewise, Bond et al. as cited by Wang et al. (2006) contended that the impact of teacher certification is positive indicated by the difference of teaching performance between certified and non-certified teachers. In view of the above, the impact of teacher certification on student achievements and teachers' performance is inconsistent. In addition, the above findings are focused on elementary and high school teachers. The impact of certification on lecturers' performance in term of student-faculty engagement and accounting-competency teaching contents on university level may provide different pictures.

In relation to other lecturers' academic characteristics, Hoffmann and Oreopoulos (2009a) contended that instructor traits, such as rank, faculty status, and salary have virtually no effect on student outcomes. On the other hand, student evaluation of teaching based lecturers rank is minimally different (Kogan, Schoenfeld-Tacher & Hellyer 2010). Based on the above, the study concludes that lecturers' rank may correlate with student-faculty engagement and accounting-competency teaching contents.

Academic dimension is one lecturer characteristic that becomes an input of the transforming process. As previously mentioned, the study employs student engagement and student-faculty engagement to measure transforming process in a university. Additionally, student-faculty engagement questions are developed based on student-engagement items and factors. Student-faculty engagement is self-reported engagement of lecturers. In other words, this engagement will be measured based on the faculty members' or lecturers' perspectives. The roles of faculty members in improving student engagement are very critical. By employing

Hierarchical Linear Analysis (HLM)[10] Umbah and Wawrzynski (2005) reported that faculty members played a very important role in student learning and engagement both in and out the classroom. Therefore, academic dimension in terms of lecturers' education attainment, working experience, research productivity, and certification may correlate with student-faculty engagement.

Demographic Dimension

As has been discussed earlier, the influence of lecturers' demographic characteristics on student achievements is minimal (Hoffmann & Oreopoulos 2009b), the study includes gender and age. Moreover, Dee (2007) concluded that the gender interactions between teacher and students have significant effect on educational outcome.

Generally speaking, lecturer age is associated with lecturer experience and seniority. Older lecturers could have more ability to teach their subject matter, since they have been teaching the subject matter longer than younger lecturers. In general, there is correlation between the age of university lecturers and their teaching performance (Kinney & Smith 1992). In addition, they also revealed that teaching performance of faculty members in social science tends to decline between the early forties and the mid-sixties. On the other hand, a senior gerontologist argued strongly that the correlation between age and job performance is zero meaning that there is no relationship between those variables (Kemper 2010). In summary, the correlations between lecturers' age and gender and student-faculty engagement may be significant.

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[10] Hierarchical Linear Modelling is a statistical technique to identify association between variables with nesting data such as the association between lecturers' education attainment with students' achievements.

Some research has been conducted to identify the impact of lecturers' gender on their teaching performance. Despite culturally-conditioned gender stereotypes, students perceive female lecturers as warmer and more potent individuals (Bennett 1982). On the other hand, Verceles and Rivera (2010) found that gender does not impact on lecturers' teaching performance. Likewise, Buck (1989) also found that students' perception of teachers' competencies was not affected by the teacher gender. Therefore, age and gender may significantly correlate with student-faculty engagement and accounting-competency teaching contents.

2.4.3 Accounting-competency Teaching Contents

Subject matter is an important input to the educational system (Nearon 2002). In this case, subject matters are considered as curricula. Toombs and Tierney (1993) define curricula as a set of courses offered to students. In other words, curricula are defined in a narrow perspective. In comparison, in a broader perspective curricula are not merely a list of courses but comprises six components i.e. purpose, goals, objectives, needs focusing, curriculum alignment, and instruction (Frey 1998). In considering accounting competencies, curricula must accommodate the requirements demanded by industries, professional bodies, and the demand for greater flexibility (Faux & Woodley 2009). Moreover, Faux and Woodley also contended that curricula should adopt a teaching approach that provides enhanced accounting education and job-ready students. Based on the Double Heuristic Model (DHM) the teaching-learning process for building competencies should use mental reflection, physical action, and the use of skills (Azemikhah 2006).

There are many approaches to teaching accounting competencies in higher education. The combination of cooperative learning, contextual learning, and e-portfolio learning seems to have been successfully implemented to build students' competencies in accounting (Wu 2008). More generally, Jayaprakash (2005) suggested the integration of content learnt with real world experience. Moreover, he mentioned some example of teaching tools such as interactive case studies, simulations and games, and group work. The research findings by Weil, Oyelere and Rainsbury (2004) also found that Professional Accounting School candidates perceive case studies as being useful for developing competencies specified by the program. Nonetheless, an accounting lecturer needs to carefully employ multiple teaching methods to achieve learning objectives of a given accounting course, since the objectives are likely to encompass the full range and types of objectives (Bonner 1999).

In view of the above, Tigelaar et al. (2004) validated a framework for teaching competencies in higher education suggests three domains i.e. person as lecturer, expert on content knowledge, facilitator of learning processes. Moreover, in the last domain, a lecturer functions as developer, counsellor, evaluator, organiser, and scholar/lifelong learner.

The above discussion implies that there are two bases for improving students' competencies i.e. curricula and the implementation of teaching and learning in classrooms. Accounting curricula developed by Indonesian universities have to follow Ministerial Decree number 232/U/2000 on Guidelines for Developing Higher Education Curricula and Assessing Student Learning Outcomes. The decree clearly mentions that curricula of program study have to include a national core content that accounts for 40% to 80% (Depdiknas 2000). Therefore, at least 40% of the accounting curriculum adopted by Indonesian universities is similar. Moreover, Hamzah (2009) reiterated that accounting curricula used by Indonesian universities are adopted and replicated from other reputable universities. In addition, he also contends that accounting curricula tend to be static. This implies that type and number of subject matter taught in accounting programs have similarities. Nevertheless, the implementation of accounting curricula in accounting teaching and learning by university and lecturer could be different. Therefore, the study uses perceived accounting-competency teaching contents, International Competency of Accounting Graduates-Teaching Contents (ICAG-Teaching Contents), as a proxy of curricula. As previously mentioned by Mizikaci (2006) content and delivery are considered processes. On the other hand, Nearon (2002) considered subject matter as an input. Therefore, the study concludes that based on lecturer perceptions, ICAG-Teaching Content may lie between educational inputs and transforming process. In addition, student engagement (student perception) and student-faculty engagement (lecturer perception) are also intended to measure transforming process. Section 2.5.2 and 2.5.3 discuss more detailed about these engagements.

2.4.4 Learning Facilities

Learning facilities are also considered important inputs, since they enhance the quality of learning processes. By employing appropriate learning facilities, the process of teaching and learning becomes more productive (Boyce cited in Herring III & Bryans 2001). Therefore, universities have to provide adequate learning facilities for both lecturers and students to ensure outputs of teaching-learning processes meet required competencies. In line with this, Dolan, Jung, and Schmidt (1985) contended that academic support in the forms of libraries, laboratories, and computers enhance the quality of students and teachers. Moreover, they also conclude that these academic support facilities could be major drivers of educational processes. Hypothetically, the function of learning facilities is very critical in enhancing teaching-learning processes in higher education. Good education facilities may not guarantee good outputs from an education system, but poor facilities certainly affect the quality of output from an education system (Mohamed & Lashine 2003). More specifically, learning facilities may have a positive impact on student engagement, student-faculty engagement, and accounting-competency teaching contents or ICAG-Teaching Content.

A library is a very important resource for the teaching-learning process on all education levels. Teachers, students, administrators, counsellors, and other parties use the library as a resource for information to support their work. Moreover, the salient role of a library is providing information to its users, a library also has other important roles in an education setting, i.e. practical, cultural, social, and intellectual roles (Marchionini & Maurer 1995). More specifically, a library also provides useful academic experience to students. There is a correlation between the library experience of undergraduate students with the selection of educationally purposeful activities (Kuh & Gonyea 2003). Moreover, they also contended that use of the library could increase student engagement in academic challenge that needs high-order thinking.

Internet and computers change the behaviour of students and lecturers both inside and outside classrooms. These technologies buttress educational processes.

The presence of internet and computer technologies in higher education is compulsory. The role of computer technology in accounting education is critical, as computer technology enhances the accounting learning processes. More importantly, the use of technology also improves student achievement and engagement (Chen, Lambert & Guidry 2010). Boyce cited in Herring III and Bryans (2001) identified four advantages of computer technology for assisting teaching and learning in accounting i.e. more efficient and productive learning, more expansion of topic and subject, more effective learning, and more contribution to students' skills. Likewise, Khan (2009) arrived at the same conclusion that computers help students in enhancing their learning and interaction with both fellow students and instructors. Besides enhancing the teaching and learning process, the use of the internet and computer technologies could improve students' skills that are required by working environments. More pointedly, Mohamed & Lashine (2003) found that the use of technology for teaching accounting becomes necessary, since accountants should master the use of computer technology.

Most accounting programs in Indonesian universities have special rooms for an accounting laboratory. Students learn and develop their accounting skills in this accounting laboratory. Internet and computer technology not only change the educational process in a university, but also change the form of the accounting laboratory. A traditional laboratory consists of manuals and documents for practicing accounting process manually. More current accounting laboratory may consist of computers and software for simulating accounting processes, therefore most of accounting laboratory is merged with computer laboratory.

By using computer laboratory and standard-practice sets, students can simulate accounting with accounting software such as MYOB. The objective of simulation is to bridge students' competencies with real-world environments. Accounting-practice sets are still intensively used by Indonesian universities, even though these practice sets are subject to criticism due to relatively sterile in nature and some issues about the "black market" of the best solution (Knechel 1989). The impact of accounting simulation on student competencies is very important to build students' attitude and perception (Jack, Smith & Clay. Jr 1986), to improve students' critical thinking (Springer & Borthick 2004), and to sharpen students' ability to find creative solutions to managerial problems (Wynder 2004).

As previously mentioned, learning facilities in terms of internet and computer technology could make the teaching-learning processes easier and more productive. Therefore, this technology could lead to greater engagement for both students and teachers (Chen, Lambert & Guidry 2010; Heiberger & Harper 2008).

Besides the above learning facilities, class size is also important in determining the quality of teaching and learning. Logically, small classes enable lecturers and students to interact and the lecturer could provide necessary facilitation to every individual student. In other words, small classes allow productive interaction between lecturers and students and among students themselves. Big classes, in contrast, limit student ability to interact with lecturers and other students. Therefore, class size has an effect on student engagement and student-faculty engagement. Cotten and Wilson (2006) emphasised that educational institutions have to provide physical space ... such as smaller class size ... to create substantive engagement between student and teachers.

In relation to class size and student achievements, almost all academics are in favour of the proposition that class size correlates negatively with students' achievements. In smaller classes, all types of students can learn better than in larger classes (Konstantopoulos 2007). Therefore, in small classes students scored significantly higher on their final exams than did students in large classes (Murdoch & Guy 2002). Class size correlates negatively with students' grades (Johnson 2010; Kokkelenberg, Dillon & Christy 2008). Other research found that class size had a negative logarithmic relationship to grades (Dillon & Kokkelenberg 2002). In addition, according to the visibility principle, students in smaller classes will highly engage in learning (Finn, Pannozzo & Achilles 2003). This study uses Comfort of Class Size as a proxy of class size. In view of this, if a student feels comfortable with the class size, he or she is more likely to have more engagement and greater achievements. Therefore, the study concludes that Comfort of Class Size correlates positively with student engagement and student achievements.

Most lecturers perceive that larger classes require more effort to handle than smaller classes. Finn et al. (2003) propositioned that smaller classes affect the teachers' morale and enjoyment of teaching, which in turn affects students' engagement. Nevertheless, some teaching techniques commonly used in smaller classes are considered useful in very large classes to engage students (Exeter et al. 2010). In view of the above, Comfort of Class Size is beneficial for both students and lecturers and is included in this study.

2.5 Education Process

Education process is the interaction of inputs inside a system's boundary to transform inputs (students) into outputs (graduates). Even though Deming (1995) contends that System Theory could be applied to the education sector, the theory does not mention any proxy for measuring an education process. There are some potential proxies to measure the process such as approach to learning developed by Biggs et al. (2001), Involvement Theory developed by Astin (1987, 1999), and the Seven Principles for Good Practice in Undergraduate Education (Chickering & Gamson 1987, 1999).

In relation to approach to learning, Biggs et al. (2001) developed 20 questions to measure students' approach to learning. Approach to learning is classified into four subscales i.e. Deep Motive, Deep Strategy, Surface Motive, and Surface Strategy. The scope of this approach is very specific and only includes the psychological aspect.

Student involvement or student engagement, on the other hand, includes both physical and psychological aspects. Student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience (Astin 1987, 1999). In comparison, Chickering and Gamson (1987, 1999) proposed seven principles for good practices in undergraduate education. The principles are in line with student engagement developed by the National Survey of Student Engagement (NSSE). In relation to student engagement, Kuh (2009) emphasised that student engagement represents constructs such as quality of effort and involvement in productive learning activities. Student involvement or student engagement is the physical and psychological efforts of learning in higher education.

Moreover, student engagement is an organising construct for institutional assessment, accountability, and improvement efforts (Kuh 2009). Therefore, student involvement or student engagement could be an accurate proxy to measure education process in higher education. For more detailed discussions, the following section discusses about Involvement Theory.

2.5.1 Involvement Theory

Student involvement is a very simple theory that every administrator, researcher, lecturer, parent, student, and ordinary people can understand. Students learn by becoming involved (Astin 1987, 1999). The theory provides more practical definition about student involvement, the amount of physical and psychological energy that the student devotes to the academic experience (Astin 1987, 1999). The theory also implies that a student with high involvement will have more contact or more commitment to university experience or university environment. In contrast, a student with low involvement will tend to have low contact or low commitment with university experience or the environment.

Student involvement in a university's academic and non-academic experiences can be both quantitative and qualitative. In term of quantitative, student involvement can be measured by how much time a student spends to gain experience in the university. On the other hand, the qualitative involvement can be measured using the intensity or the immersion of a student in a university's academic and non-academic experience. In other words, the quality and quantity of student engagement in academic and non-academic activities in a university determines the quality of university outputs, in this case university graduates. Therefore, student development is closely related to students' involvement with their friends, academics, and academic programs (Astinas cited in Norwani 2005).

In relation to student motivation, Involvement Theory contends that student motivation could play an important role in determining student involvement (Astin 1999). It also implies that there is a positive correlation between student motivation and student involvement. The fundamental difference between student motivation and student involvement is that student involvement emphasises what the individual does, how she or he behaves (Astin 1999). In other words, student involvement is not merely how students think and feel but also what students act or respond to the academic and non-academic experience in a university.

The Involvement Theory includes five basic postulates. Astin (1987, 1999) explained briefly about the postulates as follows: (1) involvement refers to the investment of physical and psychological energy in various "objects"; (2) regardless of its object, involvement occurs along a continuum; (3) involvement has both quantitative and qualitative features; (4) the amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program; (5) the effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement.

There are many degrees of student involvement from very general to very specific. General involvement might include engagement in academic and non-academic activities in a university. An example of narrower student involvement would be to engage in a cost accounting course. Student involvement in completing an assignment on advanced accounting is also one of example of very specific student involvement. The scope of involvement depends on the “object” in which the student engages.

Every student has a different degree of involvement in a certain “object”. For example, student A has more involvement in cost accounting course than does student B. Conversely, student B tends to have more involvement in advanced accounting course than does student A. Furthermore, Astin (1987, p. 136) explained that different students manifest different degrees of involvement in a given object, and the same student manifest different degrees of involvement in different objects at different times.

Involvement can be measured both quantitatively and qualitatively. The time that a student spends on study every day is one example of quantitative involvement. A student could study four hours a day, but she or he only opens the books and yawns. It means that this student is not studying intensively. This student spends high number of hours studying, but the quality of involvement is relatively low. Therefore, involvement also uses qualitative features to measure intensity of student involvement. Ideally, involvement should be both quantitative and qualitative. The constraint for ideal involvement is students’ time, since students have other commitments other than academic or non-academic activities in their universities.

The last two postulates relate to the university administrators’ responsibility. The roles of university administrators are very critical, since they have to provide educational programs enabling students to learn and develop through student involvement. The availability of good learning programs is not enough, because administrators also should provide policies to ensure all students engage in programs. In other words, administrators have to provide good programs for students and strongly encourage them to participate in those programs actively. Designing policies and programs that attract student are other arduous issues faced by administrators. Friedlander and MacDougall (1992) found that the challenge faced by community colleges is to design policies and practices that will encourage students to invest their time and effort in desired learning activities.

Enhancing student involvement is beneficial for both universities and students, since student involvement could improve student learning and curb student drop-out rate. Astin (1987, 1999) explained that students joining social fraternities or sororities or participating in extracurricular activities are less likely to drop out. Student involvement leads to student development and student retention. Likewise, Friedlander and MacDougall (1992) also concluded that there is a strong relationship between student involvement and achievement, persistence, and satisfaction.

Relating to student involvement, Astin (1987, 1999) also found six interesting results on the effect of specific student involvement. *First*, students living on campus or dormitory have more advantages than students living off campus. Moreover, Astin (1987, 1999) contended that on campus students obtained more interest in art, liberalism, and interpersonal self-esteem, since they have more opportunities to have contacts with faculty members, participate in university activities, and have more contact with peers. Other research findings show that residential hall community has a different effect on male and female achievement. A same-sex building influence male student achievement, while a quiet house environment influences female achievement (Yongyi et al. 2004). Unfortunately, living on campus also has a negative effect on students' behaviour, students tend to be less religious and more hedonistic (Astin 1987, 1999).

Second, students who participate in honours programs also have more interpersonal self-esteem, intellectual self esteem, artistic interest and more satisfaction with the quality of the science program, closeness to the faculty members, and quality of instruction (Astin 1987, 1999). Moreover, Astin also contended that students participating in this program tend to be dissatisfied with their friendships.

Research using a longitudinal model shows different results about the effect of extracurricular activities on academic achievement. Hunt (2005) found that participation in extracurricular activities did not improve grades and educational expectations. He also found a more interesting conclusion that getting better grades may lead to students participating in more extracurricular activities. In other words, the involvement of students in extracurricular activities is not the predictor of student achievements, but grades or student achievements would affect student participation in extracurricular activities. Likewise, Baker (2008) contended that the amount of time that minority students spend participating in an extracurricular activity did not significantly affect academic performance.

Third, in relation to academic involvement, students participating in academic activities tend to be more satisfied with college life. Moreover, in terms of personality, these students tend to be less interested in liberalism, hedonism, arts, religious activities, business, and tend to be isolated with their peers (Astin 1987, 1999). Other research findings also show similar result that students' active involvement in learning positively influences their academic achievement (Ullah & Wilson 2007).

Fourth, effective student interaction with faculty members has a very positive impact on student satisfaction in all aspects. Current research has also found that students' relationship with faculty members influence their academic achievements (Ullah & Wilson 2007). In spite of difficulties in designing attractive and productive policies and programs (Friedlander & MacDougall 1992) university administrators should make decisions that encourage faculty members and students to interact with each other. In relation to the Indonesian context, policy makers at state universities are transforming their mindset and work culture, due to more autonomy for state universities (Irianto 2007). The interaction between students and faculty members should not only take place inside classrooms but also outside classrooms. Sandeen (2003) shares his experience as a dean. He had very good engagement with all students in both formal and informal situations. The effect of his engagement on student life on campus and after graduation was positive.

Fifth, the effects of student involvement in athletic activities are similar to the effects of academic involvement. As Astin (1987, 1999) concluded, students who participate actively in athletic activities tend to be less interested in politics, arts, religious, and business. Moreover, he also found other positive effects of athletic involvement i.e. student satisfaction on the institution's academic reputation, academic environment, student friendship, and institutional administration. Even though, students are satisfied with their friendship, athletic involvement tends to isolate students from their peers. In relation to the effect of athletic involvement on student achievement, Baker (2008) found that involvement in athletic organisations did not affect academic performance among minority students.

Sixth, students who actively participated in student government tend to be more interested in politics, hedonism, arts, and status, but they tend to be more satisfied with their friendships, because in fact the students have to interact with other students in the organisation of student government (Astin 1987, 1999). Current findings provide very interesting information that political organisations are positively related to academic performance among Black males, Latinas and Latinos (Baker 2008). Moreover, she also found that political organisation involvement did not affect students' achievement among Black female students.

The above findings are research conclusions based on an American university setting that in some respects have different situation from the context of Indonesian universities. However, campus life in Indonesian universities is almost similar to campus life in western universities. All Indonesian universities and colleges have student organisations such as a student union, fraternities, and sororities. However, the structure of student organisations varies from one university to another.

For a clearer picture about the context of student organisations and student residence, the following are an example of student government and student organisations in a particular university. Semarang State University (http://simawa.unnes.ac.id) has student government with the following bodies. University level: University Student Congress (KKMU), University Students' Representative Council (DPMU), Student Consultative Assembly (MPM KM), Senator of University Students, University Student Executive Board (BEMU), and Student Activity Units (UKM). UKM consists of six groups of activities i.e. Academic, Religious and Welfare, Hobbies and Interests, Technology, Sports, and Community Service. Each unit has many sub-groups of student activities. On the faculty level, there are three bodies i.e. Faculty Student Congress (KMF), Faculty Students' Representative Council (DPMF), and Faculty Student Executive Board (BEMF). Lastly, on department level there are two bodies i.e. Student Family (KMJ) and student association (HIMA).

As previously discussed, students living on campus have more advantage than students living off campus. Most Indonesian students stay in *rumah pondokan* (lodging house) and *rumah kos* (boarding house) located next to the university campus. These types of housing are owned and managed by the community living around the university. Pontoh and Ardjo (2007) also reported that the student housings were dominated by *pondokan* and *rumah kos.* Students living in *pondokan* and *rumah kos* are considered as living on campus, since the distance between these housings and campus is not far by either walking or riding a motorcycle. Organisations and residence of Indonesian students are not so different from American university students'; therefore Involvement Theory may be applicable in the context of Indonesian universities.

The relationships between Involvement Theory and other higher-education theories-- the Subject-matter Theory (SMT), the Resource Theory, and Rendon's Validation Theory—are complementary. The subject matter theory posits that learning outcomes depend on students' exposure to subject matter. The words "exposure" and "involvement" almost have the same meaning. Online Merriam Webster Dictionary (http://www.merriam-webster.com/) lists the closest meaning of "exposures" as "the condition of being present to view or made known". In contrast, the dictionary also shows the meaning of involvement as "to engage as participant, to oblige to take part". A little difference is that "exposure" implies less active students than “involvement”. In view of this, Astin (1987, 1999) presumed that the weakness of subject-matter theory is putting students on a passive role in the learning process.

Resource Theory implies that a university should provide complete resources to make sure students can study properly by optimising their capacity to utilise resources provided. If these resources are adequately available in a university, students can learn and develop. Moreover, Astin (1987, 1999) concluded that Resource Theory has two limitations i.e. high quality of human resources are very limited in nature and the theory tends to pay more attention to the accumulation of resources than utilise available resources optimally. Resource Theory views the process of learning and development as a “black box” meaning that teaching learning occurs automatically when all necessary resources are adequately available in a university. Therefore, Involvement Theory could be an appropriate link between resources and development or learning outcomes. Student involvement could be an intervening or mediating variable between inputs (resources) and outputs. Involvement Theory could be clearer explanations about the “black box”.

Validation Theory developed by Rendon (2002) posits that institutional agents not students, are expected to take the first step to promote involvement and to affirm students as knowers and valuable members of the college learning community. According to this theory, Involvement Theory is not completely applicable for students coming from lower class backgrounds or non-traditional students, since non-traditional students do not have enough information about university or college life. Therefore, university administrators, faculty members, and counsellors should take initial action to reach and encourage new students to engage in academic and non-academic activities.

Certainly, Involvement Theory also suggests administrators, faculty members, counsellors, and personnel workers pay more attention to the passive, reticent, or unprepared students (Astin 1987). In relation to this issue, Involvement Theory has not yet developed more detailed actions and strategies that administrators, faculty members, counsellor should do to activate uninvolved students. Validation Theory provides some examples to analyse both academic and interpersonal validation inside classrooms. Involvement Theory, on the other hand, does not mention any strategy that should be taken to involve passive students in the process of teaching and learning.

Involvement Theory is in line with I-E-O model contended by Astin (1993a). The task of university administrators is to provide the necessary environment for students to learn and develop. In addition, university management should also provide some policies to ensure students will engage in a university's environments properly.

Once Involvement Theory was declared, many scholars tried to design more accurate proxies to measure student involvement. One of the proxies that has broadly used by universities is student engagement. In relation to student involvement and student engagement, some scholars contended that there is no difference in nature. Astin (1987) contended that involvement is an active term. Moreover, he also listed verbs for involvement such as attach oneself to, commit oneself to, engage in, and so forth. Likewise, Delvin et al. (2007) also defined engagement as students' involvement with activities and conditions likely to generate high-quality learning. In addition, concise definition was contended by ERS (1998), student engagement means active involvement in, and commitment to learning process. Lastly, Solomonides (2009) from the Learning and Teaching Centre, Macquarie University also explained that student engagement can be thought of as the involvement of students with their study, university and the activities that support learning. The above definitions substantiate that student involvement and student engagement is the same concept.

2.5.2 Student Engagement

The previous section describes Involvement Theory that becomes one of theoretical foundations for student engagement questionnaires. In addition, the aforementioned section also describes the similarity of student involvement and student engagement. Student involvement was developed by Astin (1987, 1999) while student engagement was developed by Indiana University Center for Postsecondary Research and Planning. Through the work of the National Survey on Student Engagement (NSSE), student engagement questionnaires have been broadly used to measure the education processes in higher education and successfully implemented in some countries such as AUSSE (Australia) and NSSE (USA). Some Canadian and New Zealand universities also used the questionnaire for improving teaching and learning as well as for benchmarking with other universities in neighbouring countries.

Like student involvement, student engagement also has many levels starting from the micro level of student engagement, e.g. reading task engagement, student course engagement, and engagement in undergraduate education. For example, Handelsman et al. (2005) have developed a questionnaire for measuring student course engagement with a very short version, consisting of 23 questions. This study uses student engagement in undergraduate education as a proxy for the transforming process (teaching-learning process) in a university. Since the process of teaching and learning includes lecturers and students, consequently there are two types of engagement, engagement based on students' perspective and student-faculty engagement reported by lecturers.

In relation to student engagement, Chickering and Gamson (1999) proposed more practical approaches, seven principles for good practice in undergraduate education. These principles are students-faculty contact, cooperation among students, active learning, prompt feedback, time on task, high expectation, and respect for diverse talent and way of learning. These principles have been implemented successfully in two courses at management/MIS Department, University of west Florida. Page and Mukherejee (2000) concluded that the implementation of the seven principles reduced student apathy towards academics, increased of student curiosity about contents, improving cooperation among students, strengthening student involvement among weaker students, improving attentiveness, and increasing student performance.

Even though some academics and research institutions used different factors for measuring student engagement, basically they use the same factors as in the seven principles. NSSE employs five factors of student engagement namely level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experience, and supportive campus environment (Kuh 2009). Items of NSSE questionnaires have been widely tested in American Higher Education with good performances (Kuh 2006).

In relation to the performance of NSEE questionnaires, LaNasa et al. (2009) analysed the validity and reliability of NSEE questionnaire. They reported that the original questionnaires have lower validity and reliability by showing factor loadings ranging from 0.11 to 0.95 and Cronbach alpha reliability of scale range from 0.590 to 0.787 in each latent variable. To improve questionnaire performance LaNasa et al. (2009) grouped questionnaire items into eight factors i.e. learning strategies, academic integration, institutional emphasis, co-curricular activity, diverse interaction, effort, overall relationship, and workload. The performance of the questionnaire improved after being grouped by factor loadings ranging from 0.4 to 0.9 and reliability of scale ranges from 0.527 to 0.888. These results imply that lower factor loadings and reliability of the scale was due to item grouping.

The Australasian Survey of Student Engagement (AUSSE) is an organisation run by Australian Council for Educational Research (ACER). The objectives of this organisation are to help stimulate evidence-focused conversations about student engagement in university study and provide institutions with information that they can use to monitor and enhance the quality of education they provide to their students (http://ausse.acer.edu.au). This organisation adapted student engagement and student-faculty engagement questionnaires developed by NSSE to ensure questionnaires are in line with Australian university context. Therefore, the number of factors in AUSSE questionnaire is also different. AUSSE (2010b) employs more factors in their questionnaire i.e. academic challenge, active learning, student and staff interactions, enriching educational experience, supportive learning environment, and work integrated learning.

As previously discussed, there are some proxies for measuring teaching and learning processes or transforming processes in a university i.e. seven principles for good practice in undergraduate education (Chickering & Gamson 1987, 1999) and student engagement (AUSSE 2010b; Kuh 2006, 2009; LaNasa, Cabrera & Trangsrud 2009). Scholars provide different dimensions on these proxies due to different emphasis.

Table 2.1 shows dimensions of transforming processes in universities contended by some scholars. In addition, the table also shows probable compatibility among dimensions. For example, student-faculty contact and prompt feedback that contended by Chickering and Gamson (1999) are compatible with student-faculty interaction contended by Kuh (2009) and student-staff interaction used by AUSSE (2010b).

Table 2.1: Comparison of Dimensions for Measuring Transforming Process in Higher Education

Chikering & Gamson	Kuh	AUSSE
Student-faculty contact	Student faculty interaction	Student and staff interaction
Prompt feedback		
Active learning	Active and collaborative learning	Active learning
Cooperation among students		
Time on task	Academic challenge	Academic challenge
High expectation		Work integrated learning
Respect diverse talent and way of learning	Enriching educational experience	Enriching educational experience
	Supportive campus environment	Supportive learning environment

Source: AUSSE (2010b); Chickering and Gamson (1987); Kuh (2006)

Student-faculty interaction is very important to build quality of student effort (Pascarella & Terenzini 1991). In this case, student-faculty interaction is not merely formal interactions inside classrooms, but also interaction outside classrooms. Therefore, student-faculty interactions include formal and informal interaction (Tinto 1993). The role of lecturers is becoming more important, since lecturers become role models, mentors, and guides for continuous, life-long learning (Kuh 2009). Likewise, Chickering and Gamson (1987) also contended that student-faculty contact is very important, since it can help students improve their motivation and involvement. They also contended that faculty members have important roles in enhancing students' intellectual commitment and encouraging them to think about their own values and future plans.

Some scholars have conducted research to find the influence of student-faculty contact on students' achievements or development. Interaction with agents of socialisation such as faculty impacts on student learning and cognitive development (Tinto 1993). More specifically, teacher behaviours significantly predict students' mid-term test and students' perceptions of scholastic competence (Woodside, Wong & Wiest 1999). Relationships between students and faculty are not only associated with student academic outcome, but also related to psychological outcome (Komarraju, Musulkin & Bhattacharya 2010). The above findings show that faculty contact with their students has positive impacts on students' outcomes. In relation to prompt feedback, Chickering and Gamson (1987, 1999) posited that students need appropriate and frequent feedback from lecturers to ensure they can assess their knowledge and competence. Feedback also plays very important roles in the process of teaching and learning, since feedback could function as a tool for motivating and evaluating students (Kartal 2010).

Learning is not merely listening and watching a lecture, but learning should also include more active involvement of students both psychologically and physically. Academic challenge and high expectation relate to student learning and collegiate quality (Kuh 2009). In view of this, academic and social integration influence outcomes in term of departure decision (Pascarella & Terenzini 1991). In addition, Chickering and Gamson (1987) also concluded that students must talk about what they learn, write about it, relate it to past experience, and apply it into their daily lives. They also emphasise that active learning is a meaningful process. It means that students should understand what they are learning both practically and theoretically. Therefore, students learn more when they are intensely involved in their education and asked to think about what they are learning in different settings (Kuh 2009).

Cooperative learning is one of the teaching strategies that has been widely implemented in western countries. The strategy consists of creating small groups of students to learn together and help each other in solving problems to achieve learning objectives. By using cooperative learning, students could learn to solve problems by asking or by providing some help to other members of the group. Learning is enhanced when it is more like a team effort (Chickering & Gamson 1987) and students are collaborating with others in solving problems or mastering difficult material that they will encounter in daily life (Kuh 2009).

Some research has been conducted to understand the influence of cooperative learning on student achievements, even though, the results were quite diverse. Tsay and Brady (2010) found significant and positive correlation between involvement in cooperative learning with academic performance. Moreover, cooperative learning enhances students' interpersonal and communication skills among undergraduate student majoring in accounting (Ballantine & McCourt Larres 2009). They also revealed that cooperative learning benefits students in two respects i.e. immediate academic context and students' long term career development. On the other hand, Krause and Stark (2010) found that students in the individual conditions showed greater progress than those in cooperative condition. These diverse findings could be caused by the nature of cooperative learning that it would not provide automatic results unless students know how to help each other (Chan 2010).

Academic challenge and high expectation relate to student learning and collegiate quality (Kuh 2009). Students will be motivated, if they get appropriate academic challenges or academic expectation from university's academic environments. Moreover, Chickering and Gamson (1987, 1999) hypothesised that expecting students to perform well becomes self-fulfilling prophecy when teacher and institutions hold high expectations of themselves and make extra efforts. In summary, high expectation and academic challenge could motivate students to put more efforts to ensure they will be able to fulfil expectation and challenge. In relation to time on task, Astin (1987, 1999) explained that students have limited time to be involved in university's activities. Universities should use students' time optimally, since learning could be determined by the time and energy that students spend in university activities. Therefore, students needs help in learning effective time management (Chickering & Gamson 1987).

Every student brings his own talent, motivation, and other uniqueness to learn in a university. Students need the opportunity to show their talents and learn in ways that work for them (Chickering & Gamson 1987). A university should provide facilitation to all types of students to ensure they can achieve their goals. Supportive campus environment leads to students' satisfaction, commitment, success by cultivating positive working and social relations among different groups on campus (Kuh 2009). The impacts of university environment on student achievements and development are significant. Students who participate in a certain organisation tend to gain more achievements or development than students who do not participate (Astin 1987, 1999).

In view of the above, all dimensions of student engagement have been briefly discussed. The influence of each dimension on student achievements and development is quite obvious. Owing to limited research providing a clear picture about the impact of a particular dimension on student achievements and development, the study concluded that dimensions of student engagement—academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences, and supportive campus environment--has a strong theoretical foundation. The following reviews discuss the roles of student engagement as a proxy for transforming processes in a university.

The effectiveness of student engagement in predicting students' learning outcomes is quite obvious. By citing some research results, Harper and Quaye (2008) arrived at a conclusion that educationally purposeful engagement produces gains, benefits, and outcomes. In addition, they also identified nine student outcomes resulting from student engagement such as cognitive and intellectual skill, practical competence skill, moral and ethical development, grade point average, and so forth. The above findings are in line with the proposition that student engagement is considered as an important predictor of student achievements (Handelsman et al. 2005). Likewise, Institutional Planning and Analysis, University of Victoria, Canada (2006) arrived at the same results that student engagement is a crucial predictor of student learning and success. This institution also concluded that student engagement can be a good proxy for overall educational quality.

In view of the above, the following findings show the extent of student engagement impacting on outputs or outcomes. The influence of student engagement on student achievements varies among universities. Carini, Kuh, and Klein (2006) concluded that many measures of student engagement have positive correlation with desirable learning as critical thinking and Grade Point Average (GPA), even though correlations were quite weak. Using bi-variates correlation, they found that student engagement measures—academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experience, and supportive campus climate—have positive and significant correlation with students' GPA, although the correlation coefficients ranges from 0.06 to 0.13 (at least with $p<0.05$). In addition, the study also shows that by employing partial correlation all student engagement measures have significant correlations with GPA, except the measure of enriching educational experience. Likewise, the correlation between student engagement measures with other standard test i.e. RAND test and Graduate Record Examination (GRE) also tend to be weak, and some measures have insignificant correlations.

More current research conducted by Gordon, Ludlum, and Hoey (2008) found that the National Survey of Student Engagement (NSSE) benchmarks have minimal explanatory power on freshmen retention, GPA, pursuit of graduate education, and employment outcome upon graduation. On the other hand, Kuh et al. (2008) concluded that student engagement in purposeful activities correlates positively with student grades between the first and second year of college.

In relation to the above findings, low correlation between student engagement and learning outcomes could be engendered by at least two factors. *First*, the NSSE questionnaire did not fully capture many meanings of academic challenge, therefore they proposed changes to some questions (Payne et al. 2005). Learning technology also plays an important role in strengthening student engagement (Chen, Lambert & Guidry 2010; Heiberger & Harper 2008). Therefore, a questionnaire measuring student engagement should be tailored to the development of this learning technology. *Second*, the student engagement questionnaire should be regrouped to gain higher factor loadings and reliability of the scales (LaNasa, Cabrera & Trangsrud 2009).

By employing academic engagement as a proxy for teaching and learning at University of California, Berkeley, Agronow (2008) found that correlation between academic engagement and student achievements was 0.298. In other words, academic engagement determined student GPA by 8.9%. Coefficient of determination almost doubled when he put students' critical thinking and communication as dependent variables, and the influence of academic engagement to dependent variables was approximately 17%. Other findings also show a different view on the effectiveness of student engagement in predicting learning outcomes. Strayhorn (2008) found that student engagement in educationally purposefully activities correlates positively with student's personal/social learning. He also found that peer interactions, faculty-student interactions, and active learning experiences contribute 24% to personal and social learning outcomes. Chen, Lambert and Guidry (2010) provide a different perspective about student engagement and technological intervention. They correlated the use of learning technology and student engagement in the same model to predict learning outcomes among online learners. They found that the relationships between the use of learning technology and student engagement with learning outcomes were positive and significant.

The theory of validation contended by Rendon (2002) may corroborate the above findings. According to this theory, student engagement or student involvement cannot be fully applicable to students from lower middle class, since this type of student tends to be passive. Therefore, the theory suggests that faculty members, administrators, and counsellors should take initiative action to involve them in academic activities.

Despite its shortcomings, student engagement is still worthwhile as a construct for measuring the process of teaching and learning in a university. This construct still has enough power to predict educational output such as student achievements and student skills. Therefore, student engagement, a proxy for the accounting learning process, has correlation with international competency of accounting graduates and student achievements in Indonesian universities.

This study employs student engagement and student-faculty engagement to measure transforming processes or teaching-learning processes in Indonesian universities. These questionnaires were adapted from Australasian Survey of Student Engagement (AUSSE) (2010b). Originally, this questionnaire was adapted by AUSSE from questionnaires developed by NSSE (2009). The study needs to adapt these questionnaires to ensure all items of the questionnaire correspond with the context of Indonesian university. The questionnaire dimensions of student engagement as well as student-faculty engagement used by this study are academic challenge, student-faculty interaction, active and collaborative learning, experiences with diversity, and supportive campus environment. Chapter 4, Research Methodology, provides more detailed descriptions about the questionnaires.

2.5.3 Student-Faculty Engagement

As previously mentioned, students and teachers are very important inputs in the education process at a university, since the interactions between these two inputs triggers transforming processes or teaching and learning processes. Hattie (2003) contended that the influence of a teacher on students' achievements is enormous. He estimated 30% of the variance on student achievement could be explained by the role of the teacher. In this case, student-faculty engagement is the roles of lecturers to make students maintain time on task and improve their intellectual attachment in the process of learning. For a clearer picture, Kennedy (1998) defines lecturer engagement as a parallel process in which the lecturer is consciously aware of his or her role in the learning process. In addition, she also explains that the engaged lecturer will be aware of, and responding to student experiences in the classroom. In terms of lecturer engagement, the followings research describes the influence of teachers on student engagement or student learning.

By employing multi-level analysis and using NSSE data sets to understand the roles of lecturer on student learning and engagement, Umbah and Wawrzynski (2005) found that lecturer behaviours and attitude affect students. They also surmised that lecturers play the most dominant role in student learning. It is quite clear that student engagement has a positive influence on student achievements and development. By utilising I-E-O model developed by Astin (1993a) as an underpinning theory and employing items from the *College Student Experience Questionnaire (CSEQ)* as a proxy for environment, Strayhorn (2008) found that faculty-student interaction was positively-correlated with students' personal/social learning (0.36 with $p<0.01$). Other findings provide a different picture. Kuh and

Shouping (2001) examined the effect of student-faculty engagement on student satisfaction and self-reported learning and personal development. They found that the effect of independent variables on dependent variables was trivial, but student-faculty interaction had a substantially positive effect on students' efforts in other educationally purposeful activities. In summary, faculty encourage engagement by providing students with active learning, conveying excitement and enthusiasm, and providing opportunity for student-faculty engagement (Heller et al. 2010).

Since student engagement uses five dimensions, consequently student-faculty engagement also utilises five dimensions. The dimensions are student-faculty interaction, active and collaborative learning, academic challenge, enriching educational experience, and supportive campus environment (AUSSE 2010b; Kuh 2009; NSSE 2009). Moreover, student engagement dimensions measure student engagement based on student perception, while student-faculty engagement dimensions measure lecturers' or faculty members' engagement. Certainly, the questions of Student-Faculty Engagement are the mirror of Student Engagement questions (Kuh, Nelson Laird & Umbach 2004). For example, students are asked "Did you ask questions or contribute to discussions in class", teachers will be asked "Did you encourage students to ask questions or contribute to discussions in class".

Previous research shows that the association between student-faculty engagement questions on student engagement is inconsistent. Kuh et al. (2004) provides a more detailed table about the relationship between Student Engagement and Faculty Expectation Behaviour.

Table 2.2: Relationship between Student Engagement and Faculty Expectation and Behaviour

At campuses Where Faculty Score Highly on	Student Scores tend to Be Higher On			
	Academic Challenge	Active and Collaborative Learning	Diversity Experience	Student-Faculty Interaction
Emphasis on Academic Challenge	√	√	√	
Active and Collaborative Practices	√	√	√	√
Emphasis on Diversity Experiences	√	√	√	
Emphasis on Higher-Order Thinking	√	√	√	
Importance of Enriching Educational Experience	√	√		√

Source: Kuh *et al.* (2004)

Table 2.2 shows clear information that the relationship between student-faculty engagement and student engagement. At campuses where faculty score high on emphasis on active and collaborative practices, students scores tend to be higher on academic challenge, active and collaborative learning, diversity experience, and student-faculty interaction. The table also shows that at campuses where faculty score highly on the dimension of importance enriching educational experience has no correlation with students' diversity experience. Likewise, student-faculty interaction has no correlation with students' perception of academic challenge, diversity experiences, and higher order thinking.

Student-faculty engagement (lecturer perception) positively correlated with student engagement (student perception). The information presented by the above table is in line with current empirical findings (Kuh & Shouping 2001; Strayhorn 2008; Umbach & Wawrzynski 2005). Therefore, the study uses student-faculty engagement as a proxy for transforming processes or teaching and learning processes in universities based on lecturers' perspectives.

2.6 Education Output

Based on both System Theory and I-E-O model, the ultimate objective of university education is outputs or outcomes. In comparison, Tinto's model of Institutional Departure (Tinto 1993) and Pascarella's general model for assessing change (Pascarella & Terenzini 1991) also end up with learning outcome as ultimate objectives. There are various kinds of education outputs. In general, outputs of education could be classified into three main domains i.e. knowledge, affective, and psychomotor (Bloom cited in Isaacs 1996).

In relation to accounting competencies as educational outputs, there are many standards of accounting graduate competencies. These standards are minimum competencies that should be achieved by accounting graduates. Some organisations such as Business, Industry and Higher Education Collaboration Council (BIHECC) and American Institute of Certified Public Accountants (AICPA) have already established skills and competencies of accounting graduates. Likewise, some academic research has been conducted to uncover accounting competencies required by accounting graduates in work places i.e. technical and non-technical skills (Hancock et al. 2009a). In fact, there are many other more specific learning outcomes that have been studied such as employment (Gordon, Ludlum & Hoey 2008), GPA and critical thinking (Carini, Kuh & Klein 2006), personal/social learning, communication and social skills (Hardern 1995; Strayhorn 2008).

The study focuses on two education outputs i.e. International Competencies of Accounting Graduates (ICAG) based on AICPA core competencies and student achievements in terms of Grade Point Average (GPA). The following section discusses more detail about these outputs.

2.6.1 International Competencies of Accounting Graduates (ICAG)

As has been noted, there are many types of university education outputs. Individual traits, characteristics, and attributes gained by students during their presence in the education process at their universities are examples of education output. Besides equipping students with general knowledge, universities should also equip their graduates with skills and knowledge that are in line with the demands of employers to ensure graduates can work harmoniously in the real world. Competency is one of common terms for describing traits, characteristics, and attributes of graduates. To provide a clearer picture about competency, Johns (1995) defined competency as a relational notion--the way in which individual attributes (knowledge, skills, attitudes) are drawn on in performing tasks in particular work contexts. The definition clearly implies that competencies also consist of cognitive, affective, and psychomotor domains as contended by Bloom.

In relation to accounting graduate competencies, some academics and organisations have already established standards. To ensure accounting graduates' competencies are in line with employers' expectation, Kavanagh and Drennan (2008) enlisted graduates' skills for entering the profession i.e. analytical/problem solving skills, a level of business awareness, oral communication skills, ethical awareness and professional skills, teamwork, written communication and an understanding of the interdisciplinary nature of business. In relation to generic competencies, Harden (1995) also suggested that education institutions should pay more attention to the importance of developing personal, communications, and social skills in their students. Lastly, to ensure accounting graduates meet global market requirements and expectations, Mohamed and Lashine (2003) conceptualised seven areas of accounting competencies that graduates have to possess i.e. communication skills, computer skills, analytical skills, multi-disciplinary and inter-disciplinary skills, knowledge of global issues, personal characteristics, and critical thinking. It is quite clear that some items contended by academics are complementary or congruent.

Some developed countries have already established skills and competencies of accounting graduates. The Accounting Education Change Commission (AECC) requires that accounting education should provide students with the requisite set of skills that future employers seek, including strong communication, quantitative analysis, interpersonal, and intellectual skills (Reinstein & Bayou 1997). Likewise, an Australian-base organisation, Business, Industry and Higher Education Collaboration Council (BIHECC) (2007) also established a set of business employability skills consisting of eight skills, namely communication skills, teamwork skills, problem solving skills, self-management skills, planning and organising skills, technology skills, life-long learning skills, and initiative and enterprise skills. Current findings show that accounting graduates should master not only accounting but also non-technical skills such as communication, teamwork, problem solving and so forth (Hancock et al. 2009a). Moreover, they also found that graduates working in small companies need more technical than non-technical skills (Hancock et al. 2009a).

In comparison, the American Institute for Public Accountants (AICPA) created a set of competencies that graduates should have i.e. functional, personal, and broad-business perspectives (Foster, Bolt-Lee & Colson 2002; Mula 2007; Wolcot, S. K. 2006). Each category has six, seven, and seven areas of competencies respectively. Therefore, there are 20 areas of competencies that students have to master to graduate from accounting program.

Research has been conducted to identify competencies required to become a professional manager in the Indonesian company context. This study found that employers expect 20 skills/competencies (Irianto 2010). Even though, these competencies are intended for Masters' graduates, they are in line with AICPA core competencies. The following table shows more detailed ranks of skills/competencies expected by Indonesian companies from Master's graduates.

Table 2.3: Expected Skills/competencies of professional Managers

Rank	Skills/competencies	Rank	Skills/competencies
1	Leadership skills	11	Strategic Thinking
2	Interpersonal skills	12	Ethical conduct
3	Problem-solving skills	13	Implementation skills
4	Creativity and ability to think outside the box	14	Written communication
5	Decision making	15	Analytical thinking
6	Teambuilding, teamwork	16	Quantitative skills
7	Organising	17	Presentation and negotiation skills
8	Action oriented	18	Adaptability
9	Cultural sensitivity	19	Information integration
10	Initiative and risk-taking	20	Oral communication

Source: Irianto (2010)

AICPA defines each domain as follows: functional competencies focus on specific capabilities used by accountants; personal competencies relate to interpersonal skills; and broad-business perspective competencies deal with today's accounting environment (Bolt-Lee & Foster 2003). Some accounting competencies required by the work places have been identified (Azemikhah 2006; Bonner 1999; Jayaprakash 2005; Tigelaar et al. 2004; Weil, Oyelere & Rainsbury 2004; Wu 2008). Nevertheless, students and employers report that many important non-technical and professional skills and attributes are not developed sufficiently in university accounting education (Hancock et al. 2009a; Kavanagh & Drennan 2008).

Since AICPA core competencies have been broadly used to measure accounting graduate competencies (Beard 2007; DeLaune 2004; McVay, Murphy & Yoon 2008; Mula 2007), this study employs this three-dimension competency as learning outputs of accounting programs in Indonesian universities. In addition, clear indicators of each dimension have been identified making the process of designing questionnaires more straightforward. In line with this, the study uses competency indicators developed by Wolcot (2006) based on AICPA three-dimensions competency. Since the indicators were developed based on the setting of American universities, this study also take advantages of AICPA core competencies indicators used by Mula (2007) to ensure that all indicators are applicable in the setting of Indonesian universities.

AICPA core competencies do not focus on capability to do jobs in a certain area, but it also requires deeper competencies, meta-competency. Brown and McCartney (1995) define meta competency as the higher-order skills and abilities upon which competence is based and which have to do with being able to learn, adapt, anticipate and create. In addition, skills could be classified into two categories i.e. soft skills and hard skills (Burns 1997). Soft skills are people’s abilities to relate each other, while hard skills are technical and administrative procedures related to an organisation's core business (Coates 2006). Soft skills or non-technical skills play important roles in workplaces of the future (Hancock et al. 2009a; Marsh 2012).

Some academics and institutions have already enlisted some points of soft skills. BIHECC (2007) enlisted some soft skills such as communication skills, teamwork skills, problem solving skills, and so forth. Moreover, Hancock (2009a) found communication, teamwork, problem solving are important non-technical skills in work places. Marsh (2012) enlisted the following soft skills i.e. understanding and managing diversity, emotional intelligence, strong team skills, personal responsibility, personal productivity, and handling difficult situation. In Indonesian business context, soft skills are also becoming more important. Irianto (2010) enlisted some important soft skills such as leadership, interpersonal, problem solving, decision making, ethical conduct skills and so forth.

AICPA core competency indicators, Wolcot (2006) identified 166 indicators, whilst Mula (2007) employed 120 indicators that are in line with the context of Indonesian universities. Table 2.4 shows more detailed information about the number of competency indicators in each area.

Research has identified clear lists of graduates' accounting competencies. Employers, however, still perceive that there are some competency gaps between graduates' accounting competencies with employers' expectation (Hancock et al. 2009a; Irianto 2010; Kavanagh & Drennan 2008). Even though, lecturers embed accounting competencies into courses by employing various techniques and strategies such as Contextual Teaching and Learning (CTL) (Jayaprakash 2005), Case studies (Weil, Oyelere & Rainsbury 2004), multiple teaching techniques (Bonner 1999), the use of classroom configuration and technological tools (McVay, Murphy & Yoon 2008), filling all gaps to meet the demands of employers is unrealistic (Cranmer 2006). In relation to this, Hancock et al. (2009b) released 18 strategies for embedding non-technical skills into the accounting curricula such as field trip, engagement with practitioners, business plan and case studies, and so forth.

Table 2.4: Number of indicators of AICPA core competencies

Functional Competency	*W	*M	Personal Competency	W	M	Broad-business Perspective Competency	W	M
Decision Modelling	8	8	Professional Demeanour	16	14	Strategic/Critical Thinking	7	5
Risk Analysis	7	4	Problem Solving & Decision Making	13	13	Industry/Sector Perspective	6	4
Measurement	8	5	Interaction	8	7	International/Global Perspective	8	4
Reporting	6	3	Leadership	10	7	Resource Management	9	7
Research	9	5	Communication	8	6	Legal/regulatory Perspective	6	4
Leveraging Technology	7	4	Project Management	11	9	Marketing/Client Focus	6	3
			Leveraging Technology	7	4	Leveraging Technology	6	4
	45	29		73	60		48	31

*W: Wolcot M: Mula
Sources: Wolcot (2006) and Mula (2007)

The table shows that Wolcot suggested 45 indicators for functional competency and Mula has simplified the list into 29 indicators. The number of original indicators of personal competency is 73 but Mula used 60 indicators. Lastly, indicators of broad-business perspective competency are 48, but Mula used 31 indicators to assess accounting competencies in Indonesia.

Ideally, each indicator represents one question, but the number of questions will be quite burdensome to respondents. Too many questions in one questionnaire would be counter-productive meaning that respondents might not answer the questions properly. Therefore, questions about competencies have to be simplified to ensure the number of questions is reasonable. Based on indicators, the study designs the questionnaire to collect students' competencies in three dimensions with 20 areas. Therefore, the study designs 20 questions based on the areas of competencies. The techniques used to design these questions are discussed in Chapter 4. The following section discusses student achievements as one of the education outputs. In this case, the study employs Grade Point Average (GPA) as a proxy for students' achievements gained while attending university education.

2.6.2 Student Achievement

Learning process outputs of a university can be student achievements in terms of numerical index. Test, assignment, and other standardised techniques of assessment are employed to measure student achievements. In this respect, the study also employs students' GPA as a proxy of student achievements. All Indonesian universities grade their students using numbers ranging from 0.00 to 100 which is then translated into the letters A, B, C, D, and E. In addition, they employ four-scale GPA as the Ministry of National Education enacted a decree No 232/U/2000 on "Guidelines for the Developing Higher Education Curricula and Assessing Student Learning Outcomes". The decree clearly mentions in chapter 5, verse number 12, point 3 that assessment results have to be presented in letters A, B, C, D, and E with value of 4, 3, 2, 1, and 0 respectively.

Despite the above ministerial decree, some universities have their own academic regulations in this regard. For example, Brawijaya University and Sam Ratulangi University have their rules to interpret grades. These universities use grading system ranging from A, B+, B, C+, C, D+, D, and E with the value of 4.0, 3.5, 3.0, 2.5, 2.0, 1.5, 1.0, and 0.0 respectively. University of Riau, in contrast, follows exactly the above ministerial decree. The classification of numerical score into grades (A, B, C, D, and E) also could vary among universities. The variation of grading system in each university could lead to different interpretations on students' mastery in each course. For example, a student at Jakarta State University (UNJ) scored 80 on Cost Accounting course will earn an A with a weight of 4, but a student having the same level of mastery (80) will get a B with a weight of 3 in Semarang State University (UNNES) (Table 2.5). Therefore, GPA also has a potential accuracy issue in measuring student achievement. For a clearer picture, the following table shows some grading system in selected universities i.e. University of Riau (UNRI), Jakarta State University (UNJ), University of General Soedirman (UNSOED), and Semarang State University (UNNES).

Table 2.5: Comparison of Grading Systems in Selected Universities

Grade	Grade Weight	University			
		UNRI	UNJ	UNSOED	UNNES*
A	4.0	81-100	80-100	80-100	86-100
B+	3.5	NA	NA	NA	81-85
B	3.0	66-80	70-79	67-80	71-80
C+	2.5	NA	NA	NA	66-70
C	2.0	56-65	60-69	55-66	61-65
D+	1.5	NA	NA	NA	56-60
D	1.0	41-55	55-59	47-54	50-55
E	0.0	0-40	0-50	0-46	0-50

*This university uses AB for B+; BC for C+, CD for D+
Source: Academic Guidelines from respective university

Despite different procedures in interpreting and classifying raw scores of assessment, all Indonesian universities have the same procedure of calculating GPA in every semester or Cumulative GPA. The following is the formula that is used by universities, lecturers, and students to calculate GPA.

$$IP = \frac{\sum_{i=1}^{n} K_i NA_i}{\sum_{i=1}^{n} K_i}$$

(GJM-FE-UB 2009)

Where:

IP : Semester or Cumulative Grade Point Average

K : Credit of course *i*

NA : Grade weight of course *i*

N : Number of courses

2.7 Gap in the literature

Previous sections review the literature as a foundation for the study and to identify gaps in the literature. *First*, the adoption of System Theory in accounting education is still limited. As previously mentioned, System Theory has been broadly employed as an underpinning theory in quality assurance research of higher education. Literature on the adoption of System Theory into accounting education especially building accounting graduate competencies is still limited. In other words, research on building International Competency of Accounting Graduate (ICAG) by employing three constructs (input, process, and output) in the same model seems to be very limited.

Second, the combination System Theory and I-E-O model as underpinning theories in education seems to be limited. System Theory having three basic elements--input, process, and output--is still a very general theory, since the theory can be applied to other disciplines. In comparison, I-E-O model that was exclusively developed based on the higher education institution context also has almost the same elements i.e. input, environment, and output. Literature discussing the combination between System Theory and I-E-O model in accounting education seems to be very limited. More specifically, research on building International Competency of Accounting Graduates (ICAG) that includes inputs (lecturer's characteristics, student's characteristics, accounting competency-teaching contents, comfort of class size, and learning facilities) and processes (student engagement and student-faculty engagement) in Indonesian universities appears to be non-existent.

Third, the use of Expectancy Theory to measure student motivation, Herzberg's Motivation Theory to measure teacher motivation and job satisfaction, as well as Involvement Theory to measure the transforming process in a university (in terms of student engagement and student-faculty engagement) has only been undertaken to a limited students in the Indonesian university context.

Fourth, research relating to International Competency of Accounting Graduates (ICAG) in Indonesian universities is still limited, since the attention of most academics is focused on student achievements measured by Grade Point Average (GPA) rather than competencies required by employers. The study also attempts to discover the impact of student engagement and student-faculty engagement on students' accounting competencies. More specifically, the utilisation of the student engagement and student-faculty engagement survey to gauge the transforming process for assessment and benchmarking purposes within Indonesian universities seem to be non-existent.

2.8 Conclusion

This chapter discusses relevant literature to develop hypotheses in order to answer the research questions described in Chapter 1. Briefly, the study classifies the literature into four cohorts. *First*, this chapter discusses underpinning theories employed by this study. The study combines System Theory and I-E-O model consisting of three constructs i.e. inputs, process/environment, and outputs. *Second*, this chapter discusses inputs that consist of teacher characteristics, student characteristics, accounting-competency teaching contents, comfort of class size, and learning facilities. *Third*, the discussion on the transforming process that measured by student engagement and student-faculty engagement. The discussion on student engagement and student-faculty engagement begins with Involvement Theory, the theoretical foundation for student engagement. *Fourth*, the study discusses educational outputs in terms International Competency of Accounting Graduate (ICAG) measured by AICPA core competencies and student achievements (SA) in term of cumulative GPA.

CHAPTER 3: RESEARCH DESIGN

3.1 Introduction

Based on the gaps in the literature, the study develops a research design consisting of three main sections i.e. research questions, conceptual model, and hypotheses. As previously mentioned in Chapter 1, the study developed six research questions relating to (1) relationships between inputs and processes/environments; (2) relationships between inputs and outputs; (3) relationships between processes/environments and outputs; (4) model for improving International Competency of Accounting Graduates (ICAG); (5) model for improving Grade Point Average (GPA); and (6) alumni perceptions on AICPA core competencies. Based on these main research questions, this Chapter develops more detailed research sub-questions and builds models for testing. Besides developing a more comprehensive model, the study also split the model into two sub-models based on student and lecturer perceptions. The last section of this chapter discusses the hypotheses developed to test models.

3.2 Research Questions

As mentioned earlier in both Chapter 1 and 2, the study employs two underpinning theories i.e. System Theory and I-E-O model. These theories contend that there are three constructs in an educational system that should be taken into account i.e. inputs, processes/environments, and outputs. Both theories also treat processes/environments as mediating or intervening constructs. In this regard, the I-E-O model uses the term of environment as mediating construct rather than a process term. Relationships among constructs can be direct[11] and indirect[12] causal relationships (de Vaus 2002). Therefore, research questions relate to relationships between the three constructs. Process/environment as a transforming process is measured by Student Engagement based on student perception, whilst ICAG-Teaching Content and Student-Faculty Engagement are lecturer perceptions. The research design formulates more detailed Research Sub-Questions to answer the main questions as presented in Chapter 1.

RQ1: What educational inputs have significant relationships with educational processes?

Students as inputs to an educational system will go through a process to become outputs. To ensure the educational process produces required outputs, students should have certain characteristics. In this regard, students characteristics could be classified into psychological (Credé & Kuncel 2008), previous academic performance (Duff 2004), and demographic (AUSSE 2010a; Strayhorn 2008) characteristics. In relation to psychological characteristic the study employs Student Motivation measured by Expectancy Theory (Geiger & Cooper 1995; Geiger & Cooper 1996). These measures of inputs lead to the following research sub-questions:

[11] The relationships between inputs and outputs are direct causal relationships without any mediating or intervening constructs.
[12] The relationships between inputs and outputs are indirect causal relationships by involving processes/environments as mediating/intervening constructs.

RSQ1.1: Does Student Motivation measured by Expectancy Theory have an association with Student Engagement?

RSQ1.2: Do Student Previous Achievements have associations with Student Engagement?

RSQ1.3: Do Student Demographic Characteristics have an association with Student Engagement?

Another important input to the educational system is learning facilities. Good education facilities may not guarantee good outputs from the education system, but poor facilities certainly affect the quality of outputs (Mohamed & Lashine 2003). Learning facilities are in the form of libraries, laboratories, computers (Dolan, Jung Jr & Schmidt 1985) as well as class size (Dillon & Kokkelenberg 2002; Konstantopoulos 2007; Murdoch & Guy 2002). Class size will be measured by Comfort of Class Size. These measures lead to the following question:

RQ1.4: Do Learning Facilities and Comfort of Class Size based on student perceptions have an or any association with Student Engagement?

A lecturer is another important input into an educational system (Mizikaci 2006; Nearon 2002). A lecturer also has the same characteristics i.e. psychological (Ololube 2006; Sudiro 2008; Woods & Weasmer 2004), academic (De Paola 2009; Knowles 1999; Wang, Smith & Steve Oliver 2006; Yusuf 2006), and demography characteristics (Hoffmann & Oreopoulos 2009b, 2009a; Kemper 2010; Kinney & Smith 1992).

In relation to psychological characteristics, the study employs Lecturer Job Satisfaction (Conklin & Desselle 2007) to measure lecturer motivation. In addition, academic dimensions can be in terms of teaching experience and research productivity (De Paola 2009), lecturer licensure (Harris & Sass 2009; Wang, Smith

& Steve Oliver 2006), and lecturer education attainment (Riduwan 2006; Yusuf 2006). Lastly, demographic characteristics can consist of lecturers' age (Kemper 2010; Kinney & Smith 1992) and gender (Bennett 1982; Buck & Tiene 1989; Verceles & Rivera 2010). Transforming processes or environment based on lecturer perception are ICAG-Teaching Content and Student-Faculty Engagement. These findings lead to the following research sub-questions:

RSQ1.5: Does Lecturer Job Satisfaction have an association with ICAG-Teaching Contents, Student-Faculty Engagement?

RSQ1.6: Do Lecturer Teaching Experiences, Education Attainments, Research Productivity, and Licensure have an association with ICAG-Teaching Content and Student-Faculty Engagement?

RSQ1.7: Does Lecturers' Age have an association with ICAG-Teaching Content and Student-Faculty Engagement?

RSQ1.8: Does Lecturers' Gender have an association with ICAG-Teaching Content and Student-Faculty Engagement?

RSQ1.9: Do Learning Facilities and Comfort of Class Size based on lecturer perceptions have an association with Student-Faculty Engagement and ICAG-Teaching Content?

Based on I-E-O model contended by Astin (1993a), the influence of environment cannot be understood without considering the impact of inputs on outputs. As previously mentioned, the study uses Student Engagement, ICAG-Teaching Content, and Student-Faculty Engagement as proxies of transforming processes. In addition, the study also employs ICAG and Student Achievements as outputs. Therefore, relationships between transforming processes (Student Engagement, Student-Faculty Engagement, and ICAG-Teaching Content) and outputs (ICAG and Student

Achievements) should consider relationships between educational inputs and educational outputs. This leads to the following research question:

RQ2: What are the educational inputs that have an association with educational outputs in term of ICAG and Student Achievements?

As mentioned earlier, students as inputs have at least three characteristics i.e. psychological (Credé & Kuncel 2008), academic (Duff 2004) and demographic (Strayhorn 2008). Psychological characteristics are measured by Student Motivation; academic characteristics are gauged by Student Previous Achievements; whilst demographic characteristics are Student Age and Gender. To answer research question, the following research sub-questions are asked:

RQ2.1: Does Student Motivation measured by Expectancy Theory have an association with International Competencies of Accounting Graduates (ICAG) and Student Achievements?

RQ2.2: Do Student Previous Achievements have an association with ICAG and Student Achievements?

RQ2.3: Do Student Demographic Characteristics in terms of Age and Gender have association with ICAG and Student Achievements?

RQ2.4: Do Learning Facilities and Comfort of Class Size based on student perceptions have an association with ICAG and Student Achievements?

Lecturers as inputs also have the same characteristics i.e. psychological, academic, and demographic characteristics. Lecturer Job Satisfaction is intended to measure psychological characteristics while Working Experience, Education Attainment, Licensure, and Research Productivity are proxies for lecturer academic characteristics. Lastly, the study uses Lecturer Age for demographic characteristics. To add additional answers to research question 2, the following research sub-questions are posed:

RQ2.5: Does Lecturer Job Satisfaction have an association with ICAG, and Student Achievements?

RQ2.6: Do Lecturer Working Experiences, Education Attainments, Research Productivity, and Licensure have an association with ICAG, and Student Achievements?

RQ2.7: Does Lecturers' Age have an association with ICAG, and Student Achievements?

Based on System Theory framework, contents and delivery are classified as a transforming process (Mizikaci 2006). Nevertheless, Nearon (2002) puts subject matter as an input. This study includes ICAG-Teaching Content as a part of the transforming process. Both System Theory and I-E-O model contend that process or environment influence outputs (Astin 1993a; Slack, Chambers & Johnston 2004). Therefore, the study formulates the following research question:

RQ3: Are there any significant associations between educational processes and educational outputs in terms of ICAG and Student Achievements?

As previously mentioned, the study employs Student Engagement as a proxy for the transforming process or environment to produce educational outputs. ICAG and Student Achievements as outputs could be influenced by Student Engagement. Moreover, some academics from Victoria University, Canada (UVic 2006), explained that Student Engagement can be a proxy for overall educational quality. Strayhorn (2008) also found that Student Engagement affects personal and social learning. These lead to the following sub-question:

RSQ3.1: Does Student Engagement have an association with ICAG and Student Achievements?

ICAG-Teaching Content and Student-Faculty Engagement are parts of the transforming processes based on lecturer perception. System Theory and I-E-O indicate that transforming process to have correlations with outputs, in this case ICAG and Student Achievements. This leads to the following research sub-question:

RSQ3.2: Do ICAG-Teaching Content and Student-Faculty Engagement have an association with ICAG and Student Achievements?

The questions on Student-Faculty Engagement are mirrors of student engagement questions (Kuh, Nelson Laird & Umbach 2004). Moreover, a previous study found that Student-Faculty Engagement and Student Engagement are associated (Umbach & Wawrzynski 2005). Therefore, there might be a correlation between Student Engagement and Student-Faculty Engagement. In view of this, the study formulated the following sub-question:

RSQ3.3: Does Student-Faculty Engagement have an association with Student Engagement?

In relation to other research questions (RQ4, RQ5, and RQ6), the design does not formulate research sub-question.

RQ4: What is the model for improving ICAG using input-process-output approach in the Indonesian University context?

RQ5: What is the model for improving Grade Point Average (GPA) using input-process-output approach in the Indonesian University context?

RQ6: Based on alumni perceptions, to what extent are AICPA core competencies applicable in the Indonesian business context?

The above RQs and RSQs (RQ1-RQ5) are questioning if there are relationships among inputs, processes, and outputs. In addition, RQ6 is questioning alumni perception about the applicability of AICPA core competencies in the Indonesian business context. Literature review (Chapter 2) provides theoretical answers on the aforementioned RQs and RSQs.

3.3 Conceptual Model

To answer the RQs and RSQs, the study develops conceptual models to test relationships among constructs. There are two conceptual models i.e. conceptual models based on (1) student and (2) lecturer perceptions. Once both models are identified, the study establishes a combined model that includes both models.

There are three constructs of educational system i.e. inputs, processes, and outputs (Figure 3.1). Based on System Theory, inputs influence processes or transforming processes. In turn, processes determine outputs. In this case, the transforming process is a mediating construct. As a comparison, I-E-O model contends that inputs influence both outputs and environments in the meantime environments also influence outputs. More simply, this model considers direct and indirect causal relationships among inputs, processes, and outputs.

A model based on student perceptions includes **Student Motivation** (Campbell, Baronina & Reider 2003; Geiger & Cooper 1995; Geiger & Cooper 1996; Geiger et al. 1998; Harrel, Caldwell & Doty 1985; Yining & Hoshower 1998), **Student Previous Achievements** (Agronow 2008; Astin 1993a; Credé & Kuncel 2008; Dickson & Fleet 2000; Duff 2004; Kavanagh & Drennan 2008), **Student Demographic Characteristics** (Astin 1971; AUSSE 2010a; Duff 2004; Kinzie et al. 2007; Strayhorn 2008), **Comfort of Class Size** (Cotten & Wilson 2006; Johnson 2010; Kokkelenberg, Dillon & Christy 2008; Konstantopoulos 2007; Murdoch & Guy 2002), and **Learning Facilities** (Chen, Lambert & Guidry 2010; Dolan, Jung Jr & Schmidt 1985; Khan 2009; Kuh & Gonyea 2003; Marchionini & Maurer 1995; Mohamed & Lashine 2003). These inputs have postulated direct causal relationships with outputs in terms of ICAG and Student Achievements (Astin 1993a, 1999).

Inputs also have indirect causal relationship with ICAG and Student Achievements (Astin 1993a, 1999), since inputs correlate with Student Engagement and Student Engagement, which in turn, correlates with ICAG and Student Achievements (Agronow 2008; Astin 1993a, 1999; AUSSE 2010a; Strayhorn 2008).

Since there are many kinds of previous student achievements from previous schooling, the study identifies some variables such as previous grades, nationally-tested subject matter grades (NEM), types of previous schooling and so forth. Figure 3.1 shows the relationships among the three constructs of an education system. In addition, Learning Facilities and Comfort of Class Size could be treated as a single variable or two separate variables. Data collected from students and lecturers would provide further evidence to determine their treatment.

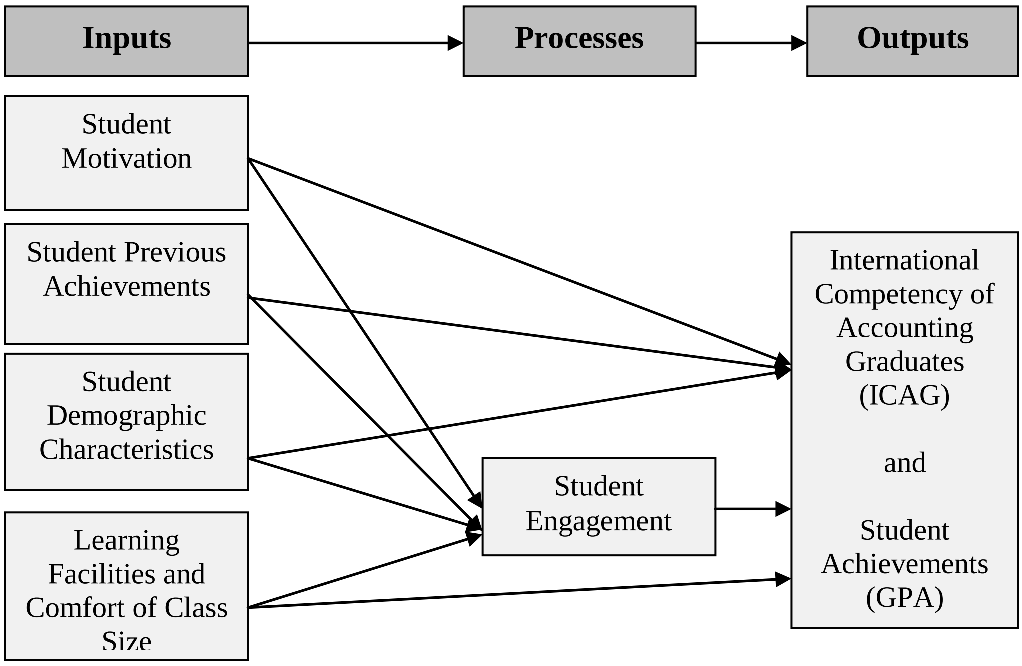

Figure 3.1: Conceptual Model Based on Students' Perceptions

The second model (Figure 3.2) was built based on lecturer perceptions. The inputs are **Lecturer Job Satisfaction** (Bassett-Jones & Lloyd 2005; Knowles 1999; Ololube 2006; Riduwan 2006; Sudiro 2008; Syptak, Marsland & Ulmer 1999; Woods & Weasmer 2004; Zhang & Zheng 2009), **Lecturer Academic Characteristics** (Buddin & Zamarro 2009; De Paola 2009; Harris & Sass 2009; Kennedy 1998; Knowles 1999; Riduwan 2006; Wang, Smith & Steve Oliver 2006; Yusuf 2006), and **Lecturer Demographic Characteristics** (Bennett 1982; Buck & Tiene 1989; Hoffmann & Oreopoulos 2009b; Kemper 2010; Kinney & Smith 1992; Verceles & Rivera 2010). Based on I-E-O model, these inputs are posited to have direct causal relationships with ICAG and Student Achievements (Astin 1993b, 1999). Likewise, these inputs are also expected to have indirect causal relationships with outputs in terms of ICAG and Student Achievements (Astin 1993b, 1999) and their correlations are mediated by ICAG-Teaching Contents and Student-Faculty Engagement. The model based on lecturer perceptions consists of two main elements i.e. inputs (Lecturer Job Satisfaction, Lecturer Academic Characteristics, and Lecturer Demographic Characteristics) and processes (ICAG-Teaching Content and Student-Faculty Engagement). These inputs and processes are derived from the model based on lecturers' perception; whilst outputs are ICAG and Student Achievements are from the model based on the students' perception.

Outputs in terms of ICAG and Student Achievements used in this model are collected from students, whilst and inputs and processes are based on lecturer perception. Despite some weaknesses of correlating lecturer variables with student variables, the study attempts to identify associations between inputs and process constructs based on lecturers' perceptions with process and outputs based on students' perceptions. More detailed discussion about the use of non-parametric analysis will be discussed in the data analysis section. In addition, the study includes ICAG-Teaching Content and Student-Faculty Engagement as proxies of transforming processes in a university based on lecturer perceptions. Since Nearon (2002) considers subject matter as an input and Mizikaci (2006) classifies content and delivery as parts of the transforming processes, the study considers ICAG-Teaching Content as a mediating/intervening factor between inputs and Student-Faculty Engagement. Moreover, the study expects to provide evidence about the role of ICAG-Teaching Content in this model.

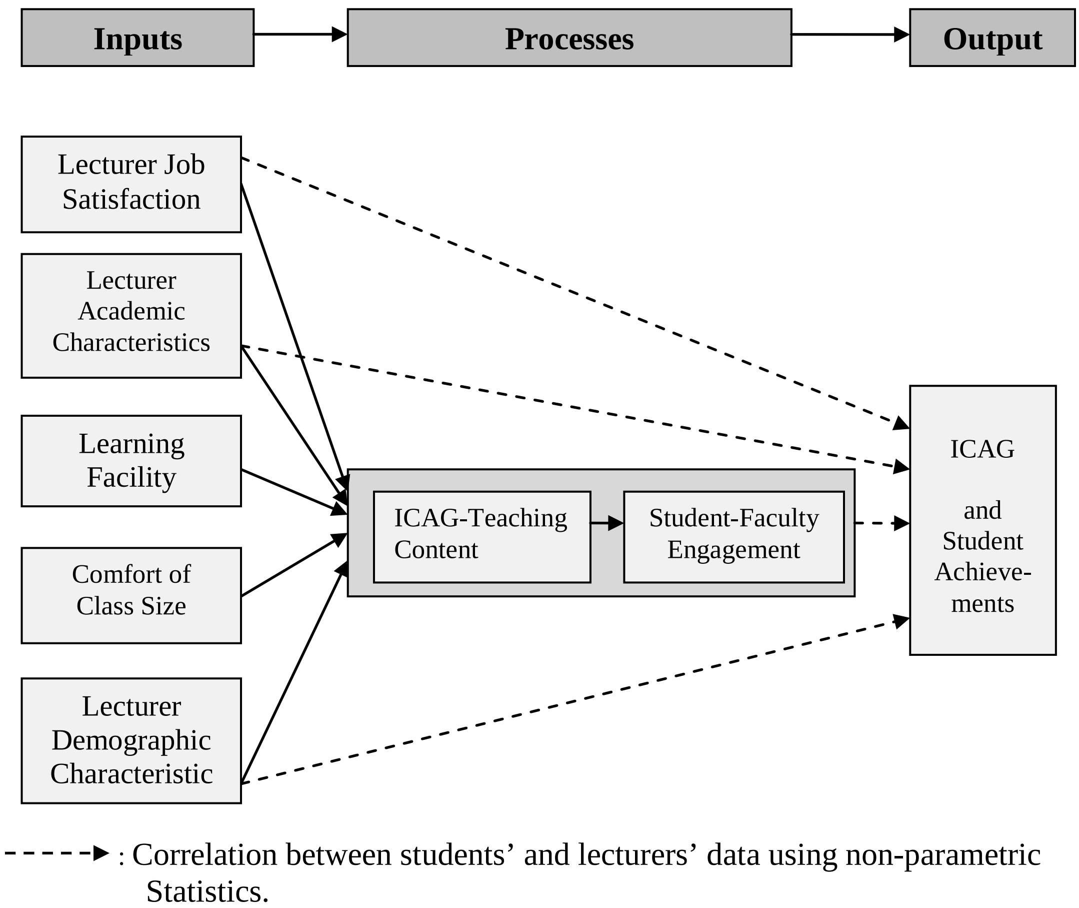

Figure 3.2: Conceptual Model Based on Lecturer Perceptions

3.4 Hypotheses

Based on the previous Literature Review (Chapter 2), the study develops hypotheses to validate models based on students' and lecturers' perception. In general, the study classifies hypotheses into three i.e. hypotheses on relationships between inputs and processes; inputs and outputs; and relationships between processes and outputs.

Based on System Theory and I-E-O model, inputs are important components (Astin 1993a; Slack, Chambers & Johnston 2004). Tinto's Theory of Student Departure (Tinto 1993) also contends that pre-entry attributes are also critical components in his model. Likewise, Pascarella's General Model for Assessing Change (Pascarella & Terenzini 1991) includes student background/pre-college traits and structural/organisational characteristics of institutions as important exogenous variables[13] in their model. In view of this, Mizikaci (2006) listed six educational inputs in higher education i.e. student characteristics, lecturer characteristics, financial resources, facilities, support services, as well as program, course, and schedule.

Student characteristics could be classified into three dimensions i.e. psychological, academic, and demographic characteristics (Mizikaci 2006). Psychological characteristic in term of Student Motivation was found to be an effective predictor of Student Engagement (Heller et al. 2010; Krause 2005; Walker, Greene & Mansell 2006). Therefore, this leads to the following hypothesis:

H1.1: Student Motivation measured by Expectancy Theory correlates with Student Engagement.

[13] A variable without being influenced by other variable(s), but affects other variable(s) in the model.

The study includes Student Previous Achievements in the model, since Student Previous Achievements correlates with Student Engagement. Previous finding shows that pre-college academic success also correlates with academic engagement (Agronow 2008). This leads to the following hypothesis:

H1.2: Student Previous Achievements correlate with Student Engagement.

Student Age correlates positively with Student-Faculty Interaction and active learning, but correlates negatively with peer interaction (Strayhorn 2008). The correlation between Student Gender and Student Engagement is more elusive. In an Australian setting female students are more engaged than their male counterparts (AUSSE 2010a). In contrast, there is only a small different between male and female students in an American university (Kinzie et al. 2007). Inconsistent correlation between Age and Student Engagement as well as correlation between Student Gender and Student Engagement lead to the following hypothesis:

H1.3: Student Demographic Characteristics in terms of Age and Gender correlate with Student Engagement.

Learning Facilities in form of libraries, laboratories, and computers have been shown to enhance the quality of students (Dolan, Jung Jr & Schmidt 1985). Moreover, there is a correlation between library experience of undergraduates students and the selection of educationally purposeful activities (Kuh & Gonyea 2003) and provides a useful academic experience for students (Marchionini & Maurer 1995). Additionally, the use of technology leads to more engagement for both students and teachers (Chen, Lambert & Guidry 2010; Heiberger & Harper 2008). Lastly, Class size has an indirect correlation to student engagement (Cotten & Wilson 2006). Therefore, the study formulates the following hypothesis:

H1.4: Learning Facilities and Comfort of Class Size based on student perceptions correlate with Student Engagement.

Lecturers are important inputs in educational system (Mizikaci 2006; Nearon 2002), since their roles in influencing students' achievements are critical (Hattie 2003; Hoffmann & Oreopoulos 2009a). The study employs ICAG-Teaching Content and Student-Faculty Engagement as proxies of transforming processes in accounting education. ICAG-Teaching Content measures lecturers' perceptions on how much they include ICAG in their teaching-learning processes. Owing to limited research on the effect of lecturers' characteristics on ICAG-Teaching Content and Student-Faculty Engagement, the study views ICAG-Teaching Content and Student Faculty Engagement as lecturers' performance.

Lecturer characteristics are classified into knowledge, motivation (Knowles 1999), and demographic characteristics (Hoffmann & Oreopoulos 2009b). Therefore, the study classifies lecturer characteristics into three dimensions i.e. psychological, academic, and demographic. Lecturer motivation is an important predictor in determining lecturers' performance (Riduwan 2006). Likewise, job satisfaction also impacts positively on lecturer performance (Sudiro 2008; Woods & Weasmer 2004). The study employs Herzberg's Motivation Theory (HMT) to measure motivation based on Lecturer Job Satisfaction. Therefore, the study formulates the following hypothesis:

H1.5: Lecturer Job Satisfaction correlates with ICAG-Teaching Contents, Student-Faculty Engagement.

Lecturer Academic Characteristics are also considered important, because these characteristics could be reflections of teachers' competencies, skills, and knowledge. Lecturers' education attainment correlates significantly with lecturer performance (Riduwan 2006; Yusuf 2006). Higher education attainment leads to better mastery of pedagogical and subject matter (Knowles 1999). Likewise, licensure also impacts on teaching performance (Wang, Smith & Steve Oliver 2006). In addition, as teaching experience and research productivity influence student achievement (De Paola 2009), the study assumes that teaching experience and research productivity also correlate with teaching performance. Likewise, previous findings show that research productivity also correlates with lecturer teaching effectiveness based on student perceptions (Centra 1983).

H1.6: Lecturer Teaching Experiences, Education Attainments, Research Productivity, and Licensure correlate with ICAG-Teaching Content and Student-Faculty Engagement.

Lecturer Age and teaching performance correlate positively (Kinney & Smith 1992). On the other hand, the relationships between Lecturer's Age and job performance is zero (Kemper 2010). Since the relationship between Lecturer's Age and teaching performance is inconsistent, the study formulates the following hypothesis.

H1.7: Lecturer's Age correlates with ICAG-Teaching Content and Student-Faculty Engagement.

Lecturer gender is another demographic characteristic. Previous studies found that lecturer gender does not affect teaching performance (Buck & Tiene 1989; Verceles & Rivera 2010). On the other hand, students perceive female lectures as warmer and more potent individual (Bennett 1982). The study formulates the following hypothesis:

H1.8: Lecturers' Gender correlates with ICAG-Teaching Content and Student-Faculty Engagement.

Academic support in the forms of libraries, laboratories, and computers enhance the quality of students and teachers (Dolan, Jung Jr & Schmidt 1985). Moreover, the use of computer technology also benefits both students and lecturers (Chen, Lambert & Guidry 2010; Herring III & Bryans 2001; Khan 2009; Mohamed & Lashine 2003). The use of libraries by both students and lecturers provides positive impacts (Kuh & Gonyea 2003; Marchionini & Maurer 1995). Moreover, the use of computer technology also benefits both students and lecturers (Chen, Lambert & Guidry 2010; Herring III & Bryans 2001; Khan 2009; Mohamed & Lashine 2003).

In relation to Comfort of Class Size, university should provide smaller class size to create engagement between students and lecturers (Cotten & Wilson 2006). Likewise, smaller classes affect teachers' morale and enjoyment of teaching (Finn, Pannozzo & Achilles 2003). Therefore, Comfort of Class Size may improve Student-Faculty Engagement and ICAG-Teaching Content. These measures lead to the following hypothesis:

H1.9: Learning Facilities and Comfort of Class Size based lecturer perceptions correlate with Student-Faculty Engagement and ICAG-Teaching Content.

The study employs Expectancy Theory to measure Student Motivation. Previous studies show that Student Motivation is effective in affecting Student Achievements (Geiger & Cooper 1995; Geiger & Cooper 1996). More specifically, Expectancy Theory is a useful conceptual framework for understanding Student Motivation to strive for academic success (Harrel, Caldwell & Doty 1985). Therefore, the study formulates the following hypothesis:

H2.1: Student Motivation measured by Expectancy Theory correlates with International Competencies of Accounting Graduates (ICAG) and Student Achievements.

To enter the accounting education system in a university, a student has to meet academic requirements. Previous academic achievements are considered as important predictors in influencing student performance (Astin 1971, 1993a). More current research also shows that pre-college achievements correlate closely with students' achievements (Agronow 2008; Credé & Kuncel 2008; Duff 2004; Rohde & Kavanagh 1996).

H2.2: Students' Previous Achievements correlate with ICAG and Student Achievements.

Student demographic dimensions slightly correlated with students' achievements (Astin 1971; Duff 2004). More specifically, gender has a positive relationship with student achievements (AUSSE 2010a; Strayhorn 2008). On the other hand, age correlates negatively with personal/social gains (Strayhorn 2008). Therefore, the study proposes the following hypothesis:

H2.3: Student Demographic Characteristics in terms of Age and Gender correlate with ICAG and Student Achievements.

Learning facilities in the form of library (Kuh & Gonyea 2003; Marchionini & Maurer 1995), computer (Chen, Lambert & Guidry 2010; Herring III & Bryans 2001), and laboratory (Jack, Smith & Clay. Jr 1986) have positive impacts on student achievements. Likewise, class size also influences student achievements (Johnson 2010; Kokkelenberg, Dillon & Christy 2008). Therefore, the study formulates the following hypothesis:

H2.4: Learning Facilities and Comfort of Class Size based on student perceptions correlate with ICAG and Student Achievements.

In relation to lecturer motivation, previous studies found that lecturer motivation impacts on student achievements (Knowles 1999). More generally, lecturer motivation influence student outcomes (Ololube 2006; Woods & Weasmer 2004). Therefore, the study employs Lecturer Job Satisfaction for measuring lecturer motivation. In view of the above, the study formulates the following hypothesis:

H2.5: Lecturer Job Satisfaction correlates with ICAG and Student Achievements.

A lecturer's mastery of pedagogical skills and subject matter affect student motivation and grades (Knowles 1999). Teaching experience and research productivity impact student achievements (De Paola 2009). On the other hand, the correlations between teacher experience and student achievements are weak (Buddin & Zamarro 2009), and correlation between teacher experience and teaching effectiveness is non-linear (Wang, Smith & Steve Oliver 2006) while teacher certification provides positive signals to student achievements (Harris & Sass 2009). Based on the above findings, the study proposes the following hypothesis:

H2.6: Lecturer Working Experiences, Education Attainments, Research Productivity, and Licensure correlate with ICAG, and Student Achievements.

The influence of teacher demographic characteristics on student achievement is minimal (Hoffmann & Oreopoulos 2009b). This lead to the following hypothesis:

H2.7: Lecturers' Age correlate with ICAG, and Student Achievements

Student Engagement is a transforming process based on student perceptions. Previous findings show that the correlation between Student Engagement and Student Achievements is significant (Agronow 2008; Carini, Kuh & Klein 2006; Handelsman et al. 2005; Kuh et al. 2008; Strayhorn 2008; UVic 2006). Therefore, the study proposes the following hypothesis:

H3.1: Student Engagement correlates with ICAG and Student Achievements.

As previously mentioned, transforming processes based on lecturers' perceptions are measured by ICAG-Teaching Content and Student-Faculty Engagement, while transforming processes based on students' perceptions is measured by Student Engagement. There is a positive relationship between Student Engagement and Student-faculty Engagement (Heller et al. 2010; Kuh, Nelson Laird & Umbach 2004; Kuh & Shouping 2001; Strayhorn 2008; Umbach & Wawrzynski 2005). Moreover, the questions of Student-Faculty Engagement are the mirrors of Student Engagement questions (Kuh, Nelson Laird & Umbach 2004). Moreover, ICAG-Teaching Content and ICAG have the same questions on AICPA core competencies. ICAG- Teaching

Content measures how much ICAG teaching content is included by lecturers, whilst ICAG gauges the extent of AICPA core competencies students earned from a university education. Therefore, the study proposes the following hypothesis:

H3.2: ICAG- Teaching Content correlates with ICAG, Student-Faculty Engagement, and Student Engagement.

Student-Faculty Engagement is a proxy for the transforming process based on lecturer perceptions, whilst Student Engagement is the transforming process based on student perceptions (AUSSE 2010b). Moreover, questions of Student-Faculty Engagement are the mirrors of Student Engagement questions (Kuh, Nelson Laird & Umbach 2004). In view of the above, the study formulates the following hypothesis:

H3.3: Student-Faculty Engagement correlates with Student Engagement.

To provide a more comprehensive model that consists of all the proposed hypotheses, the study developed a combined model (student and lecturer models). Figure 3.3 shows that all educational inputs (Lecturer Characteristics, Student Characteristics, Learning Facilities, and Comfort of Class Size) are posited to associate with educational processes. More specifically, Lecturer Characteristics, Learning Facilities, and Comfort of Class Size based on lecturer perspectives are expected to correlate with ICAG-Teaching Content and Student-Faculty Engagement (H1.5-H1.8 and H1.9). At the same time, Lecturer Characteristics are also expected to correlate with educational outputs in terms of ICAG and Student Achievements (H2.5-H2.7). Likewise, Student Characteristics, Learning Facilities, and Comfort of Class Size based on student perceptions are associated with Student Engagement (H1.1-H1.3). In addition, Students Characteristics, Learning Facilities, and Comfort of Class Size are also expected to be associated with ICAG and Student Achievements (H2.1-H23, and H2.4). ICAG-Teaching Content and Student-Faculty Engagement correlate with ICAG and Student Achievements (H3.1) whilst ICAG-Teaching Content and Student-Faculty Engagement are also associated (H3.2). Lastly, Student Engagement is expected to correlate with ICAG and Student Achievements (H3.1), whilst Student-Faculty Engagement and Student Engagement are posited to be associated (H3.3).

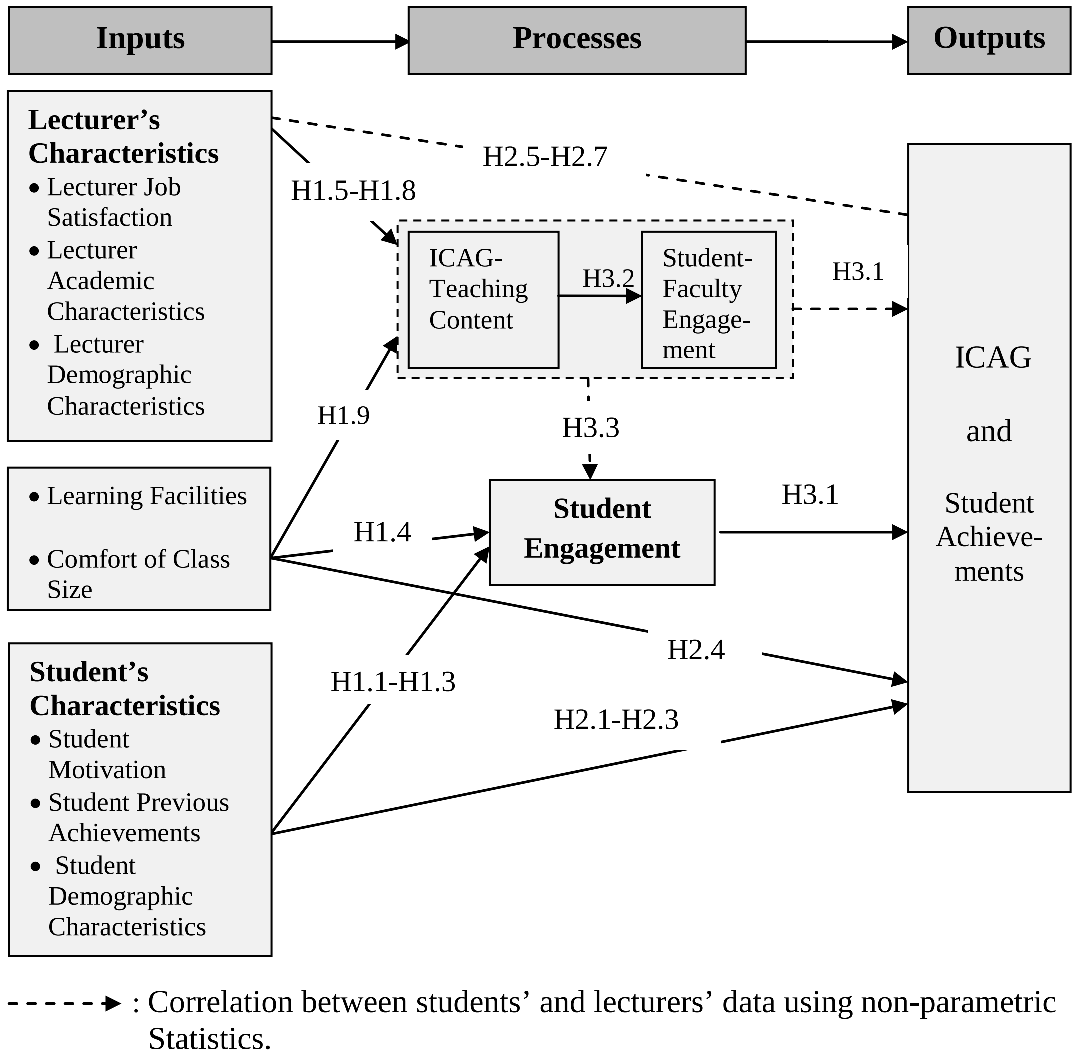

Figure 3.3: Overall Conceptual Model and Hypotheses

As previously mentioned, the study uses ICAG based on AICPA core competencies (Bolt-Lee & Foster 2003; Mula 2007; Wolcot, S. K. 2006). Many accounting competency frameworks have been established by both institutions and academics (AICPA 2006; BIHECC 2007; Hancock et al. 2009a; Kavanagh & Drennan 2008; Mohamed & Lashine 2003; Wolcot, S. K. 2006). Nevertheless, almost all accounting frameworks seem to be complementary of each other. Previous studies conducted in Indonesia show that accounting competencies of Master's students (Irianto 2010) are in line with international competency standards. In line with this, the study formulates the following proposition:

Based on alumni's perception AICPA core competencies is applicable to work place in the Indonesian business setting.

3.5 Conclusion

Based on the gaps from the literature, the study develops research questions followed by conceptual models that will be tested empirically. As has been noted, the study develops models based students' and lecturers' perceptions. Hypotheses are formulated to answer research questions theoretically. The study also formulates a proposition relating to AICPA core competencies in the Indonesian business setting. Finally, the study develops an overall conceptual model combining the two models by including all hypotheses proposed by the study. To answer research questions and test hypotheses and proposition, the Research Methodology employed by the study is discussed in the next chapter.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

Research questions and hypotheses are developed in the previous chapter. This Chapter discusses research procedures adopted and consists of nine sections. The first section discusses the population frame of the study followed by the method of selecting universities, students, lecturers, and alumni as research participants. Survey and Focus Group Discussions (FGD) as data collection methods are also presented in this Chapter. The following sections discuss instrumentation consisting of instrument's measurements as well as instrument validity and reliability. Finally, this Chapter ends with sections about data triangulation, ethical consideration, and data analysis.

4.2 Population

The study employs two units of analysis i.e. students and lecturers at state universities in Indonesia. There are 46 state universities in Indonesia spreading from eastern to western areas. The number does not include colleges, religious universities, as well as private universities operating throughout Indonesia. Out of 46 state universities, 37 universities offer accounting programs. Data on universities was downloaded from the database provided by Directorate of Higher Education (DIKTI) (2009). The National Accreditation Body for Higher Education (BAN-PT) established by Ministry of National Education accredits the quality of study programs. Based on BAN-PT database downloaded in 2009, the profile of accounting program accreditation at 37 universities is as follows: ten universities or 27% of accounting programs earned level A (Very Good or Top Ranked), 22 or 59% earned level B (Good), and five or 14% accounting programs earned level C (Fair).

Table 4.1: Accreditation Level and Number of Accounting Students

No	University	J/NJ*	Acrre-ditation	No of Acc. students	No of Final-year students
1	Univ. Indonesia	J	A	1733	433
2	Univ. Gadjah Mada	J	A	981	245
3	Univ. Airlangga	J	A	1608	402
4	Univ. Diponegoro	J	A	596	149
5	Univ. Brawijaya	J	A	1554	389
6	Univ. Sebelas Maret	J	A	691	173
7	Univ. Padjadjaran	J	A	854	214
8	Univ. Lampung	NJ	A	686	172
9	Univ. Sam Ratulangi	NJ	A	1227	307
10	Univ. Andalas	NJ	A	596	149
11	Univ. Jenderal Soedirman	J	B	1200	300
12	Univ. Pendidikan Indonesia	J	B	464	116
13	Univ. Jember	J	B	957	239
14	Univ. Trunojoyo Madura	J	B	431	108
15	Univ. Sultan Ageng Tirtayasa	J	B	685	171
16	Univ. Negeri Jakarta	J	B	336	84
17	Univ. Sumatera Utara	NJ	B	850	213
18	Univ. Hasanuddin	NJ	B	656	164
19	Univ. Tanjungpura	NJ	B	1007	252
20	Univ. Udayana	NJ	B	1573	393
21	Univ. Riau	NJ	B	1805	451
22	Univ. Mulawarman	NJ	B	760	190
23	Univ. Sriwijaya	NJ	B	1151	288
24	Univ. Syiah Kuala	NJ	B	1062	266
25	Univ. Bengkulu	NJ	B	392	98
26	Univ. Jambi	NJ	B	569	142
27	Univ. Negeri Medan	NJ	B	372	93
28	Univ. Mataram	NJ	B	573	143
29	Univ. Haluoleo	NJ	B	585	146
30	Univ. Lambung Mangkurat	NJ	B	538	135
31	Univ. Negeri Padang	NJ	B	776	194
32	Univ. Pattimura	NJ	B	426	107
33	Univ. Negeri Semarang	J	C	534	134
34	Univ. Negeri Yogyakarta	J	C	462	116
35	Univ. Palangkaraya	NJ	C	368	92
36	Univ. Cenderawasih	NJ	C	225	56
37	Univ. Tadulako	NJ	C	558	140
			Total	29841	7464

*J: Java; NJ: Non-Java

Source: BAN-PT (2009).

Accounting students at state universities in Indonesia numbered approximately 30,000 students (Table 4.1). Since the number includes 1st, 2nd, 3rd, and 4th year students, the study estimates the number of final-year students by dividing the student population by four as no figure is available. Therefore, the size of the population is estimated to be 7,500 final-year students, which may be an over estimate as there usually are more students in earlier years.

There are seven or 47% of accounting programs in Java that have earned accreditation level A, while six or 40% of accounting programs in this island are accredited at level B, and the rest, two accounting programs or 13%, achieved accreditation level C. In contrast, there are only three or 14% of accounting programs in Non-Java Island are accredited at level A, while 16 study programs or 73% at level B and the rest, 3 study programs or 14% earned accreditation level C. In other words, 87% of study programs in Java Island earned at least accreditation B, while 87% study program in Non-Java Islands also reached these accreditation levels. To scrutinise the difference in accreditation level based on location, Table 4.2 summaries accreditation levels earned by accounting programs in Java-located and Non-Java-located universities. Thus, this study considers location and accreditation level of university for sampling purposes.

Table 4.2: Accreditation Level by Location

Level of Accreditation	Java		Non-Java		Total	
	Number	%	Number	%	Number	%
Level A	7	47%	3	14%	10	27%
Level B	6	40%	16	73%	22	59%
Level C	2	13%	3	14%	5	14%
Total	15	100%	22	100%	37	100%

Source: BAN-PT (2009)

In relation to sample size determination, there are at least three strategies i.e. using a sample size of a similar study, published tables, and using formulas (Israel 1992). Since the study also employs Structural Equation Modelling (SEM), sample size has always been of major concern, because small samples are more likely to yield unreliable results (Chou & Bentler 1996, p. 47). The sample size required to use SEM should be at least 200 respondents unless the population from which a sample is drawn is itself small or restricted in size (Barrett 2007). Moreover, Chou and Bentler (1996) suggest that a sample size of 200 was considered reasonable. Israel (1992) suggests a table for sample size around 400 for a population size of 7,000 and precision (e) of 5%. The study uses a sample size around 400. Eight state universities or approximately 20% of state universities are selected randomly by considering the proportion of accreditation level of accounting program and location. Table 4.3 shows randomly-selected universities.

Lecturers in selected universities are the other respondents in this study. DIKTI's (2009) database shows that the number of lecturers in sample frame universities is approximately 211 lecturers. Based on Israel (1992) the appropriate number for the sample is 134 lecturers. If the study collects data from 134 lecturers out of 211 lecturers, the percentage is approximately 64%. Since the study also uses SEM analysis, the study collects data from at least 158 lecturers at sampled universities to make sure results will be more reliable (Chou & Bentler 1996). Table 4.3 shows distributions of samples of both students and lecturers.

Table 4.3: Distribution of Sample by University

University	Accredit-ation	Location	Final year Student	Student Sample	Number of Lecturers	Lecturer Sample
Univ. Brawijaya	A	Java	389	82	30	23
Univ. Sam Ratulangi	A	Non Java	307	65	45	34
Univ. Jendral Soedirman	B	Java	300	63	28	21
Univ. Negeri Medan	B	Non Java	93	20	18	14
Univ. Riau	B	Non Java	451	95	21	16
Univ. Negeri Jakarta	B	Java	336	18	22	17
Univ. Negeri Semarang	C	Java	134	28	17	13
Univ. Palangkaraya	C	Non Java	92	19	30	23
Total			1,909	390	211	158

Source: (DIKTI 2009)

4.3 Sample Selection

In most sampling the population can be regarded as being composed of a set of groups of elements (Kalton 1990). Since samples (students and lecturers) are clustered accounting programs at universities that have different accreditation levels, the study employs a two-stage sampling technique. Two-stage sampling is a sub-sampling from the selected clusters (the primary units) to obtain secondary units (Barnett 2002).

The first stage of sampling is to choose universities randomly based on accreditation level and location. Once universities were identified as the sample frame, the study sent an email to these universities to apply for permission to conduct the research. If a university rejected the application, the study selected another university that met the same criteria. The objective of this stage is to recruit universities that closely represent accounting education in Indonesian universities.

Eight state universities provided approval for collecting data from their students and lecturers. These eight universities represent well the accreditation levels of accounting program as well as locations.

The second stage of sampling is to select students and lecturers at universities that have been randomly selected in the first stage. The study recruited students in all classes of final-year accounting programs. Moreover, the recruitment of lecturers was conducted with the assistance of the head or secretary of accounting department in each university.

As previously mentioned, the study also employs a qualitative approach to triangulating data on ICAG. The study uses Focus Group Discussion (FGD) with alumni of accounting program to see the applicability of AICPA core competencies in their working places. FGD was employed to collect qualitative data from alumni of accounting program. This qualitative data relates to output stage of System Theory (I-P-O) and Input-Environment-Output (I-E-O) model. The study did not limit the number of participants for FGD. The study ceased collecting data after reaching saturation responses by FGD participants. However, the study considered industry sectors where alumni work i.e. service, manufacturing, Non-government Organisation (NGO), banking, and trading sectors, as a criterion for inclusion in FGD.

In relation to the process of recruiting universities, students, lecturers, and alumni as respondents, the study has to follow ethical procedures and conduct to ensure participants' rights and welfare. For more detailed information about these issues, the ethical consideration section (4.8) describes the process of recruiting participants.

4.4 Data Collection Method

This study employs two types of questionnaire for collecting data from both lecturers and students. In addition, the study also uses Focus Group Discussions (FGD) with the alumni of accounting programs to triangulate data of ICAG collected from final-year accounting students. The first questionnaire collected data from final-year accounting students (QS) and the second questionnaire from accounting lecturers (QL). The first questionnaire is designed to collect data on International Competency of Accounting Graduates (ICAG), Student Engagement, Student Motivation measured by Expectancy Theory, Comfort of Class Size, and Learning Facilities based on students' perceptions. These data are collected using a five-point Likert-type scale. Moreover, the questionnaire also collects data on demographic characteristics, students' previous achievements during high schools, and Grade Point Average (GPA).

The second questionnaire (QL) was devised to collect data from accounting lecturers who have experience teaching students completing QS. In addition, QL collects data on Student-Faculty Engagement, Motivation measured by Lecturer Job Satisfaction, Comfort of Class Size, and Learning Facilities based on lecturers' perceptions. In addition, the questionnaire also collects data on demographic and academic characteristics. Appendix A1, A2, A3, and Appendix A4 provide actual questionnaires (QS and QS) both in English and Indonesian languages. In relation to FGD, Section 4.7 (Data Triangulation) discusses in more detail FGD data collection, process, and questions used.

4.5 Instrument Measurement

Since the study employs two QS and QL instruments, therefore the study also describes measures used in both questionnaires. Student Engagement and Student-Faculty Engagement have the same measures, since the questions for Student-Faculty Engagement are the mirror of Student Engagement questions (Kuh, Nelson Laird & Umbach 2004). Likewise, measures for ICAG based on AICPA core competencies (Mula 2007; Wolcot, S. K. 2006) are the same in both QS and QL. Data on ICAG (based on student perceptions) gauge what levels of competencies students learnt from their university education. Thus, ICAG-Teaching Content (based on lecturer perception) and ICAG (based on student perception) have the same measures. Lastly, students and lecturers answer the same questions of Comfort of Class Size and Learning Facilities.

As has been previously mentioned, the study uses indicators developed by AICPA to measure ICAG/ICAG-Teaching Content. This construct consists of three dimensions namely functional competencies, personal competencies, and broad-business-perspective competencies (Bolt-Lee & Foster 2003; Foster, Bolt-Lee & Colson 2002; Mula 2007; Wolcot, S. K. 2006). Moreover, functional competency covers six competency areas (or questions), personal competencies consists of seven competency areas, and broad-business perspective competency encompasses seven competency areas (Mula 2007; Wolcot, S. K. 2006). The study adapted some questions from the work of McVay (2008) and the rests of ICAG/ICAG-Teaching Content questions were developed by the study.

As previously discussed in section 2.6.1, each area of competency consists of more specific competency indicators. For example, Decision Modelling competency consists of eight indicators (Mula 2007; Wolcot, S. K. 2006). Ideally, the study should design each questions for each indicators. Nevertheless, this technique makes the number of questions increase significantly. The study designs ICAG and ICAG-Teaching Content questions based on the area of competencies (20 areas) by providing key indicators in each question. This technique was successfully employed by McVay et al. (2008) to design competency questionnaires. In addition, this technique was also employed by Louisiana State University to measure personal competency of accounting students (DeLaune 2004). In conclusion, the study takes merits from the above works in developing questionnaire to measure AICPA core competencies.

The questions used to measure Student Engagement are adopted from AUSSE questionnaire (AUSSE 2010b) developed based on NSSE (2009) questionnaire. AUSSE questions consist of six dimensions, but in some respects not all dimensions are applicable in the context of Indonesian universities. Therefore, the study employs five dimensions i.e. Student-Faculty Interaction, Active and Collaborative Learning, Academic Challenge, Enriching Educational Experience, and Supportive Learning Environment (Kinzie et al. 2007; Kuh 2006, 2009).

The study adapts questions for Student Motivation measured by Expectancy Theory. This construct consists of six dimensions i.e. expectancy, extrinsic instrumentality, intrinsic instrumentality, extrinsic valence, and intrinsic valence (Chiang & Jang 2008; Chiang et al. 2008). The original scales were used to measure motivation for hotel employees. Therefore the study makes some adaptations to questions to ensure they are applicable to gauge student motivation.

Questions on Learning Facilities are developed based on some previous findings. Academic support consists of libraries, laboratories, and computers (Dolan, Jung Jr & Schmidt 1985). Class size is another type of learning facility, since it can significantly impact Student Engagement (Chen, Lambert & Guidry 2010; Heiberger & Harper 2008) and student achievements (Johnson 2010; Kokkelenberg, Dillon & Christy 2008; Murdoch & Guy 2002). Therefore, the measures of Learning Facilities are libraries, laboratories, and computers. Since the study collects data on class size based on students' and lecturers' perceptions, it is not an exact number of students in every class. Therefore, the study employs Comfort of Class Size to gauge how comfortable students feel about class size.

In relation to observed variables, the study uses cumulative GPA as a proxy for student achievements. In addition, the study also measures gender and age (Duff 2004; Strayhorn 2008) as demographic characteristics and average grades and national grade average earned at high schools (Astin 1971; Credé & Kuncel 2008; Duff 2004) as proxies for Student Previous Achievements. Moreover, the study also collects additional data on academic characteristics i.e. previous school attended (High School and Vocational High School) and previous majors (students' majors when they were in High School or Vocational High Schools). Data on previous major will be grouped into two groups (Natural Sciences and Social Studies). These observed variables are collected using a questionnaire for students (QS).

Questionnaire for lecturers (QL) has five similar latent constructs and only one latent construct (Lecturers' Job Satisfaction), which is different from QS instrument. Student-Faculty Engagement, Comfort of Class Size, and Learning Facilities are the same measures in both QS and QL. In relation to Lecturers' Job

Satisfaction, the study adapts questions developed by Conklin and Desselle (2007) consisting of six dimensions i.e. resource for scholarship, institutional support and reward, requirements for promotion and tenure, availability of a graduate program, collegiality, and teaching environment. These questions have satisfied validity and reliability tests to measure job satisfaction among pharmacy lecturers (Conklin & Desselle 2007). Since these questions were developed based on an American university context, the study makes small adaptations to the questions to ensure they are in line with the Indonesian university context.

Observed variables relate to academic characteristics such as teacher education attainment (Riduwan 2006; Yusuf 2006), teacher productivity and experience (De Paola 2009), and teacher licensure (Buddin & Zamarro 2009; Harris & Sass 2009; Wang, Smith & Steve Oliver 2006). In Indonesian context teacher licensure is similar to teacher certification that is being implemented by the Ministry of National Education (MONE) to enhance teachers' quality. Demographic characteristics are lecturers' age and gender (Hoffmann & Oreopoulos 2009a; Kinney & Smith 1992). The following table summarises all measures employed in this study.

Table 4.4: Sources of Measures

No	Dimension	Measure
1	International Competency of Accounting Graduates (ICAG) and ICAG-Teaching Content	Functional competency, personal competency, and broad-business perspective competency (Bolt-Lee & Foster 2003; Foster, Bolt-Lee & Colson 2002; Mula 2007; Wolcot, S. K. 2006).
2	Student Engagement	Student-faculty interaction, active and collaborative learning, academic challenge, enriching educational experience, and supportive campus environment (AUSSE 2010b; Kuh 2006, 2009; NSSE 2009).

Continued …

Table 4.4: Continued

No	Dimension	Measure
3	Student Motivation based on Expectancy Theory	Expectancy, extrinsic instrumentality, intrinsic instrumentality, extrinsic valence, and intrinsic valence (Chiang & Jang 2008; Chiang et al. 2008).
4	Students' Previous Achievements	High school grades (Astin 1971; Credé & Kuncel 2008; Duff 2004).
5	Student Demographic Characteristics	Age and gender (Duff 2004; Strayhorn 2008)
6	Learning Facility and Comfort of Class Size	Academic support in terms of libraries, laboratories, and computer (Dolan, Jung Jr & Schmidt 1985) Class size (Chen, Lambert & Guidry 2010; Heiberger & Harper 2008; Johnson 2010; Kokkelenberg, Dillon & Christy 2008; Murdoch & Guy 2002)
7	Student-Faculty Engagement	Same as student engagement measurements.
8	Lecturer Job Satisfaction	Resource for scholarship, institutional support and reward, requirement for promotion and tenure, availability of a graduate program, collegiality, and teaching environment (Conklin & Desselle 2007).
9	Lecturer Academic Characteristics	Lecturer's education attainment (Riduwan 2006; Yusuf 2006); Lecturer's productivity and experience (De Paola 2009); Lecturer licensure (Buddin & Zamarro 2009; Harris & Sass 2009; Wang, Smith & Steve Oliver 2006).
10	Lecturer Demographic Characteristics	Age and gender (Hoffmann & Oreopoulos 2009b; Kinney & Smith 1992)

4.6 Instrument Validity and Reliability

To measure what it should measure, an instrument has to be valid. Therefore, the study employs evidence-based on internal structure using factor analysis to obtain validity of newly-developed and partially-adapted instruments. Factor analysis is used to detect whether a questionnaire has uni-dimensionality or multidimensionality. Factor analysis is a statistical procedure that analyses correlations among test items (Johnson & Christensen 2008). More practically, the correlation coefficient tests the fit between an item and the rest of the scale (de Vaus

2002). In this case, the study correlates an item score with total score of the remaining items to detect uni-dimensionality of questionnaires.

As has been noted, the study developed questionnaires and adapted some items from McVay (2008) to measure ICAG, ICAG-Teaching Content. The development of ICAG questions was based on AICPA core competencies indicators. Likewise, Learning Facilities and Comfort of Class Size measures were developed based on previous research (Cotten & Wilson 2006; Finn, Pannozzo & Achilles 2003; Johnson 2010; Kokkelenberg, Dillon & Christy 2008; Konstantopoulos 2007; Murdoch & Guy 2002).

The original questionnaires were developed in English and then translated into the Indonesian language to ensure all participants (lecturers, students, and alumni) understand questions. Prior to data collection, the study trialled the newly-developed and partially-adapted questions on non-sampled students to check validity and reliability.

To test a questionnaire's validity and reliability, de Vaus (2002) contends that items having correlations (corrected item-total correlation[14]) less than 0.3 have to be dropped. Table 4.5 and 4.6 show the results of the trial n=25 and the actual survey with n=411. The tables also show that all corrected item-total correlations have a value of more than 0.3. It means that all questions in each latent construct have good uni-dimensionality. Since the questionnaire uses a five-point-Likert type scale, the correlation coefficients are calculated using Pearson Product-Moment Correlation. As the study also uses Structural Equation Modelling (SEM) type Confirmatory

[14] The correlation between an item score with the total score of remaining items in a factor or latent variable for checking uni-dimensionality or multi-dimensionality.

Factor Analysis (CFA), validity tests using factor loading[15] analysis are undertaken. Hair et al. (2006) contend that factor loadings ranging from 0.3 to 0.4 are considered to meet the minimal level for interpretation purposes. However, the study includes all questions having at least a 0.4 factor loading.

Reliability refers to the consistency or stability of a set of test scores (Johnson & Christensen 2008). To test the consistency of a questionnaire, the study uses an internal consistency approach by utilising Cronbach alpha. Cronbach alpha provides an estimate of the reliability of a homogenous test or an estimate of the reliability of each dimension in a multidimensional test (Johnson & Christensen 2008). A Cronbach alpha of more than 0.7 is considered reliable (de Vaus 2002).

Table 4.5: Validity and Reliability of ICAG Questions

Functional Competency			Personal Competency			Broad-business Perspective Competency		
Question Item	r n=25	r n=411	Question Item	r n=25	r n=411	Question Item	r n=25	r n=411
Item 1	0.476	0.489	Item 1	0.618	0.432	Item 1	0.608	0.407
Item 2	0.733	0.466	Item 2	0.701	0.456	Item 2	0.795	0.579
Item 3	0.746	0.501	Item 3	0.647	0.485	Item 3	0.800	0.574
Item 4	0.746	0.467	Item 4	0.447	0.548	Item 4	0.757	0.499
Item 5	0.814	0.459	Item 5	0.837	0.521	Item 5	0.725	0.531
Item 6	0.831	0.468	Item 6	0.595	0.428	Item 6	0.673	0.492
-	-	-	Item 7	0.802	0.405	Item 7	0.737	0.545
Alpha	0.897	0.737	Alpha	0.879	0.749	Alpha	0.908	0.791

Table 4.5 shows reliability coefficients of ICAG i.e. Functional Competency, Personal Competency, and Broad-business Perspective Competency. All alpha coefficients of both trial and sample reliability provide alpha coefficients more than 0.7 meaning that the reliability of the questions is considered good. Likewise, Table

[15] The correlation between the original variables and the factors, and the key to understanding the nature of a particular factor (Hair et al. 2006)

4.6 also shows the reliability of Comfort of Class Size and Learning Facilities. Both coefficients also show that have good reliability.

Table 4.6: Validity and Reliability of Learning Facilities and Comfort of Class Size Questions

Learning Facility	R n=25	r n=411	Comfort of Class Size	r n=25	r n=411
Item 1	0.694	0.551	Item 1	0.598	0.655
Item 2	0.714	0.555	Item 2	0.835	0.747
Item 3	0.637	0.590	Item 3	0.729	0.620
Item 4	0.631	0.600	-	-	-
Item 5	0.615	0.558	-	-	-
Item 6	0.750	0.539	-	-	-
Item 7	0.702	0.535	-	-	-
Alpha	0.884	0.818	Alpha	0.847	0.818

Reliability and validity coefficients of trial data tend to be higher than validity and reliability based on sample data. Appendix A5 provides more detailed information about validity and reliability of trial (n=25), while Appendix A6 presents validity and reliability using sample data (n=411). The previous literature shows that Learning Facilities and Comfort of Class Size were not separated. After the study undertook Principal Component Analysis (PCA), Learning Facilities and Comfort of Class Size are different constructs.

4.7 Data Triangulation

Focus groups are used to collect qualitative data in the words of group participants (Johnson & Christensen 2008). More practically, FGD collects data about alumni's perceptions on what competencies they use to perform their jobs in their work places (based on AICPA core competencies), how alumni develop competencies to meet employers' requirements, and what are alumni's suggestions to universities to ensure accounting graduates meet requirements to work in companies. In addition, FGD is also used to triangulate ICAG data collected from students using questionnaires. Triangulation means cross-checking information and conclusions through the use of multiple procedures or sources (Johnson & Christensen 2008). In this case the study employs triangulation of method meaning that the study uses qualitative and quantitative styles of research and data (Neuman 2000). The participants of FGDs are accounting alumni from various universities who have significant experience working in some sectors such as banking, NGO, trading, service, and industry.

To ensure a FGD will achieve its objectives, the study uses a FGD guide consisting of three main parts i.e. the explanation about the purpose of FGD, introduction of participants and facilitators, and main discussion. Main discussion consists of three themes, functional competency, personal competency, and broad-business perspective competency. Discussion on each theme comprises eight activities i.e. (1) delivering definition of competency and asking key competencies that participants need to complete their jobs; (2) encouraging participants to explain more about competencies they have already identified to perform their jobs; (3) asking on how participants gained their competencies; (4) discussing problems of improving competencies; (5) asking about the extent of students' competencies right after their graduation; (6) discussing connections between competencies participants gained from university education and competencies they use at work places; and (7) encouraging participants to provide suggestions to universities to ensure graduates will have sufficient competencies; and (8) asking participants to rank AICPA core competency areas based on the importance for working. The discussion takes approximately 1.5 to 2 hours. The process of FGD with alumni will be electronically recoded with permission from participants. For detailed information about FGD guides refer to Appendix A7 and A8.

4.8 Ethical Consideration

To ensure research does not violate other parties' rights, the study strictly complies with research ethics imposed. In addition, adherence to research ethics also impacts on the quality of research. Zikmund et al. (2010) contends that research works best when all parties (researcher, client, and subject) act ethically. More pointedly, each party has an obligation to be fulfilled to other parties, but at the same time each party also has rights which must be received from other parties. The following discusses two main issues relating to ethical consideration i.e. informed consent and plain language.

Informed consent is agreement to participate in a study after being informed of its purpose, procedure, risks, benefits, alternative procedures, and limits of confidentiality (Johnson & Christensen 2008). In relation to this issue, the study obtained four levels of informed consent i.e. informed consent from Deans of Economics Faculties at sampled universities, as well as informed consent from lecturers, students, and alumni. Prior to data collection from accounting departments in sampled universities, emails were sent to the Deans of Economics Faculties for approval to conduct research in their faculties. Deans, in this case, have full rights to accept or reject an application for research in their institutions.

Likewise, before a person can participate in a research study, the researcher must give the prospective participant a description of all the features of the study that might reasonably influence his or her willingness to participate (Johnson &

Christensen 2008). Therefore, before deciding to participate in the survey, students and lecturers receive a participant information sheet. In addition, a brief verbal explanation about the research is given to participants. Since the study uses an anonymous survey for participants, the submission of a completed survey is an agreement to participate in the study. Moreover, the study also provided small token (a plastic folder, two pens, and a pencil) to all survey participants (students and lecturers).

In relation to FGD participants, the study recruited alumni by calling them to participate in a FGD. Before an alumnus made a decision, a verbal explanation about the study was briefly given. A FGD participant has rights to participate in and withdraw from a FGD. If alumni agree to participate in a FGD, they are asked to sign a consent form. Moreover, all FGD participants also receive a list of questions, and participant information sheet. Since, FGD takes place between 1.5 to 2 hours, food and drink are also available. A transportation fee is also provided, because alumni are coming from areas far from venues of FGD. Lastly, all respondents (lecturers, students, and alumni) are supplied with email address and telephone number of Ethics and Research Integrity Officer for contact if this study violates their rights or welfare.

Plain language is used to explain the study briefly to ensure all participants (lecturers, students, and alumni) understand the study. Besides providing each participant with an information sheet in Indonesian language, an orally explanation is provided to improve participants' understanding of the study. Prior to using a translated-information sheet, some Indonesian students are asked to read it to ensure the language and information are properly presented.

4.9 Data Analysis

Since data are collected from three sources—students, lecturers, and alumni—the study analyses these data separately. There are three types of analyses i.e. descriptive, interpretive, and qualitative. Descriptive and interpretive statistics are employed to analyse quantitative data, while qualitative analysis is on data collected from FGDs. In relation to interpretive or inferential analysis, the study employs three statistical techniques i.e. correlation, regression, Structural Equation Modelling (SEM) with single indicators, Path analysis, and non-parametric analysis.

Correlation is intended to find separate associations among variables of input with other variables of process, as well as variables of output. Regression analyses are used to test relationships among input, process/environment, and output. SEM with single composite indicator and Path analysis are used to identify relationships among inputs, processes, and outputs simultaneously. Lastly, non-parametric analysis is employed to correlate aggregate data based on student and lecturer perceptions.

4.9.1 Descriptive

Descriptive analyses are intended to analyse nominal, ordinal, and interval data[16]. Descriptive statistics are those that summarise patterns in responses from cases in a sample (de Vaus 2002). More specifically, some data are presented in the form of tables to scrutinise tendency of a certain set of data. Likewise, charts or graphs are also used to provide clearer visual depictions on a certain data set. Lastly, descriptive

[16] Nominal data is obtained from category classification e.g. female and male. Ordinal data is collected from order magnitude classification e.g. small, medium, large, and extra large. Interval data is data representing the exact value or quantity of an object being measured e.g. GPA.

statistics such as mean and standard deviation are also utilised to provide snapshots that point to more interpretive analysis.

4.9.2 Interpretive

As suggested by Astin (1993a), to identify relationships among inputs, environments, and outputs, the study employs correlation and regression analyses. However, to identify relationships between inputs, processes, and outputs simultaneously, the study employs SEM and Path analysis.

Correlation

The study employs Pearson's Product Moment correlation to identify the degree to which two variables (X and Y variable) are associated and considers the correlation as a linear relationship[17]. In addition, a conceptual model developed by the study focuses on building relationships between variables within the three educational constructs. Correlation matrices[18] are used to identify patterns of relationships between variables.

Regression

As previously mentioned, the study employs I-E-O model proposed by Astin (1993a) where inputs affect environment (Student Engagement) and outputs and environment influencing output. Therefore, the study uses regression to validate the model by regressing an input on environment and output. At the same time the study also

[17] The decrease or increase of variable X will be followed by decrease or increase of variable Y in a consistent way.
[18] A matrix that consists of correlation coefficients to show relationships among variables are analysed.

undertakes regression to identify the impact of environments (Student Engagement) on outputs.

Based on I-E-O model, the study also tests the mediation effect of Student Engagement by employing Sobel and Aroian tests (Preacher & Hayes 2004; Preacher & Leonardelli 2010). Figure 4.1 shows the model for analysing relationships among inputs, Student Engagement, and outputs. To test the mediating effects, an input should have a positive and significant effect on Student Engagement and output. Likewise, Student Engagement should have a positive and significant impact on output in terms of ICAG and GPA.

Simple regression analyses are used to identify the impacts of an input (a) on Student Engagement and output (c') as well as the influence of Student Engagement on output (b). In addition, the above regressions should provide significant results to continue testing the mediating effect. A multiple-regression technique is used to analyse the impact of an input and mediator on output. If the impact of an input on output shrinks after including the mediator (Student Engagement) in the model, it means that Student Engagement is a mediating construct (Preacher & Leonardelli 2010). The study also calculates mediating effect coefficients using interactive Sobel and Aroian tests (Preacher & Leonardelli 2010). These mediation test techniques are not applicable for negative impacts of an independent variable on a mediator, independent variable on dependent variable, and negative impact of mediator on dependent variable. To understand the role of a variable, the study also uses a residual test to detect the moderating effect in a model (Ghozali 2009).

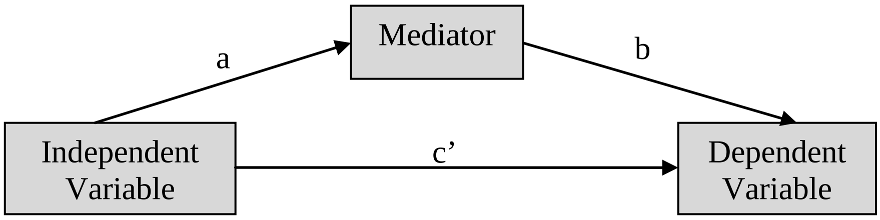

Figure 4.1: Model for Testing Mediating Effect

Source: Preacher and Leonardelli (2010)

In undertaking a multiple-regression technique, the study also considers some classical assumption tests i.e. Multicollinearity, Homoscedasticity, and Normality. Multicolliniearity is substantial correlations among independent variables or predictors (Tacq 1997). This multicolliniearity can be detected using a Variance Inflation Factor (VIF) in a regression model. A value of VIF less than 10 is acceptable (Ghozali 2009; Nadiri & Tümer 2010). Homoscedasticity refers to dispersions of the dependent variable within cells must not differ significantly (Tacq 1997). The study uses a Scatter plot technique to detect homoscedasticity; the scatter plot should not have certain pattern (Ghozali 2009). Lastly, the study uses a P-P Plot technique for detecting Normality (Ghozali 2009).

Non-parametric

Some data from lecturers and students should be correlated such as Student Engagement and Student-Faculty Engagement based on student and lecturer perceptions respectively. Even though, the questionnaires for both have the same indicators, correlation between these two engagements could not be tested using common parametric analysis. Data aggregation of students and lecturers based on university level will provide data for non-parametric analysis. King as cited in

(Umbach & Wawrzynski 2005) contends that this analysis has a flaw, since individual differences, teachers' and students' perspectives on engagement, are masked. The number of universities in this study does not meet the requirement for employing parametric multi-level analysis such as Hierarchical Linear Modelling (HLM), since the number of groups, in this case universities, should be at least 30 groups (Porter 2005). Therefore, the associations between aggregate lecturers' and students' data such as Student Engagement and Student-Faculty Engagement will be analysed using non-parametric analysis[19].

In relation to this, the study employs The Kendall rank order correlation (*T* or Kendall's τ). The analysis is undertaken to provide more information about the correlation between aggregate lecturers' and students' data, since the number of N does not meet requirement for undertaking parametric analysis. Siegel and Castellan Jr. (1988) contended that τ gives a measure of the degree of association or correlation between the two sets of ranks.

Based on Figure 3.2 and 3.3 (conceptual model based on lecturers' and students' perceptions and comprehensive model), non-parametric analysis is undertaken to provide some rough snapshots of relationships between a certain set of data based on lecturers' and students' perceptions. Referring to Figure 3.2, Conceptual Model Based on Lecturers' Perception, the study uses non-parametric analysis to correlate two variables connected by dashed-lines.

[19] Non-parametric are techniques of analyses that do not need the assumption of a normal probability distribution.

Structural Equation Modelling

Conceptual models consisting of many variables and correlations are tested by using Structural Equation Modelling (SEM)[20]. The SEM approach is a comprehensive and flexible approach to research design and data analysis (Hoyle 1996). Moreover, Confirmatory Factor Analysis (CFA) is employed to analyse relationships, since the study identifies relationships among variables within constructs of inputs, processes, and outputs.

The study develops two types of models i.e. student and lecturer models. The study uses Input-Process-Output approach with some latent variables. Owing to the large number of indicators, the study employs a single-composite-indicator technique.[21] The procedures of calculating single-composite indicator are as follows: (1) calculating composite reliability; (2) calculating factor loading for composite indicator; (3) calculating variance error for composite indicator; and (4) assigning loading factor composite into the model (Ghozali 2007; Rowe 2002).

To check the fit of the model being tested, SEM analysis provides a technique, Goodness of Fit, by calculating some indices i.e. Chi Square Statistic, Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness Fit Index (AGFI), Normed-Fit Index (NFI), and Data Normality Test (Byrne 2001; Ghozali 2007; Mulaik et al. 1989). Chi Square is used to assess actual and predicted matrices (Hoe 2008). An insignificant value of Chi Square is one indicator that the model has a good fit (Ghozali 2007), because actual and predicted matrices are not statistically different. To obtain an insignificant Chi

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[20] SEM is a statistical method combining factor analysis and simultaneous equation modelling (Ghozali 2007).

[21] One latent variable will be represented by single indicator to avoid an intricate and crowded model of analysis.

Square (CMIN) for a big sample is difficult. Therefore, researcher also provides an approximation that if a Chi Square/d.f. ratio less than 3 it is considered a good fit (Hoe 2008).

RMSEA measures the tendency for Chi Square statistics to reject a model with a large sample size (Ghozali 2007). Moreover, RMSEA index measures the discrepancy between the observed and estimated covariance matrices per degree of freedom (Steiger cited in Hoe 2008). An index value of RAMSEA less than 0.08 indicates an acceptable fit (Ghozali 2007; Hoe 2008). Moreover, Goodness of Fit Index (GFI) measures the fit of the model to the whole covariance matrix (Ghozali 2007; Mulaik et al. 1989); Adjusted Goodness Fit Index (AGFI) measures model fit of proposed model using ratio degree of freedom for null model; Normed-Fit Index (NFI) measures the comparison index between proposed and null model (Ghozali 2007). Lastly, acceptable values for these indices are GFI and AGFI greater than 0.9; TLI greater than 0.9 (Ghozali 2007; Hoe 2008). In addition, Grewal et al. (2004) contend that SEM should consider multicollinearity. Moreover, they also indicate that correlations among exogenous variable between 0.4 and 0.5 tend to have small problems in theory testing.

Prior to using SEM, the study undertook normality tests of all data distributions using Kolmogorov-Smirnov as well as Zskewness and Zkurtosis tests (Ghozali 2009). Data transformation is also undertaken to obtain a normal distribution. In addition, the study undertakes a bootstrapping technique when the model uses non-normal data distribution (Ghozali 2007; Hoyle 1996). In addition to using SEM with a single composite indicator, the study also uses Path analysis. The purpose of this additional analysis is to provide other analysis results by treating all latent variables as observed variables; the scores of all indicators within latent variables are summed. All SEM and Path analyses use the same goodness fit indices. Table 4.7 provides a summary of indices.

Table 4.7: Summary of Goodness of Fit Index

No	Goodness of Fit	Meaning	Standard
1	Chi Square/CMIN	Assessing actual and predicted matrices	Insignificant
2	GFI	Measuring the fit of the model to the whole covariance matrix	>0.90
3	AGFI	Measures model fit of proposed model using ratio degree of freedom for null model	>0.90
4	RMSEA	Tendency Chi-square statistic rejects the model with large sample size	< 0.08
5	NFI	The comparison index between proposed and null model	>0.90
6	Multicolliniearity	Measuring correlation among exogenous variables	0.4 to 0.5

Source: Ghozali (2007), Hoe (2008), and Grewal et al. (2004), Mulaik et al. (1989)

4.9.3 Qualitative Analysis

As previously mentioned, the study also uses FGD for collecting data from accounting alumni. To analyse qualitative data, the study employs a Constant Comparison/Grounded Theory method. Strauss (1987) contends that the procedures of Constant Comparison analysis are as follows: (1) Transcribing the process of FGD; (2) Coding the transcription using selective coding technique; (3) Grouping the data based on AICPA core competencies (finding consistencies and differences); and (4) Making memos on the comparison as well as making memos on new-emerging categories.

4.10 Conclusion

Firstly, the chapter discusses the population, all final-year accounting students at state universities in Indonesia. Two-stage sampling is employed to select universities based on accreditation level and location as well as to select students and lecturers at selected universities. Surveys are used for collecting data from students and lecturers while focus groups are employed to collect qualitative data from alumni for triangulating data of accounting competencies. Instruments are developed by the study and adapted from previous research. Instrument validity using Corrected Item-Total Correlation analysis, and instrument reliability analysed using Cronbach alpha are also discussed.

Second, ethical consideration consisting of informed consent and plain language are discussed in this chapter to ascertain if the study complies with ethics and research integrity, and protecting participants' rights and welfare. Finally, data analyses consisting of descriptive, correlation, regression, non-parametric, SEM, Path Analysis as well as qualitative analyses are discussed separately. The results of analysis and discussions are presented in the following chapter.

CHAPTER 5: ANALYSES AND FINDINGS

5.1 Introduction

Quantitative and qualitative analyses and findings are presented in this chapter. Four quantitative analysis techniques i.e. descriptive, correlation, regression, non-parametric, and structural equation modelling are undertaken to provide descriptions, and to test hypotheses as well as to establish models of relationships among three constructs of education. In order to maintain anonymity, the study does not identify the names of respondents (students, lecturers, alumni) and universities. The study will assign U-1 to U-8 to refer to universities' names.

This chapter begins with a profile of respondents from eight universities both students and lecturers. A profile of alumni as participants of Focus Group Discussion (FGD) will be presented for qualitative analysis for triangulating ICAG (Section 5.10). Descriptions of student and lecturer respondents are mainly focused on proportions based on institutions, locations, accreditation, and respondents' demographic characteristics.

5.2 Sample Used in Empirical Test

The study surveys students and lecturers from eight state universities by accreditation levels and locations. There are 411 students that participated in the study consisting of 277 (67%) female students and 134 (33%) male students. The sample constitutes 5.5% of population. The study also includes 188 lecturers or 89% lecturers in sampled universities. Lecturer participants consist of 101 (54%) male and 87 (46%) female lecturers. The accreditation levels of accounting programs at eight universities are as follows; two programs are at an A level accreditation, four have B level, and the rest are at C level. In addition, four state universities are located on Java Island and four are located on Sumatra, Kalimantan, and Sulawesi Islands. Sampled accounting programs constitute 27% of all accounting programs offered by state universities in Indonesia (37). Table 5.1 provides more detailed data about the samples (students and lecturers) from eight state universities.

Table 5.1: Sample Distribution

University	Accred. Level*	Loc.**	Student Sample			Lecturer Sample		
			Male	Female	Total	Male	Female	Total
U-1	A	JV	30	51	81	15	10	25
U-2	B	JV	11	9	20	5	13	18
U-3	B	NJ	26	67	93	15	13	28
U-4	B	NJ	13	12	25	15	5	20
U-5	C	NJ	7	19	26	10	7	17
U-6	A	NJ	9	56	65	15	18	33
U-7	B	JV	18	42	60	15	11	26
U-8	C	JV	20	21	41	11	10	21
Grand Total			134	277	411	101	87	188

*Accreditation level of accounting study program in 2010
** Location, JV: Java Island; NJ: Non-Java Islands

5.3 Descriptive Statistics of Student Data

The study uses descriptive statistics (Minimum, Maximum, Mean, and Standard deviation) to analyse data collected from 411 student participants. This section provides descriptive statistics for ICAG, GPA, Student Engagement, Student Motivation, Age, Comfort of Class Size as well as Learning Facilities. These data will be compared based on a university's (eight universities), accreditation level of accounting program (A, B, and C), and location (Java and Non-Java). The purpose of this comparison is to identify any variations in data based on the comparative criteria (Table 5.2).

Table 5.2: Descriptive Statistics of Student Data

	N	Min	Max	Mean	Std. Deviation
ICAG	411	38	95	67.29	8.628
GPA	411	2.20	3.88	3.2260	0.271
Student Engagement (SE)	411	75	160	112.74	12.846
Motivation (Log transformation)	411	3.63	4.42	4.1459	0.148
Previous Achievements	411	6.00	9.60	7.9589	0.575
Age	411	18	25	21.04	1.114
Comfort of Class Size (CCS)	411	3	15	9.85	2.900
Learning Facility (LF)	411	7	35	21.98	4.690

Table 5.2 shows that the average of ICAG is 67.29 (out of 100) with standard deviation 8.63. Distribution of this data is considered normal using Kolmogorov-Smirnov test. Data collected from eight universities show that ICAG varies among universities indicated by an *F*-value 2.205 (p=0.033) (Appendix B1). Nevertheless, further analysis shows that ICAG based on accreditation level is insignificant, *F*-value 2.503 (p=0.083). Lastly, ICAG by location of universities is also insignificant

(*F*-value 1.856, *p*=0.174). Thus, ICAG gained by students does not differ based on accreditation levels of accounting programs as well as locations of universities.

The average of student GPAs is 3.23 (four-scale GPA) with standard deviation 0.271. Moreover, GPA distribution is normal using Kolmogorov-Smirnov test. GPA earned by student participants varied among universities evidenced by *F*-value 7.174 (*p*= 0.000) (Appendix B2). On the other hand, GPA based on accreditation level of accounting program is considered insignificant (*F*-value= 2.712, *p*=0.068). Lastly, students' GPAs based on university location is significant (*F*-value=22.234, *p*=0.000). Mean of GPA shows that students from Java-located universities have higher GPA (3.29) than that of their counterparts from non-Java located universities (3.17).

Mean of Student Engagement is 112.74 out of 175 with standard deviation 12.846. Using a Kolmogorov-Smirnov test, data distribution of Student Engagement is considered normal. One-way ANOVA analysis (Appendix B3) shows that Student Engagement is insignificantly different across universities, accreditation levels of accounting programs as well as locations of universities (Java and Non-Java University).

Based on Expectancy Theory, motivation force is a result of the multiplication of expectancy, instrumentality, and valence measures. Therefore, final scores have large numbers that lead to non-normal data distributions (One-sample Kolmogorov-Smirnov Test). Raw data are transformed into Log10 data to provide a normal distribution. Transformed data provides a mean of 4.146 and standard deviation of 0.148. One-way ANOVA analyses show that Student Motivation varies significantly by university and location. Nevertheless, motivation is insignificantly different based on accreditation level (Appendix B4).

Previous achievements are average grades earned by students from High School or Vocational High School. The average of Previous Achievements is 7.96 (out of 10.00) and standard deviation is 0.57. Moreover, the data distribution is not normal based on a Kolmogorov-Smirnov test. The calculation of a normal distribution using Z score shows that the distribution is not normal, Z Skewness and Z Kurtosis are -2.76 and 4.28 respectively ($Z>2.58$). The problem of non-normality may be caused by the score of 8.00 that dominates the distribution (106 cases) and constitutes 26% of all data. This leads to large Skewness and Kurtosis coefficients. Therefore, the study undertook some transformation techniques, but data normality remains unchanged.

Further analyses using ANOVA (Appendix B5) show that Previous Achievements varies significantly by university as well as by program study accreditation, but analysis shows that there is no significant different in Previous Achievements by location of university. The analysis also provides information that students with higher Previous Achievements tend to choose better accredited programs indicated by the correlation between Previous Achievements and accreditation level (0.234) that significant at the 0.01 level.

The average of student ages is 21.04 with standard deviation of 1.114. Data distribution is not normal using Kolmogorov-Smirnov test. Z score test shows that the distribution has Z skewness 1.17 (normal) and Z kurtosis 4.05 (not normal). Further analyses using ANOVA show that student age varies significantly by university (F-value=8.96, $p<0.05$) and location (F-value=37.99, $p<0.01$).

Conversely, student age is insignificantly different by accreditation level of program. The analysis also shows that Java located universities tend to have older students (21.37) than Non-Java located universities (20.72). Appendix B6 provides more detailed information on tests.

Comfort of Class Size has a mean of 9.85 (out of 15) or 66% and standard deviation 2.90. Normality test using Kolmogorov-Smirnov test shows that the distribution of this data is not normal. However, Z score test of Skewness and Kurtosis coefficients provide results that Z skewness is normal with Z score of -0.397 (Z<2.58) while Z kurtosis is not normal with Z score of -3.186 (Z>2.58). ANOVA analyses show that Comfort of Class Size is significantly different among sampled universities and locations. The analysis also shows that Non-Java located universities tend to have better Comfort of Class Size than that of Java-located universities. Lastly, Comfort of Class Size does not vary significantly by accreditation level of program (Appendix B7).

Learning Facilities have a mean of 21.98 (out of 35) or 63% and standard deviation 4.69. By employing Kolmogorov-Smirnov test, the distribution of this data is not normal, but Z score analysis for Skewness and Kurtosis coefficients provides results that Z Skewness is normal (-1.00, Z<2.58) and Z kurtosis is also normal (0.81, Z<2.58). Learning Facilities vary significantly by university, by accreditation, as well as by location of university. Analyses also provide information that higher accredited programs tend to score higher on Learning Facilities. Likewise, Java-located universities also score higher on Learning Facilities than Non-Java located universities (Appendix B8).

5.4 Correlation Analyses for Student Data

The study explores the associations among inputs, processes, and outputs. The study keeps the presentation of analyses and results simple by adopting the following steps: (1) Correlation between an input and process; (2) Correlation between an input and output; (3) Correlation between process and output; (4) Regression analyses to identify further relationships between an input, process, and output; (5) Mediation test using regression, Sobel, and Aroian tests.

5.4.1 Student Motivation and Student Engagement

Motivation is a psychological input to educational processes in higher education. The study uses Expectancy Theory consisting of three dimensions i.e. Expectancy, Instrumentality, and Valence. Moreover, education processes are measured by Student Engagement comprising of five dimensions i.e. Academic Challenge, Active Learning, Student-staff Interaction, Enriching Educational Experience, and Supportive Learning Environment.

Table 5.3 shows selected correlation coefficients that Expectancy dimensions are significantly correlated with almost all dimensions of Student Engagement. The correlation between Expectancy and Enriching Educational Experience is insignificant, while the correlation between Expectancy and the rest of the dimensions are significant at the 0.01 level. Likewise, Instrumentality is also correlated with Student Engagement dimensions, except Enriching Educational Experience. The last factor of Expectancy Theory, Valence, is significantly correlated with all Student Engagement dimensions at the 0.01 level, except Enriching Educational Experience that has significance at the 0.05 level. Correlations between Student Motivation and Student Engagement dimensions are significant at the 0.01 level, except the correlation between Student Motivation and Enriching Educational Experience that is significant at the 0.05 level.

Table 5.3: Correlation between Student Motivation and Student Engagement

	Academic Challenge	Active Learning	Student-Staff Interaction	Enriching Educational Experience	Supportive Learning Environment	Student Engage-ment
Expectancy	0.181**	0.233**	0.142**	0.047	0.223**	0.229**
Instrumentality	0.197**	0.222**	0.152**	0.068	0.190**	0.234**
Valence	0.264**	0.269**	0.265**	0.150**	0.225**	0.332**
Student Motivation	0.258**	0.297**	0.231**	0.105*	0.255**	0.322**

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

5.4.2 Student Motivation and ICAG

The previous table (5.3) shows correlations between Student Motivation and Student Engagement as a proxy of educational process or environment. Expectancy, Instrumentality, and Valence are also closely correlated with Functional Competency, Personal Competency, Broad-business Perspective Competency, as well as ICAG (Table 5.4). Associations between Student Motivation and Functional Competency, Personal Competency, Broad-business Perspective Competency, and ICAG are significant at the 0.01 level. In summary, all dimensions of Expectancy Theory are significantly correlated with all dimensions of accounting competency. Students who have higher motivation measured by Expectancy Theory are more likely to have better ICAG.

Table 5.4: Correlation between Student Motivation and ICAG

	Functional Competency	Personal Competency	Broad-business Perspective Competency	ICAG
Expectancy	0.144**	0.154**	0.153**	0.178**
Instrumentality	0.119*	0.117*	0.153**	0.154**
Valence	0.187**	0.132**	0.209**	0.209**
Student Motivation	0.185**	0.155**	0.204**	0.215**

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

5.4.3 Student Engagement and ICAG

Student Engagement, consisting five dimensions as a proxy of educational processes at a university, is closely correlated with International Competency of Accounting Graduates (ICAG). All dimensions of Student Engagement are significantly correlated with all ICAG dimensions (Functional Competency, Personal Competency, and Broad-business Perspective Competency) at the 0.01 level of significance (Table 5.5). The lowest coefficient is the correlation between SSI and Functional competency (0.161).

Correlations between Student Engagement, as well as its dimensions, with ICAG are significant at the 0.01 level. The highest correlation between Student Engagement dimensions and ICAG is the correlation between Academic Challenge and ICAG (0.417). The lowest coefficient is the correlation between Enriching Educational Experience and ICAG (0.262). Likewise, correlations of Student Engagement with all competency dimensions as well as ICAG is also significant at the 0.01 level. Lastly, the correlation between Student Engagement and ICAG is 0.456, significant at the 0.01 level. Correlation coefficients provide information that Student Engagement and ICAG are closely associated. In other words, highly-engaged students in academic and non-academic activities in their universities are more likely to have better ICAG.

Table 5.5: Correlation between Student Engagement and ICAG

	Functional Competency	Personal Competency	Broad-business Perspective Competency	ICAG
Academic Challenge	0.317**	0.365**	0.371**	0.417**
Active Learning	0.200**	0.305**	0.263**	0.306**
Student-Staff Interaction	0.161**	0.193**	0.313**	0.269**
Enriching Education Experience	0.174**	0.228**	0.253**	0.262**
Supportive Learning Environment	0.283**	0.289**	0.338**	0.361**
Student Engagement	0.321**	0.391**	0.433**	0.456**

**Correlation is significant at the 0.01 level (2-tailed)

Further analysis using a multiple-regression technique shows that Academic Challenge and Supportive Learning Environment significantly affect Functional Competency with *t*-values of 4.289, p=0.000 and 3.745, p=0.000 respectively, while Active Learning, Student-Staff Interaction, and Enriching Educational Experience do not impact Functional Competency (Appendix B9). Moreover, Personal Competency is influenced by Academic Challenge (t=4.346, p=0.000), Active Learning (t=2.254, p=0.025) and Supportive Learning Environment (t=3.202, p=0.001). Two dimensions of Student Engagement i.e. Student-Staff Interaction and Enriching Educational Experience do not significantly influence Personal Competency (Appendix B10). Lastly, Broad-business Perspective Competency is significantly affected by Academic Challenge (t=4.438, p=0.000), Student-Staff Interaction (t=2.502, p=0.013), and Supportive Learning Environment (t=3.954, p=0.000).

There is not enough evidence that Active Learning and Enriching Educational Experience affect Broad-business Perspective Competency (Appendix B11).

5.4.4 Student Motivation, Student Engagement, and ICAG

Correlation analysis shows that there are significant correlations among Student Motivation, Student Engagement, and ICAG as an input, process, and output respectively. To identify strengths of relationships and mediation effect, the study uses simple and multiple regressions (Appendix B12).

Simple regression analysis provides *t*-values of regression coefficients (Figure 5.1) that Student Motivation impacts Student Engagement (t=6.887, p=0.000) and Student Engagement, in turn, also has a positive effect on ICAG (t= 10.363, p=0.000). Likewise, Student Motivation significantly affects ICAG (t_1= 4.456, p=0.000). Moreover, the influence of Student Motivation on ICAG shrinks significantly (t_2=1.640, p=0.102) upon adding Student Engagement in the model. Based on the above, mediation may occur in the model (Figure 5.1).

To check the mediation effect, the study employed Sobel and Aroian test. The results show a test statistic of 5.535 (p=0.000). Aroian test also provides similar results, test statistic 5.515 (p=0.000). Both results show that Student Engagement mediates the influence of Student Motivation on ICAG. Based on the above analyses, students who have higher motivation measured by Expectancy Theory are more likely to have more engagement and more ICAG. Moreover, Student Engagement is a mediator between Student Motivation and ICAG.

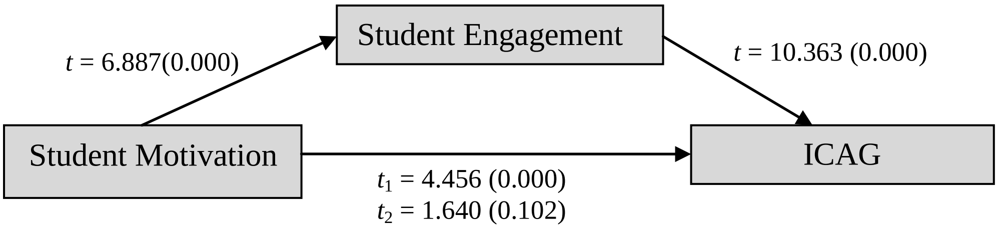


Figure 5.1: Student Motivation-Student Engagement-ICAG Sub-Model 1

5.4.5 Student Motivation, Student Engagement, and GPA

The previous analysis uses ICAG as outputs of a university education. The following analysis employs Grade Point Average (GPA) as an output of an educational system. As has been noted, Student Motivation and Student Engagement are significantly correlated (Table 5.3). Likewise, correlation between motivation dimensions and GPA are also positive and significant (Table 5.6). The lowest coefficient is the correlation between Expectancy and GPA (0.100) significant at the 0.05 level. In addition, the correlation between Student Motivation and GPA is positive (0.189) and significant at the 0.01 level.

Correlations between Student Engagement dimensions and GPA are significant, except between Enriching Education Experience and GPA (0.002). Even though the correlation between Supportive Learning Environment (0.120) is significant at the 0.05 level, the correlation is small in magnitude. Nevertheless, the correlation between overall Student Engagement and GPA is significant (0.223) at the 0.01 level. In other words, students who have high Student Engagement are more likely to have higher GPA. Despite its magnitude, student who have high motivation measured Expectancy Theory tends to have better GPA.

Table 5.6: Correlations between Student Engagement, Motivation, and GPA

Student Engagement	GPA	Student Motivation	GPA
Academic Challenge	0.214**	Expectancy	0.100*
Active Learning	0.254**	Instrumentality	0.158**
Student-Staff Interaction	0.154**	Valence	0.196**
Enriching Education Experience	0.002	Student Motivation (Motivation Force)	0.189**
Supportive Learning Environment	0.120*		
Student Engagement	0.223**		

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

Simple multiple linear regression analyses (Appendix B13) provide results that Student Motivation significantly influence Student Engagement (t = 6.887, p=0.00) and GPA (t_1 = 3.902, p=0.00). In turn, Student Engagement also significantly affects GPA (t = 4.631, p=0.00). The effect of Student Motivation on GPA decreases from (t_1= 3.902, p=0.000) to (t_2=2.593, p=0.01) after adding Student Engagement. The decrease indicates a mediating effect occurs in this model.

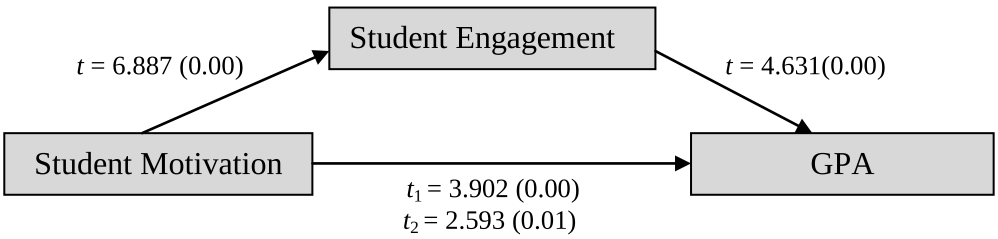


Figure 5.2: Student Motivation-Student-Engagement-GPA Sub-Model 2

Sobel analysis shows a test statistic of 3.843 (p-value=0.000). Likewise, Aroian analysis also shows a test statistic of 3.815 (p-value=0.000). Both analyses provide support that Student Engagement is a mediating construct between Student Motivation and GPA. In other words, Students who have higher motivation measured by Expectancy Theory are more likely to have better Student Engagement and higher

GPA. Student Engagement as a proxy for a transforming process also mediates the influence of motivation on GPA.

5.4.6 Previous Achievements, Student Engagement, and ICAG

The study uses the average grade a student earned from previous schoolings (High School and Vocational High School) as a proxy of past achievement. Participants are graduates from two types of high school namely Academic High School (SMA) and Vocational High School (SMK). Moreover, participants graduating from SMAs have completed a Natural Sciences (IPA) or Social Studies (IPS) major. SMK graduates have completed an Accounting and Finance, Management and Marketing, or Secretarial major. Therefore, types of subjects they study at their previous schoolings are different.

Previous Achievements correlates with overall Student Engagement as well as with all Student Engagement dimensions, except Student-Staff Interaction (0.079). In addition, Previous Achievements and Student Engagement are significantly correlated (0.235) at the 0.01 level. The correlation between Student Engagement and ICAG is 0.456 and significant as presented in previous Table 5.5. Correlation between Previous Achievements and ICAG is also significant (0.138) at the 0.01 level (Table 5.7). Therefore, the correlations among Previous Achievements, Student Engagement, and ICAG are highly significant. In other words, a student who has high Previous Achievements tends to have high Student Engagement and high ICAG. These relationships provide information that a mediating effect may occur in the model.

Table 5.7: Correlation between Student Engagement, ICAG, and GPA

Student Engagement	Previous Achievements	Learning Output	Previous Achievements
Academic Challenge	.251**	Functional Competency	.058
Active Learning	.220**	Personal Competency	.146**
Student-Staff Interaction	.079	Broad-business Perspective Competency	.137**
Enriching Education Experience	.113*		
Supportive Learning Environment	.142**	ICAG	.138**
Student Engagement	.235**	GPA	.355**

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

To identify the strengths of these relationships, further analysis was employed using regression techniques. In addition, analysis was also conducted to check for mediating effects. Figure 5.3 provides the model or effects of Previous Achievements on Student Engagement and ICAG as well as the effect of Student Engagement on ICAG.

By employing simple and multiple-regression techniques (Appendix B14), the effects of Previous Achievements on Student Engagement and ICAG are shown to be significant with *t*-values of 4.895 (p=0.000) and 2.821 (p=0.005) respectively. Likewise, the influence of Student Engagement on ICAG is also significant (t=10.363, p=0.000). By including Student Engagement in the model, the effect of Previous Achievements on ICAG becomes insignificant (t_2 = 0.721, p=0.471). Sobel and Aroian tests are intended to check whether Student Engagement mediates the effect of Previous Achievements on ICAG. Further analyses show that the Sobel test statistic of 4.426 (p= 0.00). Moreover, the Aroian test provides similar results, with test statistic of 4.409 (p= 0.00). Both tests provide a similar conclusion that Student Engagement is a mediating construct that mediates the influence of Previous Achievements on ICAG. Thus, students who have higher Previous Achievements tend to have better engagement and ICAG. Student Engagement is a mediator between Previous Achievements and ICAG.

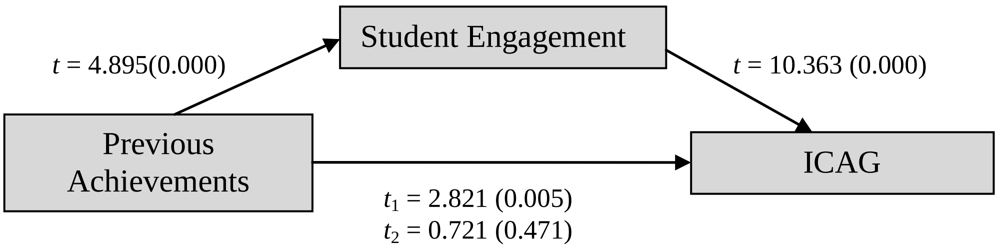


Figure 5.3: Previous Achievement-Student Engagement-ICAG Sub-Model 3

5.4.7 Previous Achievements, Student Engagement, and GPA

Previous analyses show the correlation between Previous Achievements and GPA is positive (0.355) and significant at the 0.01 level. Likewise, correlations between Previous Achievements and Student Engagement are significant. Correlations between Student Engagement and GPA also have been shown to be significant (Table 5.7).

Regression analyses (Appendix B15) show that the effects of Previous Achievements on Student Engagement and GPA are significant. In addition, the influence of Student Engagement on GPA is also significant. After Student Engagement is included in the model, the influence of Previous Achievements on GPA decreases from (t_1=7.681, p=0.00) to (t_2=6.807, p=0.00). Therefore, a mediating effect may occur in the model (Figure 5.4). Sobel test provides a t-statistic of 3.364 (p= 0.001), while Aroian generates a t-statistic of 3.328 (p= 0.001). Thus, students who have higher Previous Achievements are more likely to have more engagement and better GPA. In addition, Student Engagement is a mediating construct between Previous Achievements and GPA.

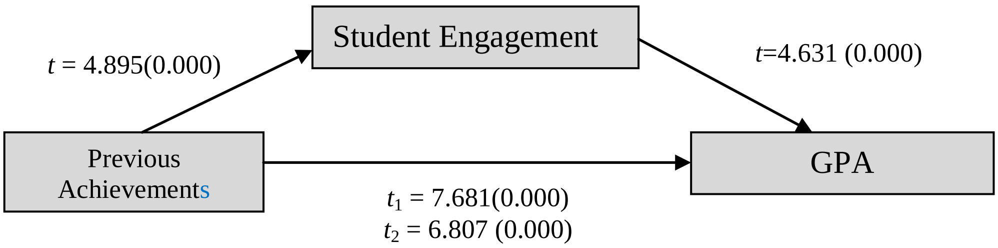


Figure 5.4: Previous Achievement-Student Engagement-GPA Sub-Model 4

5.4.8 Grades of Nationally-tested Subject (NEM), Student Engagement, ICAG, and GPA

Besides collecting Pervious Achievements in terms of average grades that students earned from High Schools, the study also collected data on grades of Nationally-Tested Subjects (NEM). There are three dimensions of Student Engagement that insignificantly correlate with NEM i.e. Student-Staff Interaction, Enriching Education Experience, and Supportive Learning Environment. The other two dimensions are positively correlated with NEM (Academic Challenge and Active Learning), but these correlations are small in magnitude. Even though, the correlation between NEM and Previous Achievements is considered moderate in magnitude (0.636, p<0.01), the association between NEM and Student Engagement is small in magnitude (0.104, p<0.05).

All correlations between NEM and ICAG are insignificant (Table 5.8). On the other hand, the correlation between NEM and GPA is 0.419, significant at the 0.01 level and the correlation is considered moderate in magnitude. In summary, NEM has a small association with Student Engagement, and no associations with competencies, but NEM has a close association with GPA. In addition, the correlation between GPA and ICAG is found to be insignificant (-0.071).

Table 5.8: Correlation between NEM, Student Engagement, ICAG, and GPA

Student Engagement	NEM	Learning Output	NEM
Academic Challenge	$.175^{**}$	Functional Competency	.021
Active Learning	$.104^{*}$	Personal Competency	.039
Student-Staff Interaction	-.024	Broad-business Perspective Competency	.039
Enriching Education Experience	.000	ICAG	.039
Supportive Learning Environment	.066	GPA	$.419^{**}$
Student Engagement	$.104^{*}$		

NEM: Grades of Nationally-tested Subjects

**.Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

Regression analysis (Appendix B16) shows the strength of relationships among NEM, Student Engagement, and GPA. Despite its magnitude, NEM affects Student Engagement (t=2.124, p=0.034). However, NEM strongly influences GPA (t_1=9.323, p=0.000), while Student Engagement significantly affects GPA (t=4.631, p=0.000). The influence of NEM on GPA shrinks slightly from (t_1=9.323, p=0.00) to (t_2=9.021, p=0.00) after the inclusion of Student Engagement in the model. Students who have better NEM tend to have better engagement and GPA. Nevertheless, Student Engagement is not a strong mediating construct between NEM and GPA (Figure 5.5).

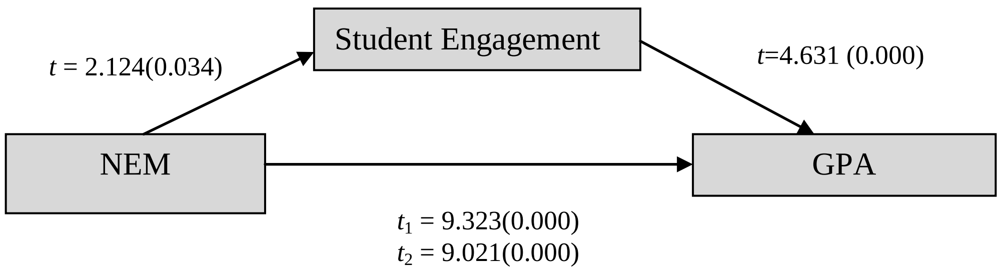


Figure 5.5: NEM-Student Engagement-GPA Sub-Model 5

5.4.9 Other Academic Characteristics

Beside Previous Achievements in terms of grade average and NEM that students earned from previous schoolings, the study also collected data on types of previous school, previous major, and major group.

As previously discussed, participants graduated either from High Schools (SMA) or Vocational Schools (SMK). For analysis purposes, dummy variable 1 and 0 are assigned for High School and Vocational School respectively. Moreover, respondents that graduated from High Schools completed either a Natural Sciences (IPA) or Social Studies (IPS) major, while respondents graduated from Vocational School completed one of the following majors; Marketing, Management, Administration, Accounting, or Finance. For the sake of analysis, the above majors are grouped into four categories based on number of hours student studied accounting in previous schools. Score of 1 is assigned to Natural Sciences major, 2 assigned to Marketing, Management, and Administration majors, 3 assigned to Social Studies major, and 4 is assigned to Accounting and Banking majors. Majors can be classified into two groups of majors i.e. Natural Sciences and Social Studies.

For analysis purposes, 1 and 0 are assigned to Natural Sciences and Social Studies respectively.

Correlation analysis shows that type of Previous Schools (High School and Vocational School) does not correlate with Student Engagement, ICAG, and GPA. Likewise, correlations between Previous Majors (Natural Sciences; Marketing, Management, and Administration; Social Studies; Accounting and Banking) and Student Engagement as well as ICAG are also insignificant. On the other hand, the correlation between Previous major and GPA is negative (-0.127) and significant at the 0.05 level (Table 5.9).

Table 5.9: Correlation between Other Academic Characteristics and Student Engagement, ICAG, and GPA

	Student Engagement	ICAG	GPA
Previous School#	-.009	-.024	-.027
Previous Major##	-.027	-.001	-.127*
NEM	.104*	.039	.419**
Group of Major###	.029	.003	.168**

#0: High School; 1: Vocational School
##1: Natural Sciences, Marketing & Management, Administration; 2: Social Studies;
3: Accounting and Banking
###0: Social Studies; 1: Natural Sciences
**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

In addition, Group of Major do not correlate with Student Engagement and ICAG, but positively correlate with GPA (0.168) and significant at the 0.01 level. This result indicates that students majoring in Natural Sciences tend to have higher GPA than those students whose high school major was Social Studies. Lastly, the correlation between NEM and ICAG is insignificant (0.039). The correlation between NEM and Student Engagement is 0.104 and significant at the 0.05 level. Likewise, NEM and

GPA are closely associated (0.419) and significant at the 0.01 level (Table 5.9). In other words, a student having higher NEM from previous schooling is more likely to have a higher GPA at university. Previous Achievements is a strong predictor for Student Engagement and ICAG, while NEM is more appropriate predictor for GPA.

5.4.10 Age, Student Engagement, ICAG, and GPA

Age and gender are two demographic characteristics that are discussed in this section. The study correlates these two demographic characteristics with Student Engagement, ICAG as well as GPA. If all correlations between demographic characteristics and Student Engagement, ICAG or GPA are found to be positively significant, the study will further analysis to identify mediating effects.

Age and Student Engagement are negatively correlated, -0.149 and significant at the 0.01 level. This could mean that older students tend to have lower engagement, possibly because they have more life experiences. Table 5.10 shows that Age also negatively correlates with Academic Challenge and Active Learning. In addition, Age is also negatively correlated with Student-Staff Interaction, Enriching Education Experience, and Supportive Learning Environment, but coefficients are not significant.

Relationships between Age and dimensions of ICAG are not significant. However, the correlation between Age and the other learning output (GPA), is also negative and significant (-0.104) at the 0.05 level. This may also means that older students are more likely to have lower GPA than younger students.

Table 5.10: Correlation between Age, Student Engagement, ICAG, and GPA

Student Engagement	Age	Learning Outputs	Age
Academic Challenge	-.158**	Functional Competency	-.068
Active Learning	-.131**	Personal Competency	-.090
Student-Staff Interaction	-.054	Broad-business Perspective Competency	-.080
Enriching Education Experience	-.085		
Supportive Learning Environment	-.082	ICAG	-.095
Total Student Engagement	-.149**	GPA	-.104*

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant ant the 0.05 level (2-tailed)

5.4.11 Age and Other Student Characteristics

Correlations between Age and other student characteristics are consistent with previous findings. Age and Student Motivation as well as Student Motivation dimensions are negatively correlated. Older students are more likely to have less motivation than younger students. In terms of previous academic achievements, Previous Achievements and NEM are also negatively correlated with Age. It seems that older students are more likely to have lower Previous Achievements and NEM than younger students. In other words, older students tend to have lower achievements when they were in high schools.

Correlation between Age and Gender is significant at the 0.01 level meaning that male students tend to be older than female students. Likewise, the correlation between Age and types of Previous Schools (0.111) significant at the 0.05 indicating students that graduating from High School tend to be older than students graduated from Vocational High School. This correlation may provide inaccurate evidence, since the number of students graduating from Vocational School in this study is only 32 or constitutes 7.8% of overall samples.

Table 5.11: Correlation between Age and Other Student Characteristics

Motivation	Age	Other Characteristics	Age
Expectancy	-0.093	Previous Achievements	-0.251**
Instrumentality	-0.131*	NEM	-0.129**
Valence	-0.118*	Gender	0.156**
Student Motivation (Log)	-0.141**	Previous School	0.116*

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

5.4.12 Gender, Student Engagement, ICAG, and GPA

In general, Gender and Student Engagement are not associated except the negative correlation between Gender and Active Learning (-0.109). Despite its small magnitude, the correlation means that male students are more likely to have less Active Learning than female students. Correlation between Gender and all competency factors as well as ICAG are insignificant. On the other hand, Gender and GPA are negatively associated. In other words, female students are more likely to have higher GPA than male students (Table 5.12).

Table 5.12: Correlation between Gender and Student Engagement and Learning Outputs

Student Engagement	Gender[1]	Learning Outputs	Gender[1]
Academic Challenge	-.087	Functional Competency	-.027
Active Learning	-.109*	Personal Competency	-.013
Student-Staff Interaction	-.004	Broad-business Perspective Competency	.012
Enriching Education Experience	-.028		
Supportive Learning Environment	-.050	ICAG	-.009
Student Engagement	-.069	GPA	-.214**

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)
[1] Male: 1 and Female: 0

5.4.13 Gender and Other Student Characteristics

Table 5.13 shows that correlations between Gender and Student Motivation are negatively significant at the 0.01 level. Likewise, correlations between Gender and motivation factors are also negative. These correlation coefficients imply that male students tend to have less motivation than female students when they have been studying at university. On the other hand, correlations between Gender and Previous Achievements as well as NEM are insignificant. In other words, both male and female students have the same previous levels of achievement (Table 5.13).

Table 5.13: Correlation between Gender and Other Student Characteristics

Motivation	Gender (Male:1; Female: 0)	Other Characteristics	Gender (Male:1; Female: 0)
Expectancy	-.192**	Previous Achievements	-.075
Instrumentality	-.112*		
Valence	-.210**	NEM	-.071
Student Motivation	-.214**		

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

Previous sections discuss relationships between Student Characteristics, Student Engagement, and education outputs (ICAG and GPA). The following sections discuss relationships between Comfort of Class Size, Learning Facilities, Student Engagement and learning outputs in terms of ICAG and GPA.

5.4.14 Comfort of Class Size (CCS), Student Engagement, ICAG, GPA

Correlations between Comfort of Class Size with all dimensions of Student Engagement are positive and significant. The lowest coefficient is the correlation between Comfort of Class Size and Academic Challenge (0.108) significant at the 0.05 level. The correlation between Comfort of Class Size and Student Engagement is also positive and significant at the 0.01 level. In addition, Comfort of Class Size and ICAG are also positively associated with correlation coefficient (0.113) significant at the 0.05 level. The only two insignificant coefficients are correlations between Comfort of Class Size and Personal Competency and GPA (-0.061).

Table 5.14: Correlation between Comfort of Class Size and Student Engagement and Learning Outputs

<table>
<tr><th>Student Engagement</th><th>Comfort of Class Size</th><th>Learning Outputs</th><th>Comfort of Class Size</th></tr>
<tr><td>Academic Challenge</td><td>.108*</td><td>Functional Competency</td><td>.102*</td></tr>
<tr><td>Active Learning</td><td>.167**</td><td>Personal Competency</td><td>.084</td></tr>
<tr><td>Student-Staff Interaction</td><td>.160**</td><td rowspan="2">Broad-business Perspective Competency</td><td rowspan="2">.102*</td></tr>
<tr><td>Enriching Education Experience</td><td>.203**</td></tr>
<tr><td>Supportive Learning Environment</td><td>.188**</td><td>ICAG</td><td>.113*</td></tr>
<tr><td>Student Engagement</td><td>.213**</td><td>GPA</td><td>-.061</td></tr>
</table>

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

Regression analyses (Appendix B17) show that Comfort of Class Size has positive effects on Student Engagement as well as on ICAG. In turn, the effect of Student Engagement on ICAG is also significant. The influence of Comfort of Class Size on ICAG becomes insignificant after the model includes Student Engagement in the analysis indicating that a mediating effect occurs. Sobel and Aroian tests provide results of *t*-statistic (t=4.065, p=0.000) and (t=4.049, p=0.000) respectively. Regression analyses and two mediating effect tests provide evidence that mediating effect occurs in the model (Figure 5.6). Based on student perception, Comfort of Class Size is an important input, since it significantly influences Student Engagement and ICAG. The study also concludes that, Student Engagement is a mediating construct between Comfort of Class Size and ICAG.

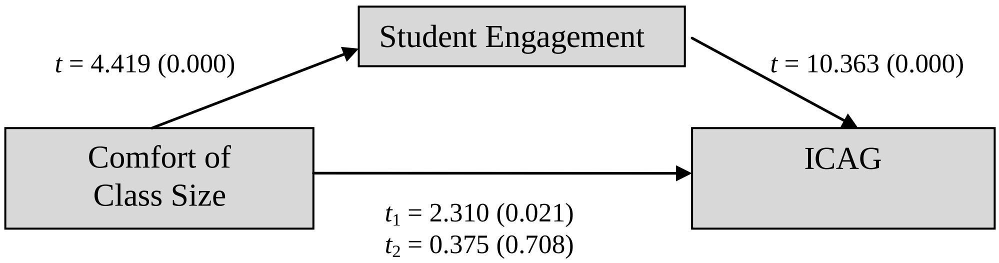


Figure 5.6: Comfort of Class Size-Student Engagement-ICAG Sub-Model 6

5.4.15 Learning Facilities, Student Engagement, ICAG, and GPA

Learning Facilities are other important inputs to an educational system. Based on data analysis, Learning Facilities and Student Engagement dimensions are closely correlated. All correlation coefficients are highly significant at the 0.01 level. The highest coefficient is the correlation between Learning Facilities and Supportive Learning Environment. Further correlation analysis was undertaken excluding the dimension of Supporting Learning Environment from Student Engagement and Learning Facilities are still closely correlated (0.400) at the 0.01 level.

Likewise, correlations between Learning Facilities and all learning outputs are also positively significant. Learning Facilities are associated with ICAG and all its dimensions. All correlation coefficients are significant at the 0.01 level. Moreover, the correlation between Learning Facilities and GPA is also significant at the 0.05 level.

Table 5.15: Correlation between Learning Facilities and Student Engagement and Learning Outputs

Student Engagement	Learning Facilities	Learning Outputs	Learning Facilities
Academic Challenge	.325**	FC	.284**
Active Learning	.333**	PC	.282**
Student-Staff Interaction	.306**	BPC	
Enriching Education Experience	.227**		.284**
Supportive Learning Environment	.516**	ICAG	.335**
Student Engagement	.457**	GPA	.104*

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

To identify effects of Learning Facilities on Student Engagement and ICAG, the study develops models based on Astin's I-E-O model. Regression analyses (Appendix B18) show results that Learning Facilities have positive influence on both Student Engagement and ICAG with t-values of (10.380, p=0.000) and (7.191, p=0.000) respectively. As previously mentioned, the influence of Student Engagement on ICAG is also significant (10.363, p=0.000) (Appendix B12).

The influence of Learning Facilities on ICAG shrinks significantly from (t_1=7.191, 0.000) to (t_2=3.276, 0.001) due to the inclusion of Student Engagement in the model. Mediating effect has been detected in this model. Sobel test shows t-statistic of 7.334 (p=0.000). Likewise, Aroian test also provides a similar result (t-statistic of 7.317 (p=0.000) (Figure 5.7).

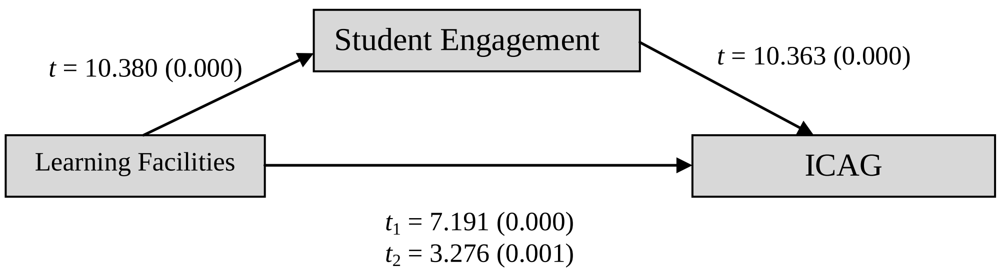


Figure 5.7: Learning Facilities-Student Engagement-ICAG Sub-Model 7

By employing ICAG as outputs, the previous model (Figure 5.7) shows that Student Engagement is a mediating construct. Figure 5.8 shows relationships among Learning Facilities, Student Engagement, and GPA. Regression analyses (Appendix B19) show that the effect of Learning Facilities on GPA is also significant (t_1=2.120, p=0.035). The effect of learning facilities on GPA becomes insignificant, after the inclusion of Student Engagement in the model (t_2=0.054, p=0.957). Sobel and Aroian tests also show 4.229 and 4.213 respectively with p<0.05 indicating that Student Engagement is a mediating construct between learning facilities and GPA.

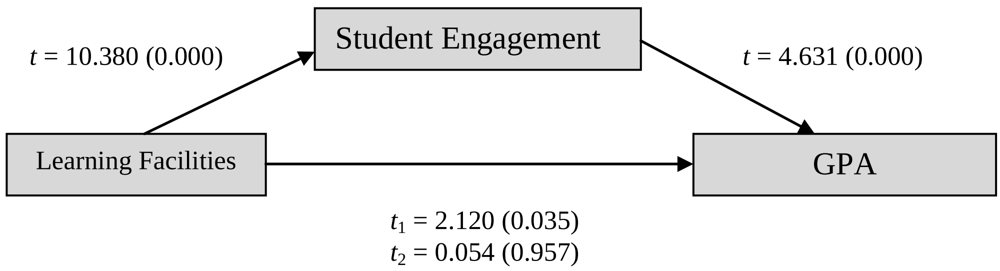


Figure 5.8: Learning Facilities-Student Engagement-GPA Sub-Model 8

5.5 Structural Equation Modelling Analyses for Student Data

5.5.1 Input-Student Engagement-ICAG Model 1 with Single Composite Indicator

To build a more comprehensive model by including inputs, processes, and outputs, the study uses two approaches i.e. Structural Equation Modelling (SEM) with single composite indicator and Path Analysis. The purpose behind using a single composite indicator is to reduce the complexity of the model. There are various views about the minimum factor loadings that can be included in the analysis. Some academics contend that the minimum loading factor is 0.3 (Hair et al. 2006) while others determine 0.4 (Carraher et al. 1998) or even 0.7 (Saadé & Kira 2009). The study uses factor loading at least 0.4 for Comfort of Class Size, Learning Facilities, Student Engagement, and ICAG. However, the study includes some questions having factor loading of more than 0.35, since the study employs a large sample (n=411).

The lowest factor loading for ICAG is 0.434 while the highest loading factor is 0.624. Originally, Student Engagement consisted of 35 questions, but 23 questions have reasonable factor loadings. Moreover, the study includes two questions that have factor loadings 0.370 and 0.359, since these questions are considered important. Comfort of Class Size consists of three questions and all of them have factor loading more than 0.4. All questions of Learning Facilities are considered valid, since they have at least 0.556 factor loadings. Lastly, all questions for Student Motivation are considered valid, but three questions have factor loading of 0.368, 0.389, and 0.365. These three questions are included in the analysis.

As previously mentioned, the study uses SEM with single composite indicator; the study calculates composite indicators for ICAG, Student Engagement, Comfort of Class Size, and Learning Facilities. Student Motivation is the exception, since Student Motivation is the multiplication of Expectancy, Instrumentality, and Valence. Therefore, this is treated as an observed construct. Since Student Motivation is the result of multiplication, the scores become large. The study transforms Student Motivation data into log data to get a normal distribution (see previous section 5.3). Factor loadings, measurement errors, and factor score weights are used to calculate a composite indicator. For more detailed information, Appendix (Appendix B20) provides all coefficients for calculating a composite indicator. The calculations of composite indicator for ICAG, Student Engagement, Comfort of Class Size, and Learning Facilities are presented in Appendix B21, B22, and B23.

The study develops Preliminary Model 1 by including all inputs (Student Motivation, Learning Facilities, Comfort of Class Size, Previous Achievements, and Age), processes (Student Engagement), and outputs (ICAG) (Appendix B24). Even though, previous analyses (correlations and regressions) show Comfort of Class Size has a significant effect on Student Engagement and ICAG (Table 5.14 and Figure 5.6), Structural Equation Modelling (SEM) employing a single indicator technique shows that the effect of Comfort of Class Size on Student Engagement is minimal. Standardised regression weight of Comfort of Class Size on Student Engagement is insignificant (0.076). Likewise, the effect of Age on Student Engagement and ICAG is also insignificant. Standardised regression weights of Age on Student Engagement and ICAG are -0.32 (p=0.490) and -0.036 (p=436) respectively, even though Goodness of Fit of the preliminary model shows a good fit.

The study assesses the Goodness of Fit by employing some indices. Chi-square (CMIN) is used to assess actual and predicted matrices. The CMIN coefficient obtained is 1.022 (p=0.600) meaning that the Chi-square is insignificant. In other words, actual and predicted matrices are not statistically different. Likewise, RMSEA that measures tendency of Chi-square statistic rejects the model with large sample size is found to be fit. Other Goodness of Fit tests (GFI, AGFI, and NFI) also show that the model has a good fit (Table 5.16).

Table 5.16: Input-Student Engagement-ICAG Goodness of Fit

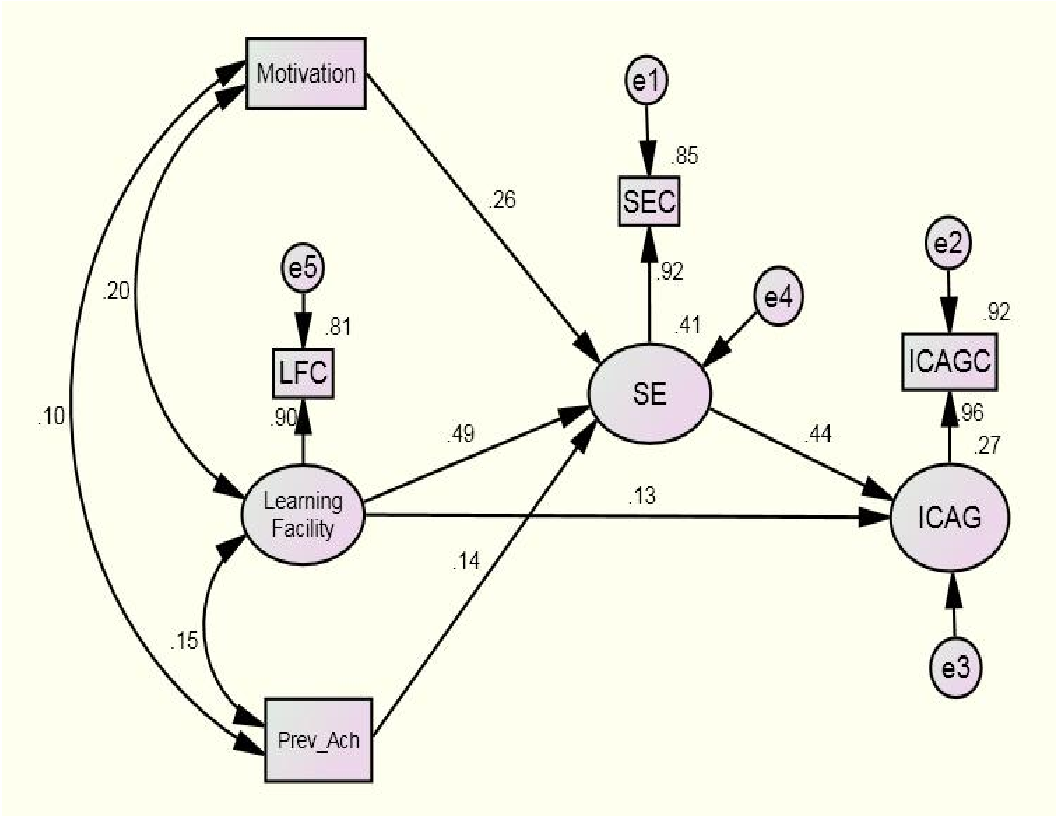
No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	1.022 (p = 0.600)	Insignificant	Fit
2	GFI	0.999	More than 0.9	Fit
3	AGFI	0.993	More than 0.9	Fit
4	RMSEA	0.000	Less than 0.08	Fit
5	NFI	0.996	More than 0.9	Fit

Due to insignificant effects of Comfort of Class Size and Age on Student Engagement as well as ICAG, the study excludes these inputs from the model. Input-Student Engagement-ICAG SEM Model 1 (Figure 5.9) shows interrelationships among inputs (Student Motivation, Learning Facilities, and Previous Achievements), Processes (Student Engagement) and outputs (ICAG). These inputs significantly affect Student Engagement and Student Engagement, in turn, influences ICAG. In addition, Learning Facilities also affects ICAG directly. Since the data of Previous Achievements (Prev_Ach) is not ideally normal, the study uses a bootstrapping technique. Figure 5.9 also shows that latent constructs (Learning Facilities, Student Engagement, and International Competency of Accounting Graduate) are measured using single composite indicator (LFC, SEC, and ICAGC)[22]. Each composite indicator has an error variance composite (e1, e2, e5) that was previously calculated (Appendix B21, B22, and B23), whilst e4 and e3 represent error terms for endogenous constructs in the model.

Figure 5.9 shows that inputs (Student Motivation, Learning Facilities, and Previous Achievements) are important to the educational processes (Student Engagement). Student Engagement, in turn, is an important process to improve

[22] LFC: Learning Facility-Composite; SEC: Student Engagement-Composite; ICAGC: International Competency of Accounting Graduate-Composite

International Competency of Accounting Graduate (ICAG). However, only Learning Facilities have direct effect on ICAG.



LFC: Learning Facilities Composite
SEC: Student Engagement Composite
Prev_Ach: Student Previous Achievements
SE: Student Engagement
ICAGC: ICAG Composite

Figure 5.9: Input-Student Engagement-ICAG SEM Model 1

Table 5.17 provides coefficients to determine the magnitude of effects. The lowest coefficient is the effect of Learning Facilities on ICAG with a standardised regression weight 0.13 (p = 0.059). Likewise, the effects of Learning Facilities and Student Motivation (Motivation) on Student Engagement are significant with standardised regression weights 0.49 and 0.26 respectively, significant at the 0.001 level. The impact of Previous Achievements (Prev_Ach) on Student Engagement is also significant indicated by a standardised regression weight 0.14 (p=0.002).

Finally, the standardised regression coefficient indicating the effect of Student Engagement on ICAG is 0.14, significant at the 0.001 level (Table 5.17).

Table 5.17: Regression Weight and Estimates for Input-SE-ICAG Model

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	p	
SE ←Learning Facilities	.495	.052	9.487	***	.49
SE ←Motivation	1.786	.311	5.743	***	.26
SE ←Previous achievement	.249	.079	3.146	.002	.14
ICAG ←SE	.436	.064	6.774	***	.44
ICAG ←Learning Facility	.125	.066	1.886	.059	.13

SE: Student Engagement
*** $p \leq 0.001$

5.5.2 Input-Student Engagement-ICAG Model with Path Analysis

To provide corroborating evidence about interrelationships among inputs, processes, and outputs. The study also uses Path Analysis by treating all variables as observed variables. Therefore, the study develops Preliminary Model 2 (Appendix B25) by including all inputs (Student Motivation, Comfort of Class Size, Learning Facilities, Previous Achievements, and Age), processes (Student Engagement), and outputs (ICAG). This model shows that Age insignificantly influences Student Engagement indicated by the value of unstandardised regression of -.058 (p= 0.181).

Further path analysis (excluding Age variable) shows interrelationships among inputs (Learning Facilities, Comfort of Class Size, Previous Achievements, and Student Motivation), processes (Student Engagement) and outputs (ICAG) (Figure 5.10). Input-Student Engagement-ICAG SEM Model 1 (Figure 5.9) shows that Comfort of Class Size insignificantly affects both Student Engagement and ICAG. On the other hand, Input-Student Engagement-ICAG Path Model 2 (Figure

5.10) provides evidence that Comfort of Class Size significantly affects Student Engagement with a standardised regression weight of 0.093 (p=0.029). The influence of other inputs is similar to previous model. However, the magnitudes of effects are slightly different. The effects of Learning Facilities, Previous Achievements, and Student Motivation on Student Engagement are significant at the 0.001 level. Likewise, the influences of Learning Facilities and Student Engagement on ICAG are also significant at the 0.001 level (Table 5.18).

Table 5.18: Regression Weight and Estimates for Input-SE-ICAG Using Path Analysis

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	p	
SE ← Learning Facility	1.016	.119	8.549	***	.371
SE ← Motivation	19.409	3.690	5.259	***	.224
SE ← Previous Achievement	3.454	.938	3.681	***	.154
ICAG ←SE	.257	.033	7.852	***	.383
ICAG ←Learning Facility	.295	.090	3.284	.001	.160
SE ← CCS	.414	.189	2.186	.029	.093

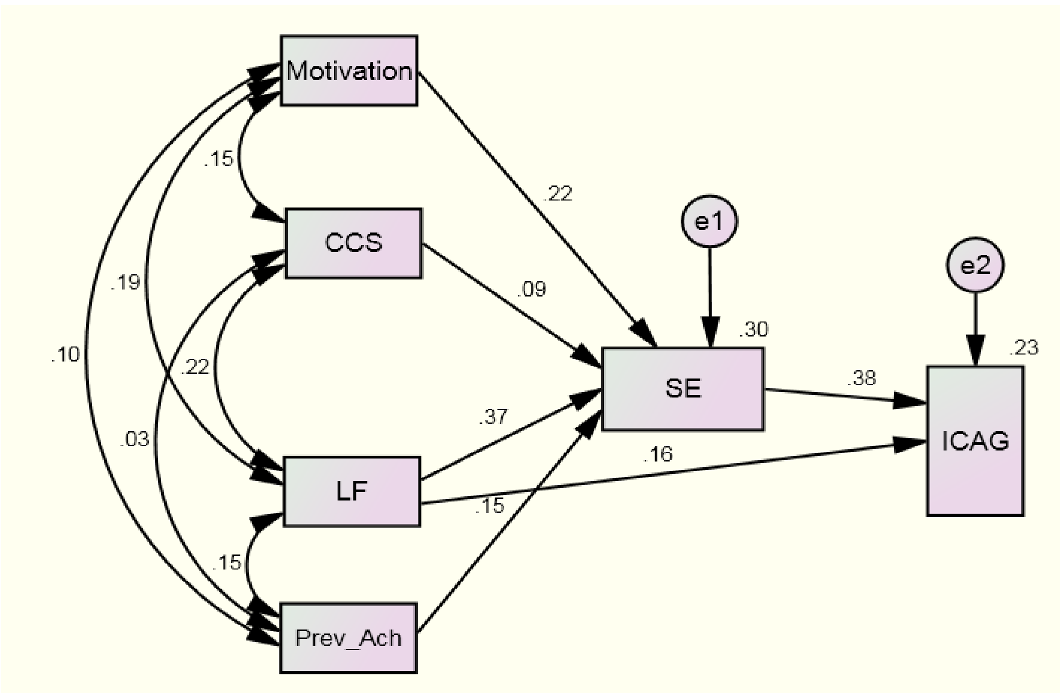
SE: Student Engagement CCS: Comfort of Class Size
*** $p \leq 0.001$

Table 5.19 shows Goodness of Fit for Input-Student Engagement-ICAG Path Model 2. CMIN has an insignificant coefficient meaning that actual and predicted matrices are not statistically different. Moreover, other tests (GFI, AGFI, RMSEA, and NFI) provide signs that the model has a good fit. In addition, covariance is also much smaller than 0.4.

Table 5.19: Input-Student Engagement-ICAG Goodness of Fit

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	2.593 (*p*= 0.459)	Insignificant	Fit
2	GFI	0.998	More than 0.9	Fit
3	AGFI	0.985	More than 0.9	Fit
4	RMSEA	0.000	Less than 0.08	Fit
5	NFI	0.992	More than 0.9	Fit

The Input-Student Engagement-ICAG Path Model 2 presented in Figure 5.10 shows that relationships among inputs (Student Motivation, Comfort of Class Size, Learning Facilities, and Previous Achievements), processes (Student Engagement), and outputs (ICAG). This model shows similar relationships found in Input-Student Engagement-ICAG SEM Model 1 (Figure 5.9). The different between the Input-Student Engagement-ICAG SEM Model 1 and Input- Student Engagement-ICAG Path Model 2 is the inclusion of Comfort of Class Size that impacts on Student Engagement.



CCS: Comfort of Class Size **LF:** Learning Facilities SE: Student Engagement
Prev_Ach: Previous Achievements **ICAG**: International Competency of Accounting Graduate

Figure 5.10: Input-Student Engagement-ICAG Path Model 2

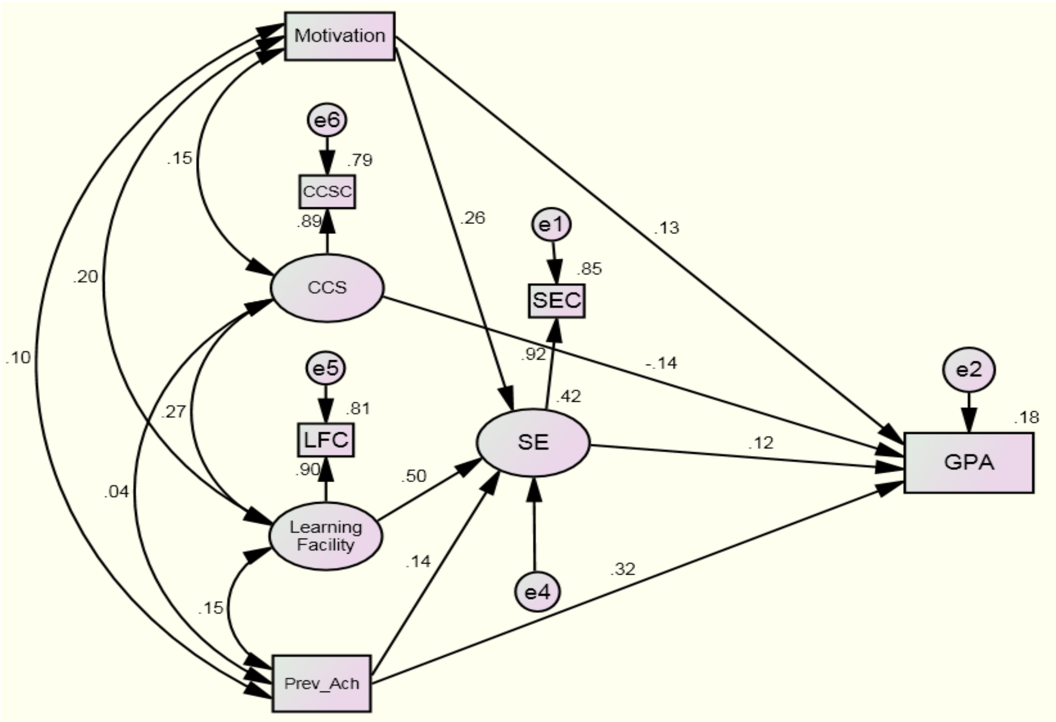
5.5.3 Input-Student Engagement-GPA Model with Single Composite Indicator

A common output of education processes in higher education is student achievements measured by Grade Point Average (GPA). Therefore, the study not only builds an Input-Process-ICAG model, but also builds Input-Process-GPA model. This model is intended to identify interrelationships among inputs (Student Motivation, Comfort of Class Size, Learning Facilities, and Previous Achievements), processes (Student Engagement), and output (GPA). The study develops Preliminary Model 3 using SEM (Appendix B26) by including all educational inputs (Student Motivation, Comfort of Class Size, Learning Facilities, Previous Achievements, and Age). The model shows that Age insignificantly influences both Student Engagement and GPA. Regression estimates show the influence of Age on Student Engagement indicated by a standardised regression of -0.040 (p=0.383) and the effect of Age on Student Engagement is -0.009 (p=0.856). This Preliminary Model 3 is considered fit by using some goodness of fit tests namely CMIN, GFI, AGFI, RMSEA, and NFI.

Owing to insignificant effects of Age on Student Engagement and GPA, the study excludes this variable from the model. Input-Student Engagement-GPA SEM Model 3 (Figure 5.11) shows interrelationships among inputs, processes, and output. In addition, the model only shows significant regression estimates (p<0.05).

Student Motivation (Motivation) has a positive effect on both Student Engagement and GPA. Standardised regression weights of this construct are 0.259 (p=0.001) and 0.135 (p=0.006) for the influence of motivation on Student Engagement and GPA respectively. Likewise, Previous Achievements gained by students from High School or Vocational School, also have a positive impacts on both Student Engagement and GPA with standardised regression weight of 0.140

(p=0,002) and 0.319 (p=0.001) respectively. Moreover, Learning Facilities also impact Student Engagement significantly with standardised regression of 0.498 (p=0.001). Even though the impact of Learning Facilities on Student Engagement is significant, there is not enough evidence that Learning Facilities affects GPA.



CCSC: Comfort of Class Size-Composite
LFC: Learning Facilities-Composite
Prev_Ach: Previous Achievements
SEC: Student Engagement-Composite

Figure 5.11: Input-Student Engagement-GPA SEM Model 3

The above Input-Student Engagement-GPA SEM Model 3 (Figure 5.11) shows that the effect of Comfort of Class Size on Student Engagement is insignificant, but its effect on GPA is negatively significant with standardized regression of -0.143 (p=0.007). These results are inconsistent with previous analyses that the correlation of Comfort of Class Size with Student Engagement is significant (Table 5.14) with coefficient of 0.213 (p<0.01). In addition, regression analysis also shows that the effect of Comfort of Class Size on Student Engagement is significant (Figure 5.6) with *t*-value of 4.419 (0.000). On the other hand, the correlation between Comfort of Class Size and GPA is negatively insignificant (-0.061, p=0.218) (Table 5.14), but Input-Student Engagement-GPA SEM Model 3 shows that Comfort of Class Size negatively affects GPA (-0.143, p=0.007). Further discussion on this issue is found at the end of this section. Lastly, the impact of Student Engagement on GPA is also significant with standardised regression of 0.118 (p=0.035).

Table 5.20: Regression Weight and Estimates for Input-Student Engagement-GPA Model Using Single Composite Indicator

	Regression Weight				Standardised Reg. Weight
	Estimate	S.E.	C.R.	P	
SE ← Motivation	1.761	.312	5.652	***	.259
SE ← Learning Facility	0.501	.052	9.605	***	.498
SE ← Previous Achievement	0.246	.079	3.098	.002	.140
GPA ← Motivation	0.247	.090	2.741	.006	.135
GPA ← CCS	-0.039	.014	-2.712	.007	-.143
GPA←Previous Achievement	0.151	.022	6.842	***	.319
GPA ← SE	0.032	.015	2.108	.035	.118

CCS: Comfort of Class Size **SE:** Student Engagement

*** $p \leq 0.001$

In relation to Goodness of Fit, Table 5.21 shows coefficients for assessing the model's fitness. All coefficients (CMIN, GFI, AGFI, RMSEA, and NFI) show good fits meaning that the Input-Student Engagement-GPA SEM Model 3 presented in Figure 5.11 and relationships listed in Table 5.21 are fit.

Table 5.21: Input-Student Engagement-GPA Goodness of Fit Using Single Composite Indicator

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	2.365 (p=.307)	Insignificant	Fit
2	GFI	0.998	More than 0.9	Fit
3	AGFI	0.980	More than 0.9	Fit
4	RMSEA	0.021	Less than 0.08	Fit
5	NFI	0.992	More than 0.9	Fit

5.5.4 Input-Student Engagement-GPA Model with Path Analysis

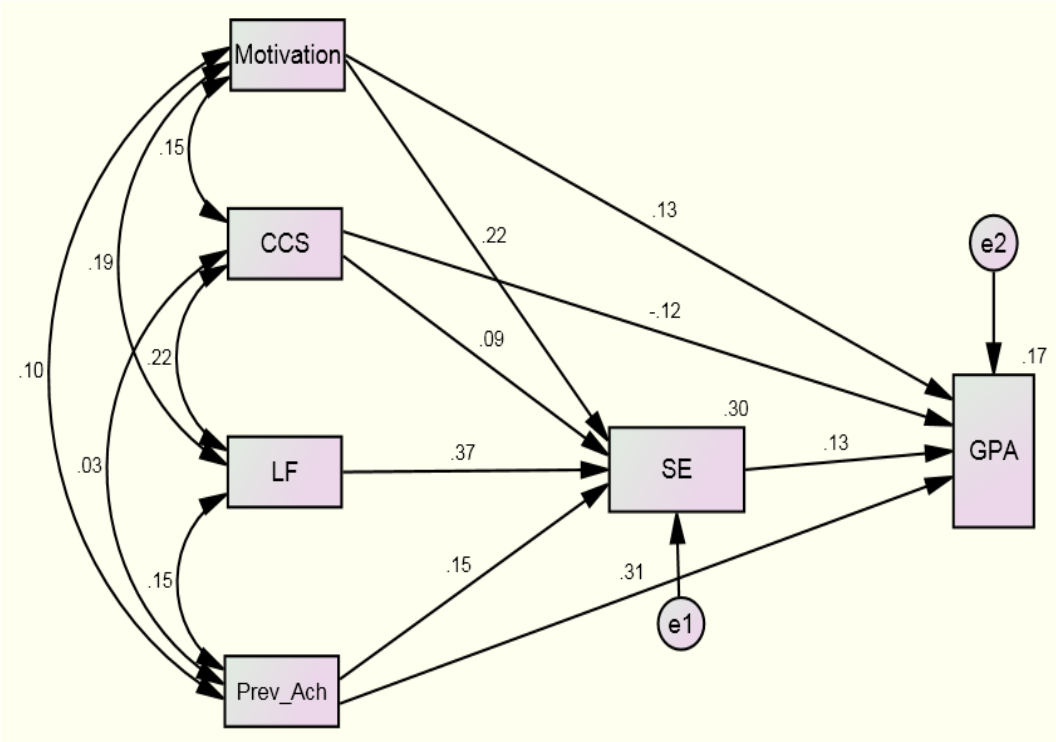
The study develops Preliminary Model 4 (Appendix B27) by including all inputs (Student Motivation, Comfort of Class Size, Learning Facilities, Previous Achievements, and Age), processes (Student Engagement), and outputs (GPA). Using Path analysis, Age variable does not affect both Student Engagement and GPA. Therefore, the study excluded this variable from the model. The model built using Path analysis shows almost similar results with the model built based on SEM with single composite indicator. The most salient difference is the effect of Comfort of Class Size on Student Engagement. Input-Student Engagement-GPA SEM Model 3 (Figure 5.11) shows that Comfort of Class Size insignificantly affects Student Engagement, but Input-Student Engagement-GPA Path Model 4 (Figure 5.12) shows that Comfort of Class Size has significant influence on Student Engagement, even though its standardised regression is small in magnitude (0.093, p=0.026).

Despite its magnitude, other standardized regression weights also change. The negative influence of Comfort of Class Size on GPA is slightly higher in Input-Student Engagement-GPA SEM Model 3 (-0.14, p=0.007) than the standardized regression weight of Comfort of Class Size on GPA in Input-Student Engagement-GPA Path Model 4 (-0.12, p=0.014). Motivation and Previous Achievements have enough power to influence both Student Engagement and ICAG. Lastly, Learning Facilities have a positive effect on Student Engagement but an insignificant impact on GPA.

Table 5.22: Regression Weight and Estimates for Input-Student Engagement-GPA Using Path Analysis

	Regression Weight				Standardised Reg. Weight
	Estimate	S.E.	C.R.	P	
SE ← LF	1.016	.114	8.903	***	.371
SE ← Prev_Ach	3.452	.894	3.860	***	.154
SE ← CCS	.413	.185	2.228	.026	.093
SE ← Motivation	19.419	3.418	5.682	***	.224
GPA ← SE	.003	.001	2.557	.011	.132
GPA ← Motivation	.244	.081	2.989	.003	.133
GPA ← CCS	-.011	.004	-2.467	.014	-.119
GPA ← Prev_Ach	.148	.022	6.706	***	.315

*** $p \leq 0.001$



CCS: Comfort of Class Size **LF:** Learning Facilities **SE:** Student Engagement
Prev_Ach: Previous Achievements **GPA:** Grade Point Average

Figure 5.12: Input-Student Engagement-GPA Path Model 4

On average, the model built using Path Analysis has smaller coefficients. Four standardised regression coefficients shrink and three standardised regression coefficients inflate slightly. Table 5.20 and Table 5.22 provide more complete data about standardised regression weight for both models.

Table 5.23 shows coefficients for Goodness of Fit for Input-Student Engagement-GPA Model 4 (Figure 5.12). All coefficients show that the model has a good fit. Nevertheless, the effects of Comfort of Class Size on Student Engagement and ICAG are not in line with previous analyses using correlation and regression.

Table 5.23: Input-Student Engagement-GPA Goodness Fit Using Path Analysis

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	0.001 (*p*= .970)	Insignificant	Fit
2	GFI	1.000	More than 0.9	Fit
3	AGFI	1.000	More than 0.9	Fit
4	RMSEA	0.000	Less than 0.08	Fit
5	NFI	1.000	More than 0.9	Fit

As previously mentioned, impact of Comfort of Class Size on Student Engagement is positively significant, but the effect of Comfort of Class Size on GPA is negatively significant. The study attempts to identify inconsistency impact of Comfort of Class Size on both Student Engagement and GPA. Further analysis using multiple regression (Appendix B28) shows that Comfort of Class Size has a positive and significant effect on Student Engagement (t= 2.175, p=0.030). This analysis meets some classical assumption tests i.e. Variance Inflation Factor (VIF) for detecting multicolloniearity, P-Plot of Regression Standardized Residual for detecting normality, and heteroscedacticity. In contrast, Appendix B29 shows the effect of Comfort of Class Size on GPA is negatively significant (t=-2.270, p=0.024).

The study conducted further test to identify the model of relationships among Comfort of Class Size, Student Engagement and GPA. A residual test was performed to detect if Student Engagement is a moderating construct, since the effect of Comfort of Class Size on GPA is strengthened while the effect of Comfort of Class

Size on Student Engagement is weaker. The result of this analysis (Appendix B30) shows that the role of Student Engagement in this model is not moderating, indicated by the insignificant effect of the absolute residual (ABS_RES1)[23] obtained from the regression of Comfort of Class Size on Student Engagement (t=-0.475, p=0.635).

Stepwise regression analysis (Appendix B31) shows that the influence of Comfort of Class Size on GPA strengthens as the regression includes more predictors. Finally, Regression Model 4 shows that Comfort of Class Size negatively affects GPA (t=-2.568, p= 0.011) with standardized beta coefficient of -0.119. Likewise, hierarchical regression was also undertaken to identify the effect of Comfort of Class Size on GPA by adding an incremental predictor based on the correlation strength among predictors (Appendix B32). The initial regression (Regression 1) shows that the impact of Comfort of Class Size on GPA is insignificant (t=-1.233, p=.218). Previous Achievements having the lowest correlation with Comfort of Class Size (0.034) was included in the model as an additional predictor. The result (Regression 2) shows that the t-value of Comfort of Class Size strengthened from (-1.233, p=0.218) to (-1.579, p= 0.115). Regression 3 is a multiple regression with three predictors (Comfort of Class Size, Previous Achievements, and Motivation) and it shows that the t-value of Comfort of Class Size strengthens from (-1.579, p= 0.115) to (-2.115, p=0.035). Lastly, additional predictor of Learning Facilities (Regression 4) on the model also shows that the negative influence of Comfort of Class Size on GPA becomes larger.

The last model (Regression 5), including five predictors, shows that all predictors have effects on GPA. Comfort of Class Size, in this case, affects GPA

[23] Absolute residual of regression for detecting moderating effect

indicated by a *t*-statistic of (-2.535, *p*=0.012). Moreover, all Variance Inflation Factors (VIF) are less than 5 which is the maximum coefficient for multicollonerity. Inconsistent impacts of Comfort of Class Size on Student Engagement and GPA could be caused either by slight multicollonearity (Appendix B29) or GPA measurement errors.

Student Motivation, Comfort of Class Size, Learning Facilities, and Previous Achievements are important inputs for an educational process measured by Student Engagement. In turn, Student Engagement also significantly affects ICAG and GPA as educational outputs. Demographic Characteristics do not provide enough influence on Student Engagement and educational outputs. Other Academic Characteristics (NEM, Types of Previous Schooling, and Previous Major) do not have enough strength to affect Student Engagement, ICAG, and GPA.

5.6 Descriptive Statistics of Lecturer Data

Previous sections discuss models for improving ICAG and GPA based on student perceptions. This section discusses roles of lecturers in improving ICAG and GPA in Indonesian universities. To provide an overview, this section begins with descriptive statistics of selected data. Mean, minimum, maximum, standard deviation, normal distribution and data variation based on university, accreditation level of accounting programs as well as based on universities' locations are discussed. The discussion focuses on some main data such as ICAG-Teaching Content, Lecturer Job Satisfaction, Student-Faculty Engagement, and so forth.

Table 5.24: Descriptive Statistics of Lecturer Data

N = 188	Min	Max	Mean	Std. Deviation	Student Mean
ICAG-Teaching Content/ICAG	40	100	72.21	10.822	67.29
Lecturer Job Satisfaction	31	128	93.85	15.308	--
Work Experience	1	35	12.24	8.39	--
Research productivity	0	12	2.99	2.054	--
Article Published	0	12	2.04	2.256	--
Book Published	0	9	0.47	1.130	--
Age	25	64	39.69	9.118	21.04
Comfort of Class Size	5	15	11.65	2.947	9.85
Learning Facilities	7	35	22.98	5.121	21.98
Student-Faculty Engagement/Student Engagement	90	161	126.3	14.349	112.74

ICAG-Teaching Content represents lecturer perceptions on how much they include AICPA core competencies in their teaching-learning processes. The average of ICAG is 72.21 out of 100 (72.21%) with standard deviation 10.822. Lecturers perceived that they have already included 72.21% of ICAG in their teaching contents. Based on Kolmogorov-Smirnov test, data distribution of ICAG-Teaching Content is considered normal (sig 0.564).

ICAG-Teaching Content varies significantly among universities with an *F*-value of 5.502 (p=0.00). University 6 (U-6 A/NJ) has the highest mean on ICAG-Teaching Content followed by U-1 (A/JV and U7 (B/JV). Likewise, ICAG-Teaching Content is also significantly different by the accreditation level of accounting program with an *F*-value of 12.147 (p=0.00). On the other hand, ICAG-Teaching Contet does not vary significantly based on location of universities (*F*-value 0.021, p=0.886). Appendix B33 provides more detailed results.

Lecturer Job Satisfaction has a mean 93.85 out of 130 or 72.19% and standard deviation 15.31. Data distribution of Lecturer Job Satisfaction is normal using Kolmogorov-Smirnov test (sig. 148). Lecturer Job Satisfaction across universities is significantly different (*F*-value=5.807, *p*=0.00). U-6 has the highest score of Lecturer Job Satisfaction followed by U-1 and U-3 (B/NJ). Likewise, Lecturer Job Satisfaction also varies significantly by accreditation level of accounting program (*F*-value=14.475, *p*=0.00). Moreover, Means of Lecturer Job Satisfaction are 102.24, 90.34, and 89.53 for lecturers from A, B, and C accreditation level respectively. Analyses show that a higher accreditation level tends to have a higher score of Lecturer Job Satisfaction. Nevertheless, Lecturer Job Satisfaction based on location of universities is insignificant (*F*-value=2.561, *p*=0.111). Appendix B34 provides more detailed results.

Lecturer Academic Characteristics consists of Lecturer Work Experience, Education Attainment, Appointment, Certification, Research Productivity, Article Publication, and Book Publication. Lecturer Work Experience is significantly different across universities (*F*-value=2.430, *p*=0.021). Lecturers from U-7 have the longest work experience (17 years), followed by U-3 (14 years), and U-1 (13 years). Likewise, Lecturer Working Experience is also significantly different by accreditation level (*F*-value=3.389, *p*=0.036). Lecturers from B-level accreditation have the longest experience (13.4 years), followed by A level (12.3 years), and C-level (9.3 years). Nevertheless, Lecturer Work Experience is not significantly different by location (*F*-value=0.591, *p*=0.443). Appendix B35 provides more detailed results.

The profiles of Lecturer Education Attainment are as follows; (1) 17 lecturers (9%) hold S1/BA; (2) 152 lecturers (81%) graduated with S2/Master's; and (3) 19 lecturers (10%) have completed S3/Dr degree. Lecturer Education Attainment varies significantly across universities. Lecturers from U-7 have the highest education attainment followed by U-1 and U-3. Likewise, Lecturer Education Attainment also varies significantly by accreditation level. Lecturers from B-level accounting programs have the highest education attainment followed by A-level and C-level. However, Lecturer Education Attainment does not vary by location (Appendix B36).

In relation to Lecturer Current's Appointment, 64 lecturers (34%) are Assistants; 75 lecturers (40%) are Lecturers; 47 lecturers (25%) are Senior Lecturers; 2 lecturers (1%) are Professors. Appendix B37 shows that there is insignificant difference of lecturer appointment by university (F-value=1.911, p=0.070) and accreditation level (F-value=1.442, p=0.239). However, on average lecturers from Non-Java universities have higher appointments than their counterparts from Java universities (F-value=6.597, p=0.011).

By the end of 2010, 57 accounting lecturers from sampled universities have been certified (30%) and the rest 131 (70%) have yet to be certified. Appendix B38 shows that lecturer certification or licensure does not vary significantly by university (F-value=1.607, p=0.136), accreditation level (F-value= 1.216, p=0.299), and location (F-value= 1.853, p=0.175). In other words, lecturer certification is evenly distributed among lecturers by university, accreditation level, and location.

Lecturer Research Productivity significantly varies across universities (F-value =2.066, p=0.049). During the last three years, lecturers from U-7 (B/JV) have the highest research productivity (3.58 research) followed by lecturers from U-2 (B/JV) (3.56 research), and lecturers from U-6 (A/JV) (3.52 research). Nevertheless, research productivity does not vary by accreditation level (F-value=1.089, p=0.339) and location (F-value=0.664, p=0.416). Appendix B39 provides more detailed results.

Lecturer Articles Published significantly varies across universities (*F*-value=2.261, *p*=0.036). In the last three years, lecturers from U-4 (B/NJ) have the highest publications (3.3 articles) followed by U-7 (2.58 articles) and U-3 (2.57 articles). Likewise, Lecturer Articles Published also varies by accreditation level (*F*-value=4.420, *p*=0.013). In the last three years, lecturers teaching B-level programs have the highest article publication (2.52 articles) followed by C-level (1.76 articles) and A-level (1.47 articles). Nonetheless, Lecturer Article Published does not vary significantly by location (*F*-value=0.688, *p*=0.408). Appendix B40 provides more detailed results.

Lecturer Books Published varies significantly across universities (*F*-value= 2.198, *p*=0.036). In the last three years, lecturers from U-4 (B/NJ) have the highest average publication (1 book) followed by lecturers from U-2 (0.89 book) and lecturers from U-5 (0.76 book). Moreover, Lecturer Books Published does not vary significantly by accreditation level (*F*-value=2.777, *p*=0.065) and location (*F*-value=0.847, *p*=0.359). Appendix B41 provides more detailed results.

The average of lecturers' Age was 39.69 with a standard deviation of 9.12. The youngest lecturer was 25 years old, while the oldest lecturer was 64 years old. Lecturer's Age varies significantly across universities (*F*-value= 3.133, *p*=0.004). Lecturers from U-7 have the highest average of age (45 years) followed by lecturers from U-3 (41.5 years) and lecturers from U-1 (40.28 years). Likewise, Lecturers' Age based on accreditation level is also significantly different (*F*-value= 5.649, *p*=0.004). Lecturers from B-level accreditation programs have the highest average age (41.21 years), followed by A-level (40.05 years) and C-level (35.47 years).

Lastly, Lecturers' Age based on location is insignificantly different (*F*-value=0.404, *p*=0.526). Appendix B42 provides more detailed results.

To deal with class size, the study collected data of lecturers' perceptions on Comfort of Class Size. The average perception of Comfort of Class Size is 11.65 out of 15 or 78% with standard deviation 2.95. Comfort of Class Size varies significantly among sampled universities (*F*-value=2.98, *p*=0.006). Lecturers from U-3 have the highest perceptions on Comfort of Class Size (13.25) followed by U-4 (12.35) and U-5 (12.24). Additionally, Java-located universities tend to have lower score on Comfort of Class Size than Non-Java located universities (*F*-value=7.37, *p*=0.007). Nevertheless, Comfort of Class Size does not vary significantly based on accounting accreditation level (*F*-value=0.872, *p*=0.420). Appendix B43 provides more information about the analysis of this variable.

The average for Learning Facilities is 22.98 out of 35 or (66%) with standard deviation of 5.121. The highest score is 35, while the lowest score is 7. Lecturers reported that Learning Facilities vary significantly by both university (*F*-value=8.026, *p*=0.000) and accreditation level (*F*-value=17.804, *p*=0.000). U-6 has the highest score of Learning Facilities (26.09) followed by U-1 (25.40) and U-7 (23.54). Means of Learning Facilities are 25.79, 22.36, and 20.18 for A, B, and C accreditation levels respectively. A university with the higher accreditation level is more likely to have a higher score in Learning Facilities (based on lecturers' perceptions). However, Learning Facilities based on location is not significantly different (*F*-value=2.292, *p*=0.132). Data distribution of Learning Facilities is normal using Kolmogorov-Smirnov test (sig. 617). Appendix B44 provides more detailed information.

Lastly, Student-Faculty Engagement has an average score of 126.3 out of 175 (72%) with a standard deviation of 14.35. Moreover, Student-Faculty Engagement varies significantly by university (*F*-value=3.10, *p*=0.004). U-6 has the highest score (134 or 77%), followed by U-8 (129.32 or 74%) and U-1 (127.32 or 73%). Based on program accreditation level, Student-Faculty Engagement also varies significantly (*F*-value=5.21, *p*=0.006). Study programs with an A level accreditation have the highest Student-Faculty Engagement, followed by study programs with C level and B level. Post-hoc analysis using Tukey HSD shows that Student-Faculty Engagement from study programs with C level accreditation is insignificantly different from those at B level. Nevertheless, Student-Faculty Engagement from programs with A level is significantly different from those programs with B level. Lastly, Student-Faculty Engagement based on the location of a university is insignificantly different (Appendix B45). Data distribution of Student-Faculty Engagement is considered normal using Kolmogorov-Smirnov test (sig. 0.664).

This section describes data using descriptive and ANOVA analyses to provide clearer pictures of data variations based on sampled universities, accreditation levels of accounting program as well as based on locations of universities. Lecturers' perceptions on ICAG-Teaching Content, Lecturer Job Satisfaction, Student-Faculty Engagement, Comfort of Class Size, and Learning Facilities are considered moderate. Master's graduate and Lecturer appointment dominate lecturers' education attainment and appointment. The average of a lecturer working experience is 12 years and only 30% of lecturers have been certified. Each lecturer conducts one research project every year and publishes two articles in three years. Book publications are relatively low among accounting lecturers in sampled universities.

All data listed in Table 5.24 significantly varies among universities and accreditation levels (except data of Research Productivity, Book Published, and Comfort of Class Size). Lecturers' Current Appointment and Comfort of Class Size are significantly different by location of universities. The following section discusses relationships between lecturers' characteristics, ICAG-Teaching Content, and Student-Faculty Engagement.

Interestingly, for all comparable measures, students have lower mean level of perception than lecturers' (Table 5.24). This could be driven by a lower level of knowledge about such things. Students perceive Learning Facilities, Comfort of Class Size, Student Engagement, and ICAG lower than lecturers. Presentations of results are based on lecturers' characteristics namely Lecturers Job Satisfaction, Lecturer Academic Characteristics, Comfort of Class Size, and Learning Facilities.

5.7 Correlation Analyses of Lecturer Data

5.7.1 Lecturer Job Satisfaction and ICAG-Teaching Content

Correlation analyses, to identify associations between Lecturer Job Satisfaction factors and ICAG-Teaching Content i.e. Functional Competency, Personal Competency, and Broad-business Perspective Competency provide results that Lecturer Job Satisfaction and ICAG-Teaching Content (based on lecturers' perceptions) are closely related. All correlation coefficients are significant at the 0.01 level. The relationship between Collegiality and ICAG-Teaching Content is considered the lowest correlation (0.435), while the highest correlation is the relationship with Resources for Scholarship (0.542). Resource for Scholarship and Teaching Environment are the two factors having the highest relationships with ICAG-Teaching Content. The correlation between Lecturer Job Satisfaction (overall score) with ICAG-Teaching Content (overall score) is considered moderate (0.572).

In summary, lecturers who have higher scores in Lecturer Job Satisfaction are more likely to include more ICAG contents in their teaching-learning process. Table 5.25 provides more detailed information about relationships between Lecturer Job Satisfaction and ICAG-Teaching Content.

Table 5.25: Correlation between Lecturer Job Satisfaction Factors and ICAG-Teaching Content

	Teaching Content			
	Functional Competency	Personal Competency	Broad-business Perspective Competency	ICAG
Resource for Scholarship	.524**	.468**	.468**	.542**
Equitable and Supportive Climate	.426**	.394**	.342**	.429**
Requirement for Promotion	.407**	.435**	.377**	.452**
Availability of Assistant and Senior	.456**	.453**	.368**	.471**
Collegiality	.384**	.383**	.345**	.435**
Teaching Environment	.435**	.446**	.415**	.481**
Lecturer Job Satisfaction	.543**	.525**	.476**	.572**

**Correlation is significant at the 0.01 level (2-tailed)

5.7.2 ICAG-Teaching Content and Student-Faculty Engagement

The inclusion of ICAG content in the teaching-learning process relates to the way a lecturer interacts in Student-Faculty Engagement activities. ICAG-Teaching Content (Functional Competency, Personal Competency, and Broad-business Perspective Competency) correlates with Student-Faculty Engagement and all dimensions i.e.

Academic Challenge, Active Learning, Student-Staff Interaction, Enriching Learning Environment and Supportive Learning Environment (Table 5.26).

Lecturer involvement in Academic Challenge activities seems to have an association with all Functional Competency-Teaching Content, Personal Competency-Teaching Content, as well as Broad-business Perspective Competency-Teaching Content evidenced by all correlations being significant at the 0.01 level. The correlation between overall ICAG-Teaching Content with Academic Challenge is considered moderate (0.621) and significant at the 0.01 level. Moreover, Functional Competency-Teaching Content, Personal Competency-Teaching Content, and Broad-business Perspective Competency-Teaching and overall Student-Faculty Engagement are positive and significantly associated. The correlation between overall ICAG-Teaching Content with overall Student-Faculty Engagement is moderately high (0.649, p<0.01).

Table 5.26: Correlation between ICAG-Teaching Content and Student-Faculty Engagement

Teaching Content	Academic Challenge	Active Learning	Student-Staff Interaction	Enriching Educational Experience	Supportive Learning Environment	Student-Faculty Engagement
Functional Competency	$.545^{**}$	$.386^{**}$	$.376^{**}$	$.403^{**}$	$.435^{**}$	$.565^{**}$
Personal Competency	$.546^{**}$	$.398^{**}$	$.419^{**}$	$.430^{**}$	$.474^{**}$	$.591^{**}$
Broad-business Perspective Competency	$.574^{**}$	$.373^{**}$	$.439^{**}$	$.432^{**}$	$.397^{**}$	$.586^{**}$
ICAG	$.621^{**}$	$.430^{**}$	$.462^{**}$	$.472^{**}$	$.484^{**}$	$.649^{**}$

**Correlation is significant at the 0.01 level (2-tailed)

5.7.3 Lecturer Job Satisfaction and Student-Faculty Engagement

As previously discussed, Lecturer Job Satisfaction and ICAG-Teaching Content is closely associated. This section discusses the relationships between Lecturer Job Satisfaction factors and Student-Faculty Engagement dimensions. Table 5.27 shows that all Lecturer Job Satisfaction factors and Student-Faculty Engagement dimensions are also associated. The relationship between Resources for Scholarship and Supportive Learning Environment is the highest correlation 0.613 significant at the 0.01 level. It appears that the more a lecturer feels satisfied with Resource for Scholarships she or he is more likely to encourage students to participate in Supportive Learning Environment activities.

Overall Lecturer Job Satisfaction correlates significantly with all dimensions of Student-Faculty Engagement. The correlation between Lecturer Job Satisfaction and Supportive Learning Environment is the strongest (0.580). In summary, correlation between Lecturer Job Satisfaction and Student-Faculty Engagement is positive and significant. It appears that Lecturer Job Satisfaction is an important input, since it has a close association with both ICAG-Teaching Content (Table 5.25) and Student-Faculty Engagement (Table 5.27). In addition, correlation coefficients in these two tables are significant at the 0.01 level.

Table 5.27: Correlation between Lecturer Job Satisfaction and Student-Faculty Engagement

	Academic Challenge	Active Learning	Student-Staff Interaction	Enriching Educational Experience	Supportive Learning Environment	Student-Faculty Engagement
Resource for Scholarship	.351**	.282**	.290**	.312**	.613**	.455**
Equitable and Supportive Climate	.302**	.250**	.279**	.320**	.420**	.394**
Requirement for Promotion	.390**	.247**	.292**	.287**	.434**	.423**
Availability of Assistant and Senior	.345**	.265**	.224**	.263**	.451**	.393**
Collegiality	.298**	.231**	.212**	.210**	.379**	.346**
Teaching Environment	.284**	.219**	.250**	.254**	.491**	.368**
Lecturer Job Satisfaction	.403**	.308**	.323**	.346**	.580**	.572**

**Correlation is significant at the 0.01 level (2-tailed)

To investigate the relationships among Lecturer Job Satisfaction, ICAG-Teaching Content and Student-Faculty Engagement further, the study undertakes regression analyses to identify the role of ICAG-Teaching Content in the model (Appendix B46). The effect of Lecturer Job Satisfaction on ICAG-Teaching Content is significant (t= 9.52, p=0.000). The influence of ICAG-Teaching Content, in turn, on Student-Faculty Engagement is 11.649 (p=0.000). Moreover, the Lecturer Job Satisfaction also has a direct effect on Student-Faculty Engagement (t-value=7.682, p=0.000). It appears that the effect of Lecturer Job Satisfaction on Student-Faculty Engagement shrinks significantly from t_1=7.682 (p=0.000) to t_2=2.646 (p=0.009) after ICAG-Teaching Content is included in the model. This shrinkage is a sign that ICAG-Teaching Content is a mediating variable.

Sobel and Aroian tests provide t-statistics of 7.371 (p=0.000) and 7.355 (p=0.000). These two tests also provide evidence that ICAG-Teaching Content is a mediating variable. In other words, Lecturer Job Satisfaction affects ICAG-Teaching Content and ICAG-Teaching Content, in turn, influences Student-Faculty Engagement. At the same time, Lecturer Job Satisfaction also has a direct influence on Student-Faculty Engagement (Figure 5.13).

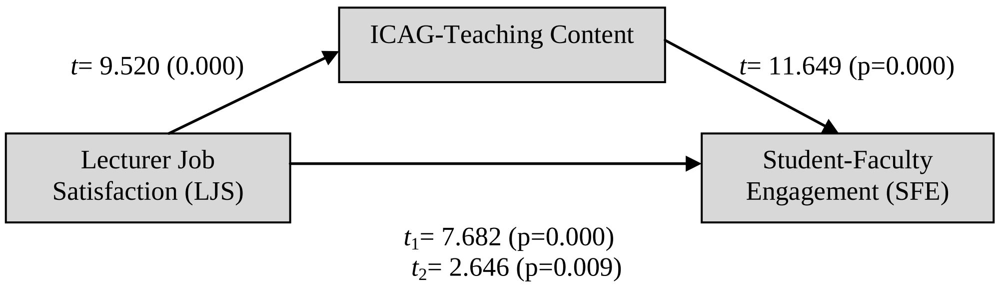


Figure 5.13: LJS-ICAG-Teaching Content-SFE Sub-Model 9

5.7.4 Lecturer Academic Characteristics and ICAG-Teaching Content

Besides collecting data on Lecturer Job Satisfaction, the study also collects data on Lecturer Academic Characteristics. There are eight variables of Lecturer Academic Characteristics in the study namely Work Experience (in year), Education Attainment (BA, Masters', and PhD), Current Appointment (assistant, lecturer, senior lecturer, and professor), Lecturer Certification (certified and uncertified), Research Productivity (number of research projects in the last three years), Articles Published (number of articles published in the last three years), and Books Published (number of book published in the last three years).

None of the academic characteristics has an association with all dimensions of ICAG-Teaching Content as well as overall ICAG-Teaching Content. Moreover, the combination of some academic characteristics (Academic Productivity) is also unrelated to ICAG-Teaching Content. In other words, Lecturer Academic

Characteristics are unrelated to accounting competencies that lecturers include in the teaching-learning process (Table 5.28).

Table 5.28: Correlation between Lecturer Academic Characteristics and ICAG-Teaching Content

	Teaching Content			
	Functional Competency	Personal Competency	Broad-business Perspective Competency	ICAG-Teaching Content
Work Experience	-.001	.057	.041	.037
Education Attainment	-.047	-.003	.106	.028
Current Appointment	.055	.099	.109	.100
Lecturer Certification	.038	.091	.047	.065
Research Productivity	.029	.107	.087	.084
Articles Published	-.021	.043	.114	.056
Book Published	-.029	-.006	-.058	-.037
Academic Productivity#	.001	.088	.114	.079

Education Attainment, Current Appointment, Research Productivity, Article Publication, and Book Publication Combined

5.7.5 Lecturer Academic Characteristics and Student-Faculty Engagement

The previous section discussed correlations between Lecturer Academic Characteristics and ICAG-Teaching Content while this section explores correlations between Lecturer Academic Characteristics and Student-Faculty Engagement. Lecturer Academic Characteristics variables are unrelated to all Student-Faculty Engagement dimensions as well as overall Student-Faculty Engagement. In summary, Lecturer Academic Characteristics are unrelated to the way lecturers participate in Student-Faculty Engagement activities (Table 5.29). In addition, Lecturer Academic Characteristics are also unrelated to Lecturer Job Satisfaction indicated by all insignificant correlations except the correlation between Lecturer Certification and Lecturer Job Satisfaction (0.195, $p<0.01$). A certified lecturer is more likely to have higher job satisfaction.

Table 5.29: Correlation between Lecturer Academic Characteristics and Student-Faculty Engagement

Lecturer Academic Characteristics	Academic Challenge	Active Learning	Student-Staff Interaction	Enriching Educational Experience	Supportive Learning Environment	Student-Faculty Engagement
Work Experience	.112	.140	-.038	.080	-.077	.078
Education Attainment	.062	.117	.082	-.006	-.056	.059
Current Appointment	.122	.126	.043	.080	-.067	.097
Lecturer Certification	.133	.131	.033	.107	-.008	.118
Research Productivity	.141	.078	.133	.017	-.103	.087
Articles Published	.119	.046	.088	-.019	-.110	.050
Books Published	-.123	-.040	-.063	.069	-.037	-.059
Academic productivity#	.123	.084	.106	.030	-.131	.074

Education Attainment, Current Appointment, Research Productivity, Article Publication, and Book Publication Combined

5.7.6 Interrelationships among LAC variables

The previous sections discussed the association between Lecturer Academic Characteristics and Student-Faculty Engagement, and ICAG-Teaching Content. Both analyses show that there is insufficient evidence that Lecturer Academic Characteristics have associations with Student-Faculty Engagement and ICAG-Teaching Content. In addition, Lecturer Academic Characteristics are also unrelated with Lecturer Job Satisfaction. Work experience is closely related to the rest of Lecturer Academic Characteristic variables except Books Published. A lecturer who has extensive Work Experience is more likely to have more a higher level of appointment, more opportunities for certification, more research productivity, and more publications.

Education Attainment has close associations with Current Appointment, Lecturer Certification, Research Productivity, and Articles Published. The correlation between Education Attainment and Books Published is insignificant. Previous analyses also show that Lecturer Academic Characteristics do not correlate with other educational inputs, ICAG-Teaching Content, as well as Student-Faculty Engagement. On the other hand, relationships among Lecturer Academic Characteristic variables are significant, except Books Published that correlates inconsistently with the rest of the variables (Table 5.30). It implies that Lecturer Academic Characteristic do not correlate with teaching-learning process, but does correlate with variables of Lecturer Academic Characteristics.

Table 5.30: Correlation among Lecturer Academic Characteristic Variables

	Work Experience	Education Attainment	Current Appointment	Lecturer Certification	Research Productivity	Articles Published
Education Attainment	.300**	1				
Current Appointment	.761**	.370**	1			
Lecturer Certification	.654**	.381**	.715**	1		
Research Productivity	.235**	.237**	.373**	.194**	1	
Articles Published	.239**	.372**	.339**	.265**	.418**	1
Books Published	.079	-.021	.161*	.209**	-004	.026

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

Psychological and academic characteristics have been discussed in this section. The next section describes the association between demographic characteristics (Age and Gender) and Student-Faculty Engagement, ICAG-Teaching Content as well as with related variables.

5.7.7 Age, ICAG content, and Student-Faculty Engagement

Lecturer's Age and all dimensions of Student-Faculty Engagement are unrelated, except the correlation between lecturer's Age and Active Learning (-0.168) significant at the 0.05 level. The younger a lecturer is the more likely he or she is to encourage student participation in Active Learning activities, but the correlation is small. In addition, the correlation between Age and overall Student-Faculty Engagement is insignificant (0.063, p>0.05).

Lecturer's age and ICAG-Teaching Content is also uncorrelated, indicated by none of the coefficients having significant correlations. In other words, contents of accounting competencies in the teaching-learning process are not associated with the age of a lecturer. Based on the following Table 5.31, the study concludes that lecturer's age is uncorrelated with both Student-Faculty Engagement activities as well as ICAG-Teaching Content. The study will discuss some variables having associations with age.

Table 5.31: Correlation between Age and Student-Faculty Engagement, and ICAG-Teaching Content

Student-Faculty Engagement	Age	Teaching Content	Age
Academic Challenge	0.071	Functional Competency	-0.030
Active Learning	0.149*	Personal Competency	-0.015
Student-Staff Interaction	-0.048	Broad-business Perspective Competency	0.002
Enriching Education Experience	0.079		
Supportive Learning Environment	-0.078	ICAG	-0.015
Student-Faculty Engagement	0.063		

*Correlation is significant ant the 0.05 level (2-tailed)

5.7.8 Gender, ICAG-Teaching Content and Student-Faculty Engagement

By assigning 1 for male and 0 for female, the study reveals that a lecturer's Gender and Student-Faculty Engagement dimensions as well as overall Student-Faculty Engagement is not associated. Likewise, relationships between Gender and ICAG-Teaching Content dimensions as well as overall ICAG-Teaching Content are also insignificant. Table 5.32 shows that lecturer's gender does not associate with both Student-Faculty Engagement and ICAG-Teaching Content.

Table 5.32: Correlation between Gender and Student-Faculty Engagement, and ICAG-Teaching Content

Student-Faculty Engagement	Gender	Teaching Content	Gender
Academic Challenge	0.113	Functional Competency	0.066
Active Learning	0.078	Personal Competency	0.022
Student-staff Interaction	-0.020	Broad-business Perspective Competency	0.092
Enriching Education Experience	0.058		
Supportive Learning Experience	0.031	ICAG	0.069
Student-Faculty Engagement	0.080		

5.7.9 Age, Gender, and Lecturers' Academic Characteristics

The previous sections discussed the correlation between Age and Gender, Student-Faculty Engagement and ICAG-Teaching Content. This section explores variables having associations with Age as well as Gender. Age has significant correlations with Lecturer Academic Characteristic. The correlation between Work Experience and Age is considered very high, 0.939 (p<0.01) which is to be expected. Likewise, correlations between Age and Current Appointment as well as Lecturer Certification are high 0.704 (p<0.01) and 0.605 (p<0.01) respectively. The correlations imply that older lecturers are more likely to have more work experience, higher levels of appointment, and more chances for certification. Nevertheless, the magnitude of correlations between Age and Work Experience as well as Current Appointment are not followed by Lecturer Education Attainment, since the correlation between Age and Lecturer Education Attainment is only 0.247 (p<0.01). The magnitude of correlations is smaller when Research Productivity and Article Publication are associated with Age (0.172, p<0.05) and 0.182, p<0.05) respectively. Lastly, Age and the number of Books Published by lecturers are insignificantly associated (0.081, p>0.05)

Correlations between Gender and Lecturer Academic Characteristics are mostly significant except correlations between Gender and Research Productivity and Book Published. Male lecturers tend to have more work experience than female lecturers (0.222, p<0.01). In addition, male lecturers have longer work experience, higher education attainment and appointment, which are similar to rest of the world, as well as more articles published than female lecturers. Therefore, male lecturers have more certification than their counterparts. In addition, Pearson's and Coefficient Contingency (CC)[24] correlations also provide the same results. Lastly, male lecturers have more articles published than female lecturers (Table 5.33).

Table 5.33: Correlation between Age, Gender, and Lecturer Academic Characteristic

Lecturers' Academic Characteristics	Age	Gender (Male: 1; Female: 0)
Work Experience	0.939**	0.222**
Education Attainment	0.247**	0.218**/CC: 0.276 (0.000)
Current's Appointment	0.704**	0.229**/CC:0.239 (0.010)
Lecturer Certification	0.605**	0.287**/CC:0.276 (0.000)
Research Productivity	0.172*	0.065
Articles Published	0.182*	0.250**
Books Published	0.081	0.026

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant ant the 0.05 level (2-tailed)

[24] Coefficient Contingency (CC) is an analysis technique for correlating two ordinal variables.

5.7.10 Learning Facilities, ICAG-Teaching Content and Student-Faculty Engagement

The previous sections discussed students' characteristics and lecturers' characteristics. This section discusses other types of input, Learning Facilities, and their associations with both Student-Faculty Engagement and ICAG-Teaching Content. Availability of learning facilities in a university has close relationship with the intensity of lecturers to engage in Student-Faculty Engagement activities. All correlations coefficients show that Learning Facilities have positive and significant relationships with Student-Faculty Engagement dimensions as well as overall Student-Faculty Engagement as a construct. The association between Learning Facilities and Supportive Learning Environment is considered the highest correlation (0.680, $p<0.01$). Conversely, the correlation between Learning Facilities with Enriching Education Experience is the smallest (0.275). All correlations between Learning Facilities with all dimensions of Student Engagement are significant at the 0.01 level. Overall Student-Faculty Engagement and Learning Facilities are closely correlated evidenced by a correlation coefficient 0.518 ($p<0.01$). Therefore, the availability of learning facilities has significant relationships with the extent lecturers engage in Student-Faculty Engagement activities.

Relationships between Learning Facilities and ICAG-Teaching Content, the extent to which lecturers include accounting competencies in their teaching learning processes, are significant at the 0.01 level. The relationship between Learning Facilities and Personal Competency-Teaching Content is considered the highest (0.572) while the relationships between Learning Facilities and Functional

Competency-Teaching Content as well as Broad-business Perspective Competency-Teaching Content are 0.556 and 0.465 respectively. Finally, correlation between Learning Facilities and overall ICAG-Teaching Content is 0.588. Therefore, the availability of learning facilities in a university has a significant association with how much AICPA core competencies are included by lecturers in their teaching and learning processes (Table 5.34).

Table 5.34: Correlation between Learning Facilities and Student-Faculty Engagement, and ICAG-Teaching Content

Student-Faculty Engagement	Learning Facilities	Teaching Content	Learning Facilities
Academic Challenge	.422**	Functional Competency	.556**
Active Learning	.345**	Personal Competency	.572**
Student-Staff Interaction	.377**	Broad-business Perspective Competency	.465**
Enriching Education Experience	.275**		
Supportive Learning Environment	.680**	ICAG	.588**
Student-Staff Engagement	.518**		

**. Correlation is significant at the 0.01 level (2-tailed)

Table 5.34 shows that Learning Facilities correlate closely with both ICAG-Teaching Content and Student-Faculty Engagement. The correlations between ICAG-Teaching Content and Student-Faculty Engagement are also significant at the 0.01 level (Table 5.26). This section also discusses the role of ICAG-Teaching Content in the model. Simple and multiple regression analyses are employed to identify mediation effects (Appendix B47).

Learning Facilities have positive effects on both ICAG-Teaching Content (t-value=9.923, p=0.000) and Student-Faculty Engagement (t_1-value=8.254, p=0.000). The effect of ICAG-Teaching Content on Student-Faculty Engagement is also significant (t-value=11.649, p=0.000). After the inclusion of ICAG-Teaching Content in the model, the effect of Learning Facilities on Student-Faculty Engagement shrinks from (t_1= 8.254, p=0.000) to (t_2=3.077, p=0.002). The shrinkage is a sign that mediating effect exists in the model. Further analyses provide t-statistic of 7.554 (p=0.000) and 7.538 (p=0.000) for Sobel and Aroian tests respectively. Regression analyses as well as Sobel and Aroian tests provide the same conclusion that ICAG-Teaching Content is a mediating construct (Figure 5.14).

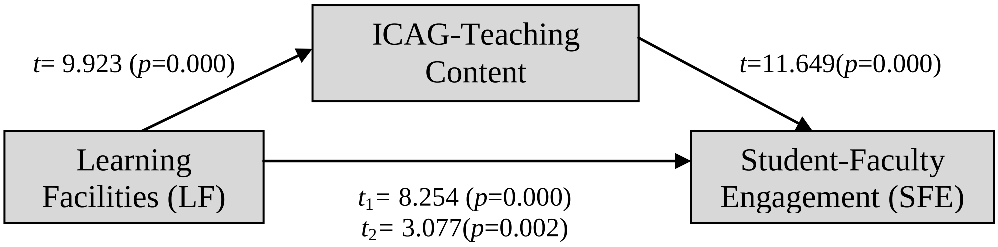


Figure 5.14: LF-ICAG-Teaching Content-SFE Sub-Model 10

5.7.11 Learning Facilities and Lecturer Job Satisfaction

Correlation analyses found that the availability of Learning Facilities also associates with Lecturer Job Satisfaction. The following correlations show that Learning Facilities have close relationships with all Lecturer Job Satisfaction factors as well as overall Lecturer Job Satisfaction. The correlation between the availability of Learning Facilities and Resource of Scholarship is considered the highest correlation (0.668, p<0.01) (Table 5.35). It implies that Learning Facilities is perceived as a resource for pursuing a lecturer's scholarship. Correlations between Learning Facilities and other Lecturer Job Satisfaction factors are considered moderate. Lastly overall Lecturer Job Satisfaction and Learning Facilities are closely associated (0.627, $p<0.01$).

Linear regression to identify the effect of Learning Facilities on Lecturer Job Satisfaction was undertaken (Appendix B48). The F-value is 120.311 ($p=0.000$) with a standardized beta coefficient 0.627 ($p=0.000$). Owing to these issues, the SEM model may change slightly. The conceptual model (Figure 3.2) shows that Learning Facilities and Lecturer Job Satisfaction are two exogenous latent constructs, but because of the finding, Learning Facilities have a role as an exogenous construct, while Lecturer Job Satisfaction will be converted from an exogenous construct into an endogenous construct.

Table 5.35: Correlation between Learning Facilities and Lecturer Job Satisfaction

Lecturers' Job Satisfaction	Learning Facilities
Resource for Scholarship	0.668^{**}
Equitable and Supportive Climate	0.463^{**}
Requirement for Promotion	0.441^{**}
Availability of Assistant and Senior	0.514^{**}
Collegiality	0.434^{**}
Teaching Environment	0.488^{**}
Lecturer Job Satisfaction	0.627^{**}

**Correlation is significant at the 0.01 level (2-tailed)

5.7.12 Comfort of Class Size, ICAG-Teaching Contents, and Student-Faculty Engagement

Correlations between Comfort of Class Size and Student-Faculty Engagement are mostly insignificant except the correlation between Comfort of Class Size and Supportive Learning Environment (0.201, $p<0.01$). Moreover, the correlation between Comfort of Class Size and overall Student-Faculty Engagement is also insignificant. Therefore, based on the analysis, Comfort of Class Size does not relate to the extent lecturers are involved in Student-Faculty Engagement activities (Table 5.36).

Table 5.36: Correlation between Comfort of Class Size and Student-Faculty Engagement and ICAG-Teaching Content

Student-Faculty Engagement	Comfort of Class Size	Teaching Content	Comfort of Class Size
Academic Challenge	.099	Functional Competency	.081
Active Learning	.022	Personal Competency	.090
Student-Staff Interaction	.014	Broad-business Perspective Competency	-.007
Enriching Education Experience	.036		
Supportive Learning Environment	.201**	ICAG	.057
Student-Staff Engagement	.091		

**Correlation is significant at the 0.01 level (2-tailed)

Likewise, all correlations between Comfort of Class Size and ICAG-Teaching Content are also insignificant. Correlation coefficients imply that Comfort of Class Size does not associate with how much competency lecturers include in their teaching-learning processes (Table 5.36).

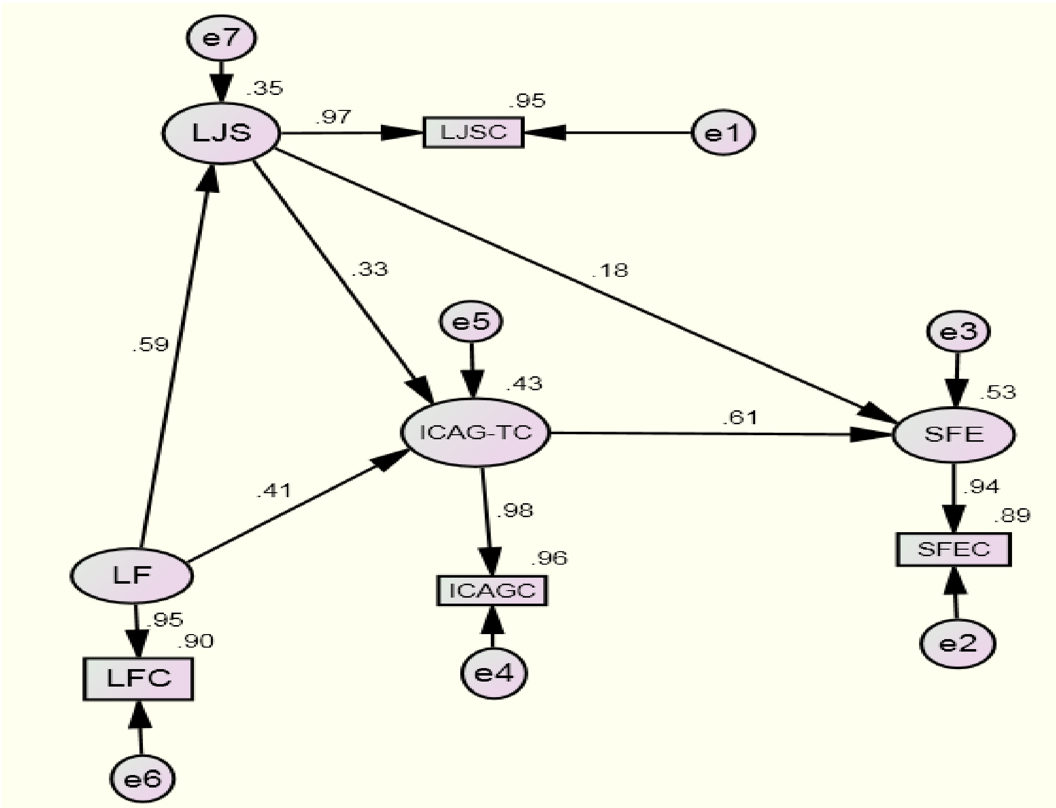
5.8 Structural Equation Modelling (SEM) Analyses of Lecturer Data

5.8.1. Lecturer Model Using SEM with Single Composite Indicator

Based on the previous sections, there are two lecturers' characteristics i.e. Lecturer Job Satisfaction and Learning Facilities, which have significant effects on both ICAG-Teaching Content and Student-Faculty Engagement. None of the academic characteristics as well as demographic characteristics has significant effect on ICAG-Teaching Content and Student-Faculty Engagement. Therefore, the model only includes Lecturer Job Satisfaction and Learning Facilities as education inputs based on lecturers' perceptions. Moreover, the study develops the model using two techniques, Structural Equation Modelling (SEM) using single composite indicator and Path Analysis.

Since the study employs SEM with single composite indicator, Loading Factor Composite and Error Variance Composite have to be calculated and assigned to Variance Error Parameter and Regression Weight Parameter in each respective latent variable. Appendix B49, B50, B51, B52, and B53 provide more detailed information about the process of calculating Loading Factor Composite and Error Variance Composite. In addition, the study only includes indicators that have at least 0.4 factor loading.

Previously-proposed models treats Learning Facilities and Lecturer Job Satisfaction (Figure 3.2) as exogenous construct that affect both ICAG-Teaching Content and Student-Faculty Engagement. This model tends to have very high covariance between Learning Facilities and Lecturer Job Satisfaction that significantly affects the influence of these constructs on both ICAG-Teaching Content and Student-Faculty Engagement. The analysis provides results that Learning Facilities have a significant effect on Lecturer Job Satisfaction. Based on the literature review (Chapter 2), Learning Facilities are considered important predictors that affects Lecturer Job Satisfaction, since two of dimensions of Lecturer Job Satisfaction are Equitable and Supporting Climate and Teaching Environment (Conklin & Desselle 2007). In addition, the correlation between Learning Facilities and Lecturer Job Satisfaction is more than 0.4. This correlation may cause multicolliniearity (Grewal, Cote & Baumgartner 2004). More specifically, covariance between Learning Facilities and Lecturer Job Satisfaction is 0.59. Figure 5.15 shows Lecturer Model after changing the role of Lecturer Job Satisfaction.



LF : Learning Facilities
LJS : Lecturer Job Satisfaction
ICAGC: ICAG-Teaching Content Composite
SFEC : Student-Faculty Engagement-Composite
LFC : Learning Facilities-Composite
LJSC: Lecturer Job Satisfaction-Composite
SFE: Student-Faculty Engagement

Figure 5.15: Lecturer Model SEM 5

The effect of Learning Facilities on Lecturer Job Satisfaction is significant indicated by a standardised regression weight of 0.59 (p<0.001). At the same time, Learning Facilities also positively affect ICAG-Teaching Content with a standardised regression weight of 0.412 (p<0.001). Likewise, the effects of Lecturer Job Satisfaction on both ICAG-Teaching Content and Student-Faculty Engagement are also positive and significant. The effect of Lecturer Job Satisfaction on ICAG-Teaching Content is significant at the 0.001 level, but the effect of Lecturer Job

Satisfaction on Student-Faculty Engagement is only significant at the 0.014 level. Lastly, the influence of ICAG-Teaching Content on Student-Faculty Engagement is also significant at the 0.001 level (Figure 5.15).

Table 5.37: Regression Weight and Estimate for Model Using Single Composite Indicator

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	P	
LJS ← LF	.539	.061	8.851	***	0.590
ICAG-TC ← LF	.392	.075	5.214	***	0.412
ICAG-TC ← LJS	.338	.080	4.222	***	0.325
SFE ←ICAG-TC	.604	.073	8.309	***	0.607
SFE ← LJS	.186	.076	2.451	.014	0.180

LJS: Lecturer Job Satisfaction **LF:** Learning Facilities **SFE:** Student-Faculty Engagement
ICAG-TC: ICAG-Teaching Content

Some tests are undertaken to judge the Goodness of Fit of the model. Table 5.38 shows that Lecturer Model SEM 5 (Figure 5.15) can be considered as having a good fit. CMIN, GFI, AGFI, NFI, and RMSEA coefficients show that the model has a good fit. Nevertheless, the study analyses the model using Path Analysis to provide a comparison.

Table 5.38: Goodness Fit of Lecturer Model Using Single Composite Indicator

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	1.61 (p=.205)	Insignificant	Fit
2	GFI	0.996	More than 0.9	Fit
3	AGFI	0.957	More than 0.9	Fit
4	RMSEA	0.057	Less than 0.08	Fit
5	NFI	0.994	More than 0.9	Fit

5.7.2 Lecturer Model Using path Analysis

The models developed based on Path Analysis and SEM using single composite indicator are quite similar. Magnitude effects of construct are the main difference between the two models. For example, Lecturer Model SEM 5 shows that effects of Lecturer Job Satisfaction on ICAG-Teaching Content and Student-Faculty Engagement are 0.33 and 0.18 respectively. In summary, relationship patterns in the two models built based on a single composite indicator and Path Analysis are the same (Figure 5.16).

Table 5.39: Regression Weight and Estimate for Lecturer Model Using Path Analysis

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	P	
TLJS ← TLF	2.065	.219	9.427	***	0.568
TICAG_TC ← TLJS	.250	.053	4.751	***	0.321
TICAG_TC ← TLF	1.160	.191	6.070	***	0.410
TSFE ← TLJS	.167	.056	2.990	.003	0.194
TSFE ← TICAG-TC	.609	.072	8.452	***	0.548

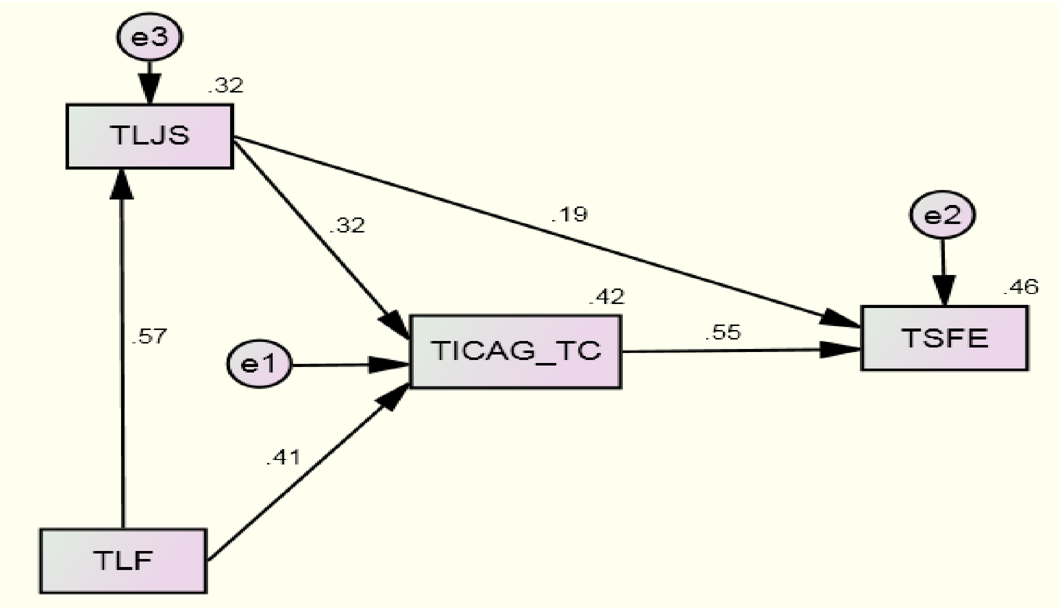
TLJS: Total Lecturer Job Satisfaction
TLF: Total Learning Facilities
TSFE: Total Student-Faculty Engagement
TICAG-TC: Total ICAG-Teaching Content

Lecturer Model Path 6 is also considered to have a good fit, since almost all tests provide satisfactory results except the coefficient of RMSEA that provides unsatisfied coefficients. Even though the CMIN coeffiecient is insignificant, the coefficient is almost significant (Table 5.40).

Table 5.40: Goodness Fit for Lecturer Model Using Path Analysis

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	3.4 (p= 0.065)	Insignificant	Fit
2	GFI	0.991	More than 0.9	Fit
3	AGFI	0.911	More than 0.9	Fit
4	RMSEA	0.113	Less than 0.08	Unsatisfied
5	NFI	0.988	More than 0.9	Fit

Based on Goodness of Fit, building the lecturer model using SEM single composite indicator has a better model fit than Path Analysis. Chi-square show an insignificant coefficient (3.4, *p*=0.065) meaning that actual and predicted matrices are not different. As has been noted, Lecturer Model Path 6 has unsatisfied RMSEA (0.113>0.08) indicating that there is a tendency for the Chi-square statistic rejects the model with large sample size.



TLJS: Total Lecturer Job Satisfaction
TICAG-TC: Total ICAG-Teaching Content
TLF: Total Learning Facilities
TSFE: Total Student-Faculty Engagement

Figure 5.16: Lecturer Model Path 6

5.9 Lecturer and Student Data Correlations

The study correlates means of students' and lecturers' variables using Kendall's Tau Correlation. Correlations are not considered accurate, because the characteristics of both student and lecturer data are masked. The most appropriate analysis for this model is Hierarchical Linear Modelling (HLM), but the number of clusters (universities) is very limited (8 universities).

The following table (5.41) shows that ICAG-Teaching Content (how much lecturers include accounting competencies based on AICPA core competency framework in their teaching learning process) correlates significantly with ICAG gained by students. Likewise, the correlation between ICAG-Teaching Content and Student Engagement is also significant at the 0.05 level. This implies that the more lecturers include accounting competencies, the more students will gain competencies. On the other hand, the correlation between Student-Faculty Engagement and Student Engagement is insignificant. The rests of the correlations are statistically insignificant. Moreover, lecturer characteristic data do not correlate with ICAG, Student Engagement, and GPA.

Table 5.41: Kendall's Tau Correlation

Lecturer Data	ICAG	Student Engagement	GPA
Lecturer Job Satisfaction	0.500	0.357	0.357
Teaching Experience	0.286	0.286	0.143
Education Attainment	0.000	0.429	0.286
Current Appointment	0.255	0.400	-0.327
Articles Published	-0.286	0.143	-0.286
Books Published	-0.429	-0.143	0.000
Age	0.214	0.357	0.214
Gender (%)**	-0.286	0.286	-0.286
ICAG-TC	0.571*	0.571*	0.143
Student-Faculty Engagement	0.500	0.214	0.357

*Correlation is significant ant the 0.05 level (2-tailed)
**Male:1; Female:0

5.10 Qualitative Analysis for Triangulating ICAG

Besides recruiting students and lecturers, the study also collected data from alumni of accounting programs. Alumni came from U-1, U-7, U-8, U-9, U-10, and U-11 located in Java Island. Moreover, U-9, U-10, and U-11 are other universities located in Central Java and Jogjakarta provinces. The alumni came from business sectors (industry, banking, trading, and service) and a non-profit organisation. Focus Groups were conducted in three cities in Central Java- Semarang (two groups), Pekalongan (one group) and Purwokerto (one group). One alumnus in Purwokerto came when the discussion was about to finish; the facilitator interviewed him separately (Table 5.42).

Table 5.42: FGD Participant's Profile

Name	Gender	Sector	Experience	Position	Univ
LL	Female	Banking	2 years	Accounting Division	U-8
DI	Female	Service (PAO)*	6 months	Auditor	U-8
RN	Male	Service (PAO) *	5 months	Auditor	U-9
AN	Female	Service (PAO) *	2 years	Auditor	U-9
WS	Male	Industry/NGO**	2 years	Accounting Division	U-10
SA	Male	Sharia Bank	1 year	Clearing officer	U-10
DS	Female	Trading Company	1 year	Accounting Division	U-10
DK	Female	Service (Education)	1 year	Accounting Division	U-10
HW	Female	Service (IT Company)	1 year	Accounting Division	U-10
CA	Female	Bank	1 year	Secretary	U-8
FK	Female	Industry/Bank	12 years	Credit Administration	U-11
DH	Female	Industry	2 years	Accounting	U-8
NI	Female	Industry	1 year	Accounting	U-8
MY	Male	Banking	2 years	Credit marketing	U-8
RI	Male	Industry	7 years	Finance manager	U-7
AH	Male	Trading	18 years	Accounting	U-10
HE	Male	Trading	3 years	Accounting	U-7
OR	Female	Bank	2 years	Accounting	U-7
WA	Female	Service (Event Organiser)	2 years	Marketing	U-1
SU	Male	Service (Hotel)	2 years	Accounting and Front Office	U-7

5.10.1 Functional competency in work place

This section discusses the three issues i.e. functional competencies used by alumni to perform their work in companies, how alumni develop their functional competencies to meet companies' requirements, and what alumni's would suggest to universities to ensure accounting graduates meet requirements for working in companies. AICPA defines functional competencies as specific capabilities used by accountants (Bolt-Lee & Foster 2003). Functional competencies used by alumni to perform works in their companies are as follow.

Decision Modelling

Alumni working in the banking sector use simple decision modelling to calculate working-capital turnover, cash flow mutation, and to establish pro-forma financial statements. This information is pivotal to evaluate business soundness of a prospective customer that leads to credit granting decisions. This competency is closely related to other competencies such as leveraging technology and risk analysis. In comparison, alumni working in the industry sector use decision modelling to calculate cost of goods sold as an input of preparing income statements. To perform this competency, alumni need other related competencies such as leveraging technology, measurement, and reporting competencies. In addition, a spreadsheet is the most frequently used software to perform decision modelling, thus a highly needed competency.

Risk Analysis

Competency in risk analysis is found to be important, since alumni use this competency. *First,* alumni working in the banking sector are required to be able to identify risks by analysing financial statements for making credit and loan decisions. In addition, alumni working in a Public Accountant Office need to analyse clients' financial statements to provide some improvement suggestions. Therefore, this competency is closely related to the reporting competency. *Second,* alumni working in Public Accountant Office are also required to audit clients' financial statements;

therefore they have to be aware of any potential audit risks. Likewise, for those who work in the industry sector, risk analysis is also considered important, since some of them perform an internal audit. *Third,* alumni should be acquainted with budgeting, since some of them undertake the task of evaluating proposed budget. Nevertheless, this competency is not explicitly mentioned in AICPA core competencies. Therefore, competencies in analysing financial statements, performing audits, and evaluating proposed budget are three competencies required by alumni to mitigate risks.

Measurement

Alumni are required to perform simple measurement in the process of journalising transactions. However, alumni working in a bank and marketing divisions, are required to have measurement competency, since they should measure the amount of sales and prepare pro-forma financial statements. MY, an alumnus working in the banking sector, said that to measure the amount of sales he should analyse client' cheque accounts to determine the amount of sales on cash, while information of cost of goods sold is measured based on interview information. As previously mentioned, MY should prepare pro-forma financial statements, therefore cost of goods sold is important information. In summary, competency in measurement is considered important for alumni working in banking and industry sectors.

Reporting

Competency in preparing financial statements including cash flow reports is important for alumni working in any sector. Moreover, alumni also need competency for making special reports such as a bank clearance report, credit status report, and financial report for a special company such as hotel and hospital. Alumni working in a branch office of a reputable company do not have to prepare financial statements, since financial statements are prepared by head office. On the other hand, alumni working in small or medium sized companies sometimes should prepare complete financial statements. FK who has significant experience working in a manufacturing company stated that she used all accounting knowledge such as recording daily transaction, conducting treasury activities, calculating merchandise inventory, and preparing income statements and balance sheets.

Research

Research competency is considered important. Some tasks are closely related to research activities especially for alumni working in the banking sector and Public Accountant Office. Some important research activities include assessing and analysing data, determining client or potential customer performance, and preparing reports. Alumni working in credit marketing should have additional research competency, in depth research to understand characteristics of a potential debtor.

Leveraging Technology

Mastering computer technology is very important to perform daily work in any sector. LL who works in a finance company stated “anyway I am working using a computer. I cannot imagine working without any computer, since it’s almost impossible for me to work with a typewriter. Nowadays, almost all jobs can be completed by using a computer.” Most of alumni use spreadsheets and word processing software. Alumni working in more well-established companies are required to use more sophisticated software such as LAN (Loan Approval System).

In addition, alumni are also required to have a good understanding of information systems.

Accounting System

Accounting system competency is not explicitly mentioned in AICPA core competencies. This competency is important, since not all alumni work in well-established companies that have good accounting systems. Some alumni may work in a new company or in a small/medium sized company lacking an appropriate accounting system. DS who works in small sized company said "my work is not mainly on accounting matters such as journalising and tracing transaction evidences, but also designing accounting systems for merchandise." In addition, this competency is considered useful for alumni to improve the existing accounting systems or to design new systems.

Summary

The above functional competencies are important for alumni to perform daily jobs in companies. However, not all competencies have the same importance. Alumni ranked Leveraging Technology as the most important competency to perform tasks in their companies, followed by Risk Analysis and Measurement. Scores of all competency indicators are not so different, meaning that all competencies are considered important. Even though, reporting competency is important for alumni working in any sector, but they rank it as the least important competency in daily work. Figure 5.17 provides a snapshot of the ranks of Functional Competencies based on alumni perceptions.

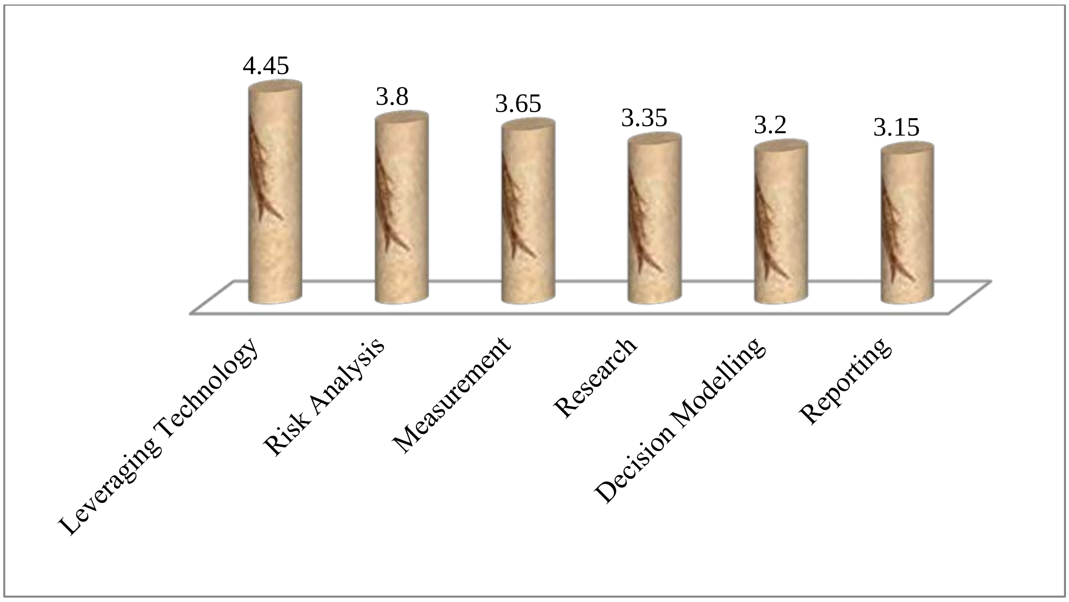


Figure 5.17: Rank of Functional Competency

Figure 5.18 shows comparison between competencies included by lecturers in teaching-learning process (ICAG-Teaching Content) and competencies learned by students (ICAG). Lecturers report that they include all functional competency areas. Likewise, students also report that they learn all functional competencies taught by lecturers. In comparison, alumni also report that all functional competency areas are applicable in their work places. Therefore, there are associations between functional competencies needed in work places and functional competencies learned in university education. Nevertheless, different emphasis on a certain competency used in work places and learned during university education is the only main issue. In other words, university education has already equipped accounting students with functional competencies.

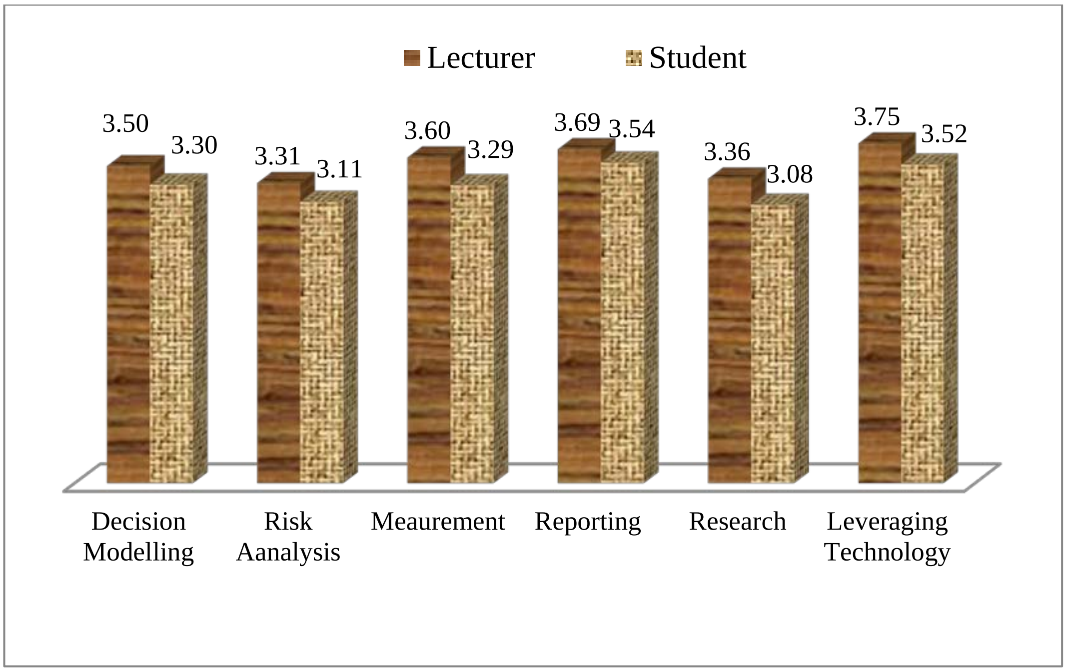


Figure 5.18: Functional Competency Based on Lecturers' and Students' Perceptions

5.10.2. Developing Functional Competency

Skills of using computers especially spreadsheets, word processing and slides (power point) have been developed by students from their university education. Students have to use the above software to complete assignments. Moreover, alumni should learn specific software used by companies where they work. This is plausible, since it is impractical for universities to provide all computer skills required by companies. However, basic computer competency learned from their university education is quite a strong foundation to learn specific software used in working place.

Other functional competencies developed by students from a university education are basic competencies and they develop those competencies further in their work places. In other words, competencies gained in a university and competencies used in work places are associated. AH, having experience designing computerised accounting system for more than 20 companies, said “I can design accounting system for companies, because I have accounting systems knowledge I learned from university education”. Likewise, HE also contended “in university education I learned how to prepare financial statements and it’s useful in working place. If I had not studied how to prepare financial statements at university, I would have been like High School or Secondary School graduates who do not understand financial statements”.

Alumni’s competencies improved significantly after they worked for some time in their companies. Alumni continue developing their competencies to meet competency requirements in their work places. They developed functional competencies, because they felt that functional competencies gained from university education were limited for working in their companies. WA stated "competencies gained from university education and competencies used in a work place are much different”. Some knowledge was not taught in university". In addition, alumni are required to master specific competencies to complete their daily work. In relation to this, MY said “the ability to absorb information from a prospective debtor and convert information into more meaningful numbers was not gained from university education”. There are gaps between competencies alumni learned at universities with competencies that alumni need for work. Alumni contended that most university lectures focused on theories, but the work place demands more practical skills.

Even though there are some gaps between competencies gained from university education and competencies used in work places, alumni are able to fill gaps by learning from experience, colleagues, super ordinates, and other formal education such as training and seminars. Nevertheless, alumni working in new or not well-established companies tend to have more problems, since they have to design or improve companies' accounting systems.

5.10.3 Suggestions to Universities

To improve graduates' functional competencies, alumni provide the following suggestions.

- Universities that have not yet offered an internship course(s) to students should include internship course(s) in their curricula to ensure all students are familiar with a work environment. Universities having offered internship course(s) should consider extending the length of internships by replacing Community Service Course (KKN). Moreover, universities should provide a course that covers various current issues in accounting.
- Universities should improve teaching-learning processes of accounting course by balancing theory and practice. More specifically, alumni recommended that universities should provide more computer and auditing practices. Alumni also suggested universities develop closer cooperation with companies so their students will not have difficulties to practice and improve their accounting competencies as well as undertake internships.
- Field Trip (KKL) management should be improved to make sure KKL will provide more learning impacts on students.
- Universities should increase credits of Accounting Information System (AIS) or Accounting System course.

Functional Competency developed by AICPA is applicable in work places in the Indonesian business setting. University education has provided a strong competency foundation for their graduates despite competency gaps between competencies developed in a university and competencies required by a work place. Alumni suggest that universities should bring more real-world experience into the teaching and learning of accounting.

5.10.4 Personal Competency in Work Places

This section discusses alumni perception on Personal Competency. The discussion also consists of three parts i.e. personal competencies needed by alumni to work in companies, how alumni develop their personal competencies to ensure they can work harmoniously and productively in their companies, and alumni's suggestions to universities on how to improve graduates personal competencies. AICPA defines personal competencies as interpersonal skills (Bolt-Lee & Foster 2003). Alumni reported on some personal competencies and then the study grouped them into categories based on AICPA Personal Competency framework.

Professional Demeanour

In order to work properly in a company, AICPA framework contains 16 demeanour characteristic, whilst alumni propose 21. However, characteristics proposed by alumni could fall into four categories. *Working demeanour*, alumni should be able to work hard, persevering, thorough, and concentrate to catch the deadline. *Personal attitude*, alumni are required to be honest, responsible, firm, disciplined, friendly, and independent. *Professional integrity*, alumni are required to have firm loyalty to the company and adhere to professional codes of ethics. *Professional learner,* alumni should be able to become resilient lifelong learners to improve their competencies and keep mentally ready in any situation with aplomb. Before working in Bank BBB, CA had experience working in Hotel CCC as GRO (General Reception Officer). In this position she had to learn communication, marketing, and hospitality skills. After her contract in this hotel finished, she worked in a telecommunication company (TTT) as a marketer. She resigned from TTT and started working at Bank BBB as a teller, customer service officer, and secretary. CA's experience is an example of how alumni should always improve their competencies and adjust themselves to changing work environments.

Problem Solving and Decision Making

Alumni are required to have problem solving and decision making competencies, since they may encounter problems and decision making dilemmas in daily work. They solve problems by synthesising problems, studying theories, discussing with colleagues, and consulting with peers and superordinates. In addition, alumni should make appropriate decisions based on their level of authority. OR, who has working experience in a reputable bank said "I have to make daily reports and I have to make necessary decisions based on my authority". Despite its scopes, alumni have to solve daily work-related problems and make decisions accurately.

Interaction

Alumni reported that there are four types interactions in their companies i.e. interaction with superordinates, subordinates, colleagues, and interaction with clients. Therefore competency in interaction is important for alumni to work effectively. Alumni's capabilities to work in a team, adjust to new work environments, and commit to implement agreements among team members, are also important for achieving intended goals and for solving problems. In addition, alumni's capabilities to interact well with their colleagues by accepting colleagues' suggestions and opinions, understanding other people's characteristics, and willingness to apologise and to forgive. Alumni working in Public Accountant Office and financing company should have additional skills, working with client. Alumni working in Public Accountant Office reported that they have to be able to build comfortable communications with clients, since comfortable interactions are preconditions for effective working relationships. AN who has more than two years experience working in Public Accountant Office said "If I have comfortable communication with a client, certainly I will get the data from client very easily".

Leadership

Leadership is also needed by all alumni to work in various sectors. Leadership is not only useful for alumni who have significant work experience and have high positions, but leadership is also useful for alumni to take the lead in team work. In relation to leadership competency, alumni provide at least three indicators. *First*, alumni should have motivation to improve a company's system and willing to invite and prepare colleagues to change. *Second*, alumni should be able to mobilize other people and run the company. Lastly, alumni should have an openness attitude.

Communication

Communication competency is important for alumni to work in any company, since alumni are required to communicate harmoniously with super ordinates, sub ordinates, colleagues, clients, as well as customers. Alumni working in Public Accountant Office collect data by having comfortable communications with clients. Alumni working in the Marketing Division of a bank use more intensive communications to survey and interview potential clients. Communications between marketer and potential client should be conducted carefully by considering character of interviewee, time, place, and techniques. As contended by MY "communication is very important in surveying a potential client. It needs the right place, time, and techniques. For example, a potential client will answer any question frankly, when he or she is driving a car."

Having good competency in communication is not enough for alumni, since their work environments also demand more communication competencies i.e. negotiation competency, English or other foreign language proficiency, communication psychology, communication competency for public relations and marketing purposes.

Project Management

An alumnus working in an Information Technology (IT) company needs project management competency to deal with project administration from initial stage of project until client's payment. Nevertheless, the application of this competency is not so intensive, since only certain companies require project management. HW who works at an IT company said "my company has many government clients and my job is to administer projects from beginning until clients' funds disbursements."

Leveraging Technology

Leveraging technology to improve personal competency is limited to using technology for email or internal information exchange and assessing information. HE who works at a trading company uses technology to assess new regulation on accounting. Likewise, AN working in Public Accountant Office said “I should always update my competencies on computer technology and related regulations.”

Summary

The above results show that indicators of personal competency are applicable in the Indonesian setting. To see the importance of personal competency indicators, the study asked alumni to rank competency indicators based on their importance in alumni’s work places.

Figure 5.19 shows that alumni perceived Professional Demeanour as the most important competency in their work places followed by Communication and Problem Solving and Decision Making competencies. On the other hand, Project Management is the least important competency. None of the indicators have a score of one (not required) indicating that all indicators are applicable in alumni’s work places.

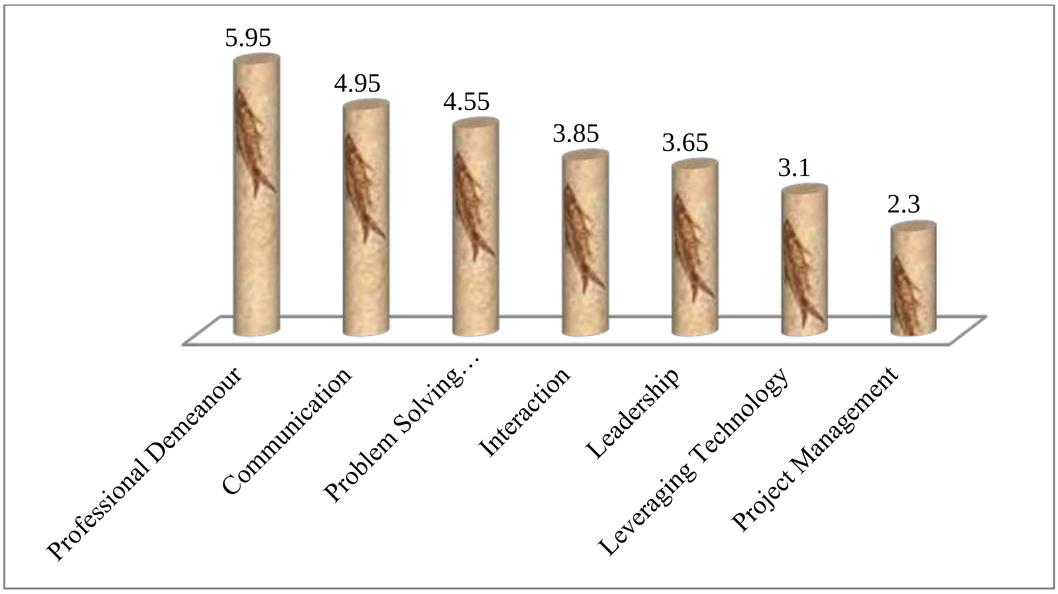


Figure 5.19: Rank of Personal Competency

Figure 5.20 show the comparison of personal competencies based on lecturers' and students' perceptions. Like functional competencies, lecturers score higher than students. This means that lecturers include more personal competencies in their teaching-learning process than student learned. Based on alumni's perceptions, all personal competency areas are considered important in work places. In comparison, all competencies are also learned by students in a university. Alumni, lecturers, and students report that professional demeanour competency is considered to be the most important personal competencies. Likewise, they also perceive that project management competency is the least important competency. In summary, universities have equipped necessary personal competencies needed for working. Nonetheless, they have different perceptions about the importance of personal competencies.

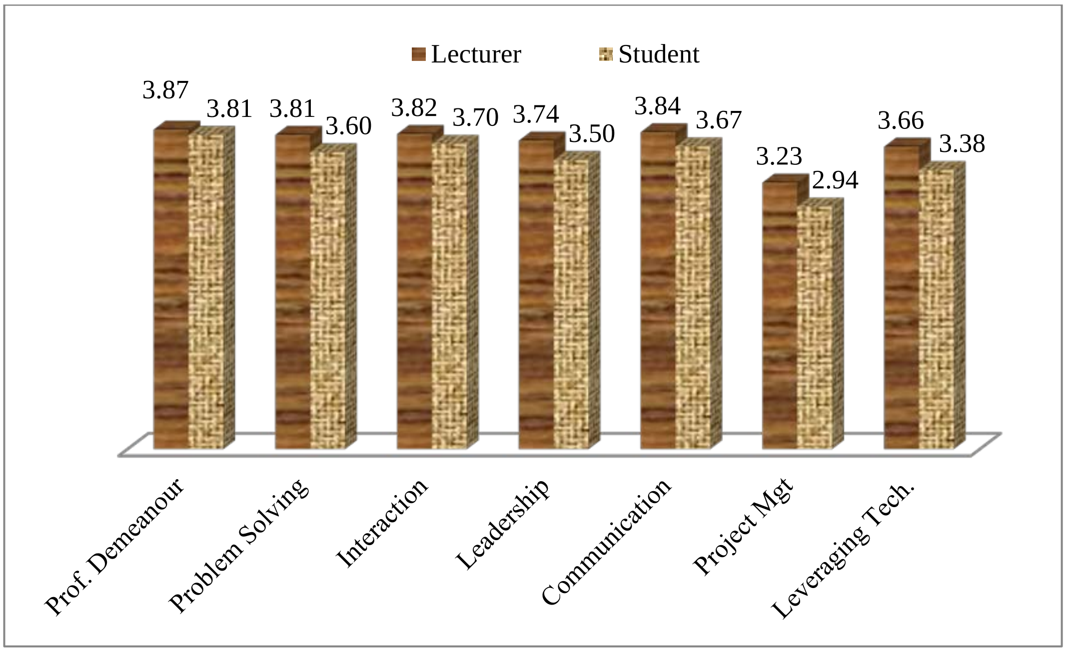


Figure 5.20: Personal Competency Based on Lecturers' and Students' Perceptions

5.10.5 Developing Personal Competency

Alumni reported that they gained basic personal competencies from their university education. They contended that university education equipped alumni with some personal competencies i.e. communication, cooperation (leadership), honesty, hard work, group work, problem solving, and information technology. While attending university education, alumni developed personal competencies through academic activities (lectures and assignments) and non-academic activities (campus organisation activities). Alumni also perceived that Personal Competencies gained from universities have a close association with competencies used in their work places, even though there are some gaps. However, alumni are able to manage these gaps.

There are some obstacles facing alumni to develop their Personal Competencies. *First*, alumni working in Public Accountant Office sometimes have dilemmas to interact with their clients. Becoming friendly with clients would create problems, because alumni would have difficulties to maintain independence and objectivity. On the other hand, working with unfriendly clients also creates different problems, such as difficulties with data collection for audit purposes. Likewise, HE said "interactions with colleagues sometimes create problems, since every person brings his/her own ego into the company. Something true is not considered true, because it is determined by seniority and other factors." *Second*, alumni have difficulty with both spoken and written English. WH who has significant experience working in the Batik industry said "My English proficiency is limited so I have difficulty to offer products to foreign buyers".

5.10.6 Suggestions to Universities to Develop Personal Competency

To improve personal competency of accounting graduates, alumni provide several suggestions. (1) Universities should develop some campus activities, personality development training, and seminars. Moreover, universities should encourage students to actively participate in activities. (2) Universities need to develop personality courses in two ways i.e. offering a personality course and embedding personality contents into existing courses. (3) Universities should improve the teaching of business communication (Indonesian and English language) as well as encourage students to learn how to work in order to gain more confidence.

Alumni reported that AICPA Personal Competency indicators are in line with work requirements in the Indonesian business setting. There are some gaps between personal competencies alumni gained from university education with personal competencies they used in the work places. Alumni suggest universities encourage their students to participate in activities conducted by students or university organisations. Providing a personality course is another plausible suggestion to improve a student's personality.

5.10.7 Broad-business Perspective Competency in the Work Place

The last dimension of AICPA core competency is Broad-business Perspective Competency. This competency deals with today's accounting environment (Bolt-Lee & Foster 2003) that measured by seven indicators (Mula 2007; Wolcot, S. K. 2006). This section begins with discussions about alumni's perception on the use of BPC in their work places followed by the way alumni develop their BPC and alumni's suggestions on how to improve university's BPC of graduates. Alumni reported BPC and then the study grouped into categories based on AICPA Broad-business Perspective Competency.

Strategic/Critical Thinking

Alumni reported that their capabilities of thinking critically are very important to cope with daily work activities. Alumni use this competency to make improvisation of problem solving encountered in a work place, since the scope of a job is more complicated than what alumni learnt from their university education. RN who works in a Public Accountant Office contends “the scope of work is different from and wider than theories; therefore I have to make improvisations”. In addition, alumni are also required to analogise complicated problems in a company and be acquainted with sectors their companies are engaged in.

Strategic thinking is also considered important for alumni working in a Public Accountant Office. They have to identify weaknesses and strengths of clients’ accounting. AN said “I don’t make a formal SWOT[25] analysis, but when I am doing observations in the client’s company, certainly I can identify what I should do.” Moreover, alumni working in the banking sector should have strategic/critical thinking competency when they analyse a potential client for extending credit.

Industry/Sector Perspective

Industry/sector Perspective competency is important for alumni who work in any industry or sector. More specifically, alumni have to have good knowledge of the industry or sector their companies deal with. The knowledge is not limited to

[25] SWOT Analysis is a technique for identifying strategies by using Strengths, Weaknesses, Opportunities, and Threats.

understanding the existing business condition but also having good knowledge on products of services their companies sell. Alumni working in a Public Accountant Office are required to understand industries/sectors of their clients. Without good knowledge on clients' industries/sectors, alumni would have difficulties in auditing and providing accurate opinions on clients' financial statements.

International/Global Perspective

Alumni do not use international/global perspective intensively, since they are working in companies operating locally. However, the capability to market product to foreign customers is an important competency. In addition, alumni also should have good international product knowledge for benchmarking purposes. RI who works in Water Company said that he needs to "benchmark his company's products with international products."

Resource Management

Alumni use resource management competency to identify financial resources owned by their companies for capturing business opportunities. As DS said, "I should be able to see financial ability of my company for capturing business opportunities." This competency is also useful for identifying human resources available in the company and preparing them to have better performance.

Legal/Regulatory Perspective

Good understanding of laws, legislations, and regulations is pivotal for alumni working in any industry/sector. More importantly, alumni should be familiar with taxation regulations such as individual, corporate, and value-added taxation. Alumni who work in Sharia banks or other Islamic institutions should be familiar with Islamic laws related to businesses that companies deal with. RI who works in the financial division at a Water company said, “besides having competency on accounting, marketing, and auditing, I should be familiar with all types of tax such as individual tax, corporate tax, and value-added tax.”

Marketing/Client Focus

Marketing/client focus competency is found to be very important in the work place at least in the following respects: (1) Offering company’s products and services as well as attracting new customers; (2) Maintaining existing customers to ensure they keep buying the company’s products or services; (3) Analysing a company’s products and services in the market place and handling complaints from customers; (4) Understanding some marketing techniques to increase a company’s sales.

Leveraging Technology

Leveraging technology is not intensively used to improve Broad-business Perspective Competency. Alumni leverage technology to search for general information, business opportunities, and currency exchange rates. Alumni working in a Public Accountant Office leverage technology for searching information that relates to clients’ industry/sector. Alumni also said that the use of the internet for online marketing is not an important issue at this time.

Summary

All indicators of Broad-business Perspective Competency are applicable for alumni to work in the Indonesian business setting. Nonetheless, not all competency indicators have the same importance. Alumni ranked Strategic/Critical Thinking as the most important competency followed by Industry/Sector Perspective, and Marketing/Client Focus. In comparison, Legal/Regulatory Perspective is considered the least important competency.

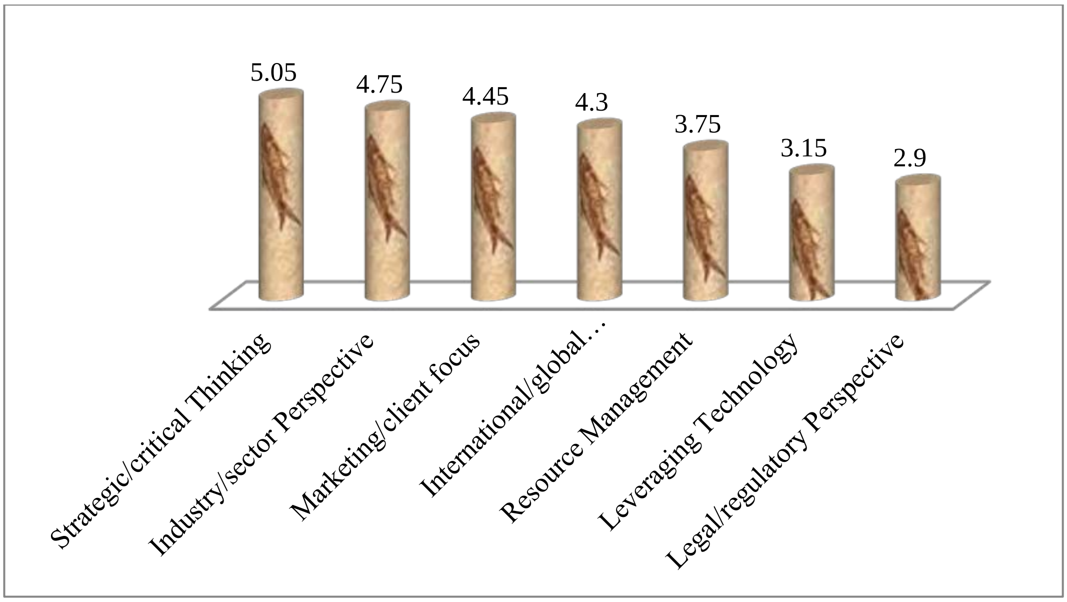


Figure 5.21: Rank of Broad-business Perspective Competency

Lecturers and students report that all Broad-business Perspective Competencies are considered being important. More specifically, marketing/client focus is the most important competency and Legal/Regulatory Perspective is the least important competency (Figure 5.22). On the other hand, alumni consider Strategic/Critical thinking is the most important competency, whilst Legal/Regulatory perspective is the least important competency (Figure 5.21).

Despite different perspectives about the importance of Broad-business Perspective competencies, lecturers, students, and alumni consider these competencies being important. In other words, accounting programs in the

Indonesian universities have equipped their graduates with competencies needed in work places.

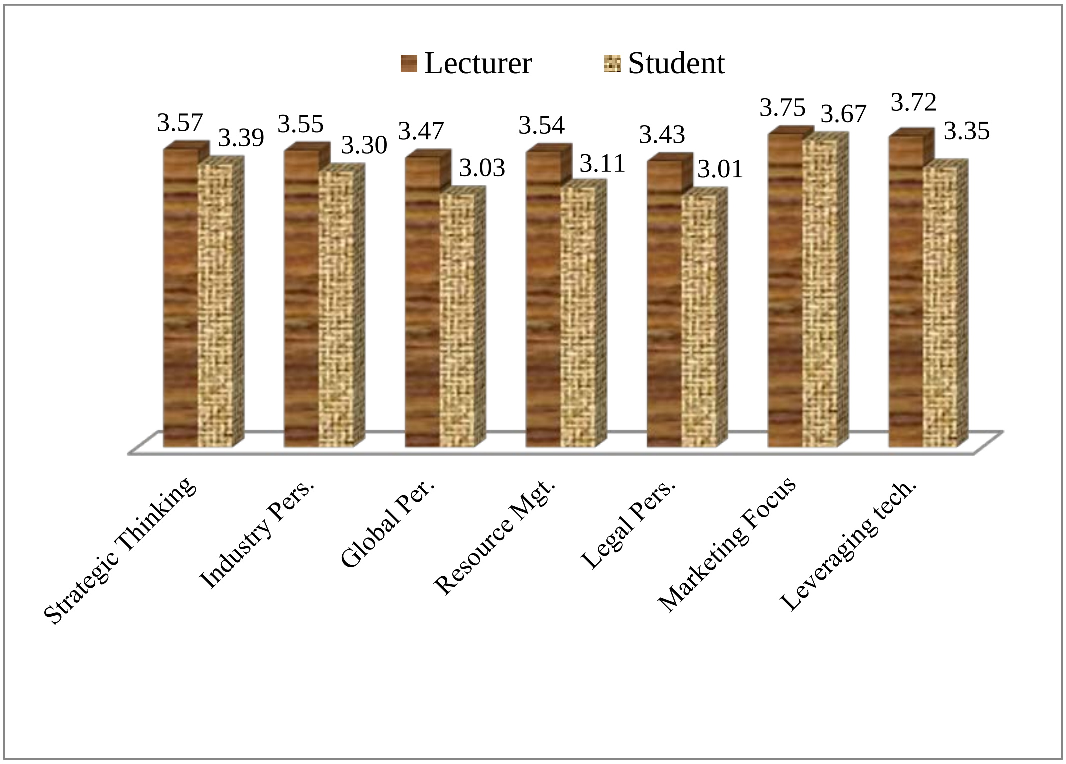


Figure 5.22: Broad-business Perspective Competency Based on Lecturers' and Students' Perceptions

5.10.8 Developing Broad-business Perspective Competency

Alumni reported that Broad-business Perspective Competency gained from their university education was not sufficient to work effectively in business entities. Most of this competency is significantly developed after they joined a company. Some business competencies gained from university education emphasise theoretical aspects or formal strategies rather than real practices in work places. SA who works in the banking sector said, “I learnt formal strategies based on theory, but I learnt more innovations of strategy in my job, not in the class.”

The main problem encountered by alumni relating to Broad-business Perspective Competency is insufficient business knowledge and practices. Most alumni said that the real-world business is much more complicated than the theory they learnt in classrooms. HE said, "I feel that this competency [Broad-business Perspective Competency] is less studied at the university. There were some business courses, but the lecture mainly emphasized theoretical aspect. Real work is not like theory, since there are many cases that were not studied in the theory [class]." Alumni working in a Public Accountant Office also have difficulties especially when they audit different kinds of companies. They have to understand clients' industries/sectors thoroughly. Despite gaps between competencies students gained from their university education and competencies demanded by work places, alumni are still able to cope with gaps and adjust themselves to work requirements.

5.10.9 Suggestions to universities for improving Broad-business Perspective Competency

To improve Broad-business Perspective Competency, alumni provide many suggestions. There are at least three categories of suggestions as follows: (1) Universities should provide more time for students to undertake internships to ensure they can learn real businesses practices; (2) Courses should be based on practice by providing more case studies, laboratory work, and more lecturers from professionals; (3) Universities should organise more seminars, workshops, and training relating to entrepreneurship and business.

Broad-business Perspective Competency based on AICPA core competencies are applicable in work places of the Indonesian company setting. Despite gaps identified in Broad-business Perspective Competency, alumni are able to cope with and adjusted to companies' demands for competencies. Alumni suggest that universities should bring students closer to real-world accounting during their education.

5.11 Hypotheses Testing Summary

Previous sections describe results of data analyses using Pearson's correlation, Kendall Tau correlation, Regressions, Structural Equation Modelling (SEM) with single composite indicator, and Path Analyses. The study also uses Kendall Tau correlations to test some hypotheses proposed in Chapter 3 (Research Design). In addition, SEM and Path Analysis are employed to construct models for improving International Competency of Accounting Graduate (ICAG) and Student Achievements in the Indonesian university context. Lastly, this Chapter also discusses qualitative analysis of alumni perceptions of AICPA core competencies.

Hypotheses mainly focus on relationships between inputs and processes; inputs and outputs; and relationships between processes and outputs. Table 5.43 provides summary of test results.

Table 5.43: Summary of Hypotheses

No	Hypothesis	Result	Table
H1.1	Student Motivation measured by Expectancy Theory correlates with Student Engagement.	Accept	5.3
H1.2	Student Previous Achievements correlate with Student Engagement	Accept	5.7
H1.3	Student Demographic Characteristic in term of Age correlates with Student Engagement.	Reject	5.10
	Student Demographic Characteristics in term Gender correlates with Student Engagement.	Reject	5.12
H1.4	Comfort of Class Size based on student perceptions correlates with Student Engagement.	Accept	5.14
	Learning Facilities based on student perceptions correlate with Student Engagement.	Accept	5.15

Continued…

Table 5.43: Continued

No	Hypothesis	Result	Table
H1.5	Lecturer Job Satisfaction correlates with ICAG-Teaching Contents	Accept	5.25
	Lecturer Job Satisfaction correlates with Student-Faculty Engagement.	Accept	5.27
H1.6	Lecturer Teaching Experiences, Education Attainments, Research Productivity, and Licensure correlate with ICAG-Teaching Content.	Reject	5.28
	Lecturer Teaching Experiences, Education Attainments, Research Productivity, and Licensure correlate with Student-Faculty Engagement.	Reject	5.29
H1.7	Lecturer Age correlates with ICAG-Teaching Content and Student-Faculty Engagement.	Reject	5.31
H1.8	Lecturers' Gender correlates with ICAG-Teaching Content and Student-Faculty Engagement.	Reject	5.32
H1.9	Learning Facilities based lecturer perceptions correlate with Student Faculty Engagement and ICAG-Teaching Content.	Accept	5.34
	Learning Facilities based lecturer perceptions correlate with ICAG-Teaching Content.	Accept	5.34
	Comfort of Class Size based lecturer perceptions correlates with Student-Faculty Engagement.	Reject	5.36
	Comfort of Class Size based lecturer perceptions correlates with ICAG-Teaching Content	Reject	5.36
H2.1	Student Motivation measured by Expectancy Theory correlates with International Competencies of Accounting Graduates (ICAG)	Accept	5.4
	Student Motivation measured by Expectancy Theory correlates Student Achievements.	Accept	5.6
H2.2	Student Previous Achievements correlates with ICAG and Student Achievements.	Accept	5.7
H2.3	Student Demographic Characteristic in terms of Age correlates with ICAG	Reject	5.10
	Student Demographic Characteristics in terms of Age correlates with and Student Achievements.	Accept	5.10
	Student Demographic Characteristic in terms of Gender correlates with ICAG	Reject	5.12
	Student Demographic Characteristic in terms of Gender correlates with Student Achievements.	Accept	5.12
H2.4	Comfort of Class Size based on student perceptions correlates with ICAG	Accept	5.14
	Comfort of Class Size based on student perceptions correlate with Student Achievements,	Reject	5.14

Continued…

Table 5.43: Continued

No	Hypothesis	Result	Table
H2.4	Learning Facilities based on student perceptions correlates with ICAG	Accept	5.15
	Learning Facilities based on student perceptions correlates with Student Achievements	Accept	5.15
H2.5	Lecturer Job Satisfaction correlates with ICAG and Student Achievements.	Reject*	5.41
H2.6	Lecturer Experiences, Education Attainments, Research Productivity, and Licensure correlate with ICAG, and Student Achievements.	Reject*	5.41
H2.7	Lecturer Age correlate with ICAG, and Student Achievements	Reject*	5.41
H3.1	Student Engagement correlates with ICAG	Accept	5.5
	Student Engagement correlates with Student Achievements	Accept	5.6
H3.2	ICAG-Teaching Content correlates with Student Faculty Engagement	Accept	5.26
	ICAG-Teaching Content correlates with ICAG	Accept*	5.41
	ICAG-Teaching Content correlates with Student Engagement	Accept*	5.41
H3.3	Student-Faculty Engagement correlates with Student Engagement.	Reject*	5.41

*Correlations were calculated using non-parametric analysis, Kendal-Tau

Table 5.43 shows that based on students' perspectives, hypotheses related to demographic characteristics are mostly rejected. Likewise, the hypothesis on the association between Comfort of Class Size and Student Achievements is also rejected. Based on lecturers' perspectives, hypotheses on lecturers' academic characteristics associations with ICAG-Teaching Content and Student-Faculty Engagement are also rejected. Lecturer Demographic Characteristics do not play an important role in the model indicated by the rejection of hypotheses on correlations between lecturers' demographic characteristics and ICAG-Teaching Content as well as Student-Faculty Engagement. Lastly, hypotheses on correlations between Comfort of Class Size and ICAG-Teaching Content as well as Student-Faculty Engagement are also rejected. Kendall-Tau formula to analyse correlations between lecturers' and students' data provide results were only two hypotheses, ICAG-Teaching Content with ICAG and ICAG-Teaching Content with Student Engagement, are accepted.

To provide clearer pictures on hypotheses testing, the study provides conclusions in diagrammatic form. There are four models i.e. (1) Significant factors that develop ICAG; (2) Significant factors that develop GPA; (3) Significant factors that develop ICAG based on lecturer perceptions; and (4) Significant factors that on develop GPA based on lecturer perceptions. These models are based on correlation analyses (Pearson's and Kendall's Tau).

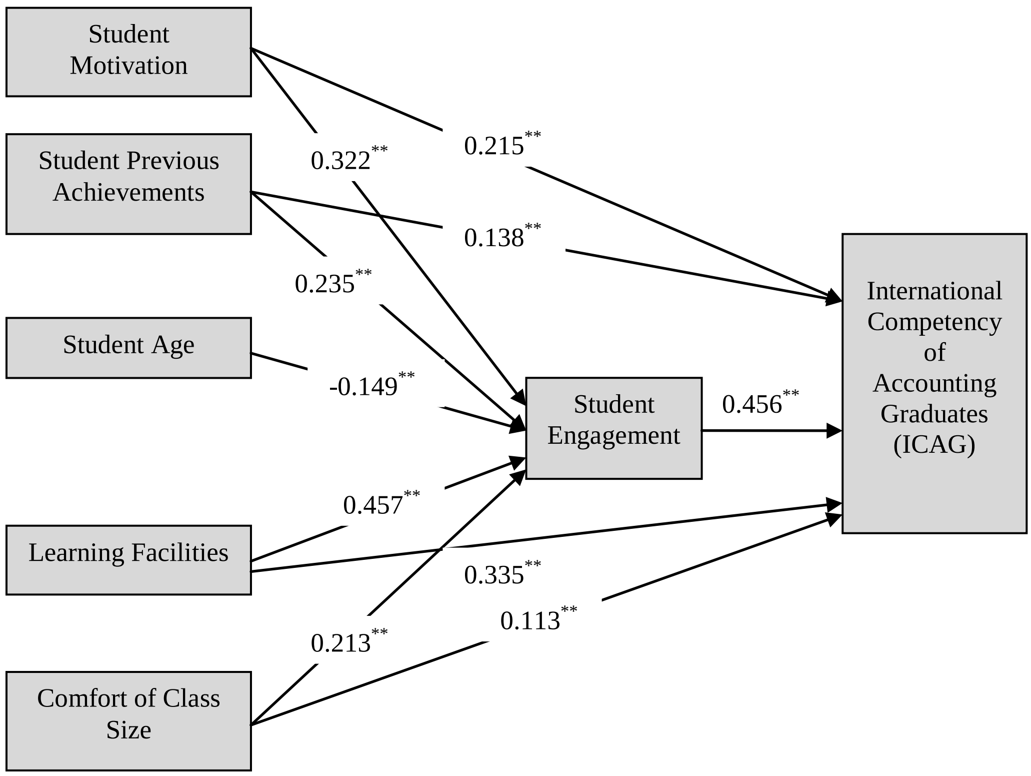
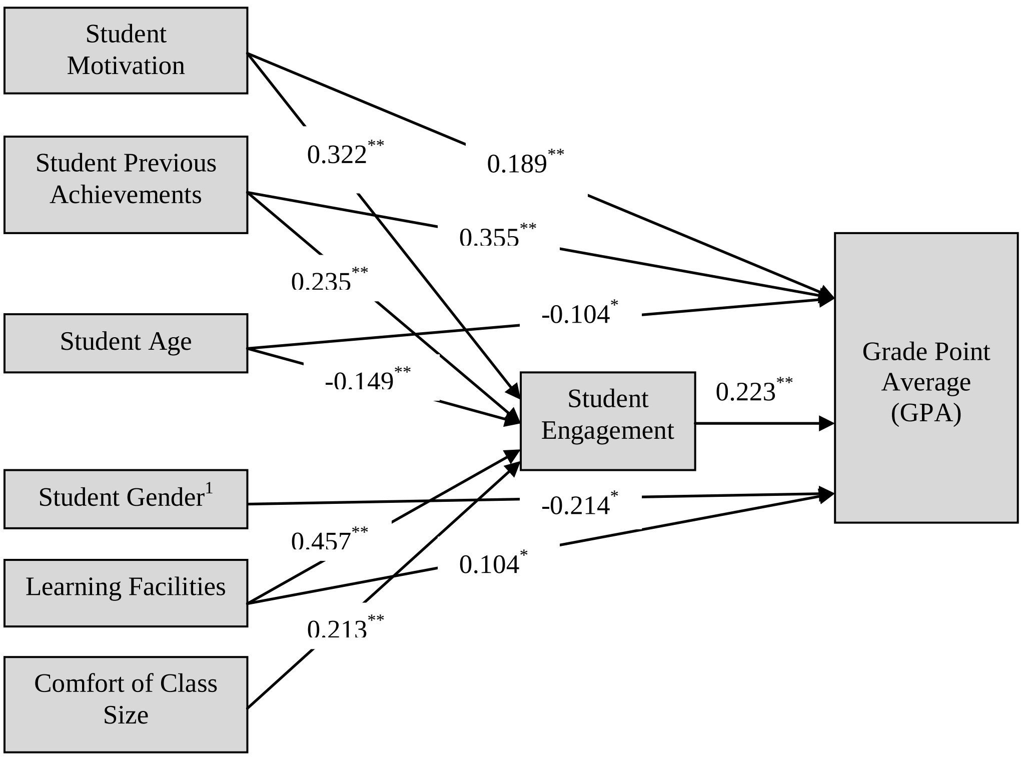


Figure 5.23: Hypotheses Summary on Developing ICAG

Figure 5.23 shows that Student Motivation, Student Previous Achievements, Learning Facilities, and Comfort of Class Size significantly correlate with Student Engagement and ICAG. Likewise, Student Engagement also significantly correlate with ICAG. On the other hand, Student Age negatively correlates with Student Engagement. The correlation between Student Age and ICAG is not significant. Likewise, Student Gender does not correlate with both Student Engagement and ICAG. Therefore, Age and Gender do not play an important role in developing ICAG. By far the most significant contributor is Learning Facilities with some contribution from Student Motivation to both Student Engagement and ICAG.

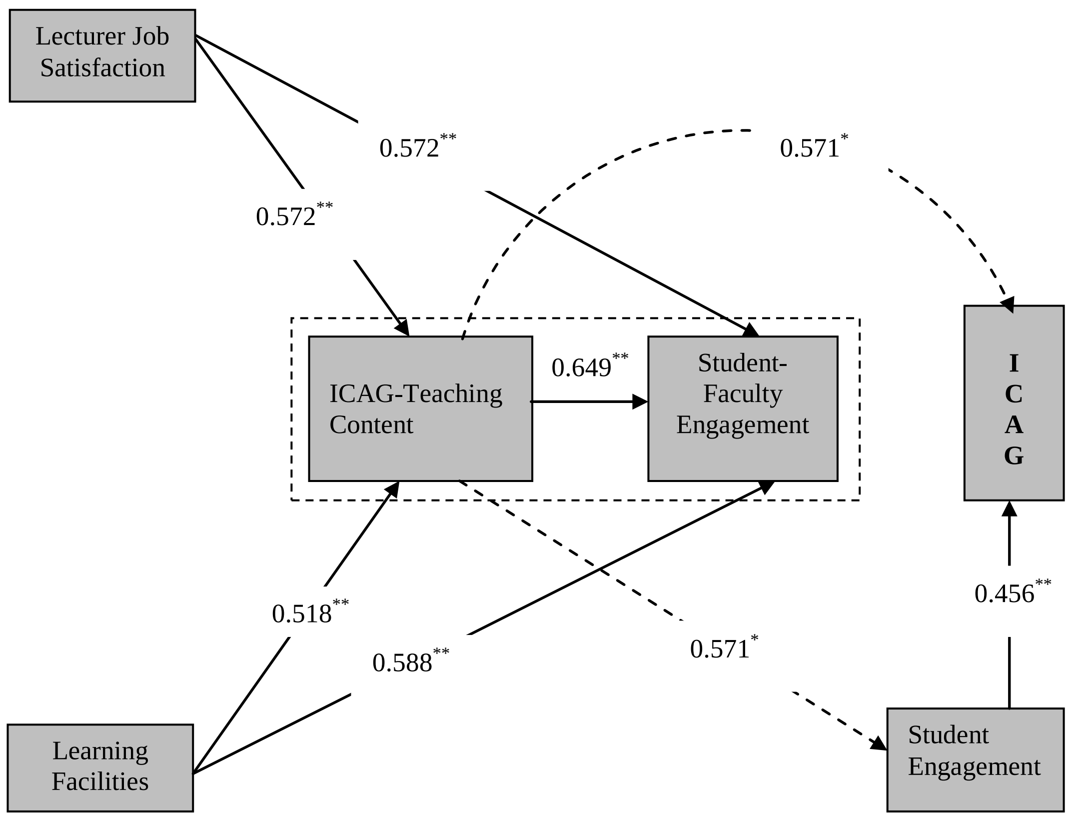
Figure 5.24 provides a hypotheses summary on developing GPA as outputs of education. The correlations between inputs and processes (Student Engagement) are similar to the correlation in the previous hypotheses summary (Figure 5.23). Nevertheless, the correlations between inputs and outputs (GPA) provide different picture. Moreover, the correlation between processes (Student Engagement) and output (GPA) is also different in magnitude.



[1] Male: 1; Female: 0

Figure 5.24: Hypotheses Summary on Developing GPA

Student Age and GPA is negatively correlated meaning older students tend to have lower GPAs. Student Gender also negatively correlated with GPA. Thus, male students tend to have lower GPA than their counterparts. Moreover, Comfort of Class Size is not significantly associated with GPA, whilst other correlations are positive and significant at the 0.01 level. Figure 5.25 and 5.26 are based on lecturers' perceptions, since ICAG and GPA are reported by students.



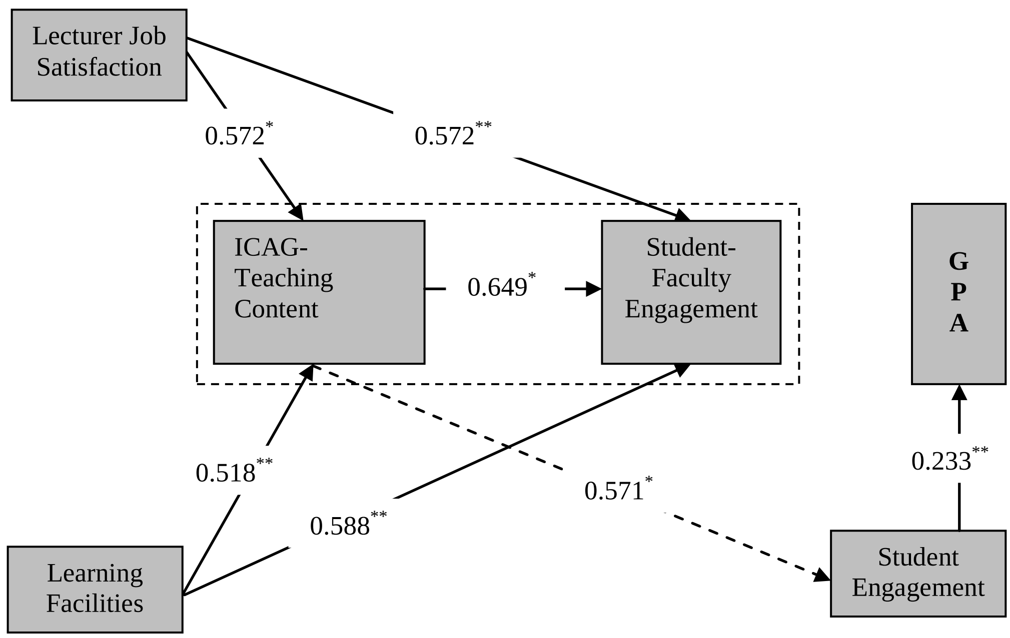
- - - - ► : Correlation between students' and lecturers' data using non-parametric statistics, Kendall's Tau Correlation

Figure 5.25: Hypotheses Summary on Developing ICAG based on Lecturer Perception

Figure 5.25 shows that two inputs (Lecturer Job Satisfaction and Learning Facilities) correlate significantly with processes (ICAG-Teaching Content and Student-Faculty Engagement). ICAG-Teaching Content (lecturer perception) correlates significantly with ICAG and Student Engagement (student perception). Student Engagement, in turn, significantly correlates with ICAG.

Lecturer Job Satisfaction and Learning Facilities (lecturer perception) significantly correlate with both ICAG-Teaching Content and Student-Faculty Engagement. These inputs do not correlate with ICAG (student perception). Likewise, Lecturer Academic Characteristics and Lecturer Demographic Characteristics are not associated with ICAG-Teaching Content, Student-Faculty Engagement, and ICAG. Nevertheless, ICAG-Teaching Content significantly correlates with both Student Engagement and ICAG.

Figure 5.26 shows that the correlations between inputs and processes are similar to the correlations between inputs and processes in Figure 5.25. Lecturers' characteristics (psychological, academic, and demographic) do not correlate with GPAs. Nevertheless, ICAG-Teaching Content significantly correlates with Student Engagement (student perception). Student Engagement, in turn, correlates significantly with GPAs.



- - - - -▸ : Correlation between students' and lecturers' data using non-parametric statistics, Kendall's Tau Correlation

Figure 5.26: Hypotheses Summary on Developing GPA based on Lecturer Perception

5.12 Conclusion

This chapter discusses results of analyses to answer research questions by testing hypotheses. Pearson's and Kendall's Tau correlation, regressions, SEM and Path Analyses are used to analyse quantitative data and to revise models. Qualitative analysis (constant comparison) is undertaken to triangulate ICAG indicators. Results of qualitative analysis provide conclusions that AICPA core competencies are in line with the contexts of Indonesian companies. The following chapter draws some conclusions from research findings in relation to the theories employed by this study and research findings from previous studies. It ends with identifying limitations and poses future research recommendation to overcome them.

CHAPTER 6: DISCUSSION AND CONCLUSIONS

6.1 Introduction

Besides conducting quantitative analyses of data collected from students and lecturers, the study also conduct qualitative analysis or data collected from Focus Group Discussions (FGD). This Chapter discusses both quantitative and qualitative results presented in Chapter 5 (Analysis and Findings). This chapter begins with discussions of findings followed by conclusions, theoretical and practical implications, limitations, and directions of future research.

6.2 Discussions

As previously mentioned in Chapter 2, the study employs System Theory and Input-Environment-Outcome (I-E-O) model as underpinning theories. This section discusses relationships among all elements of theories i.e. Inputs, Processes/ environment, and Outputs. In addition, this section also discusses qualitative analysis that emphasises in the applicability of AICPA core competencies in the Indonesian business context. Therefore, this discussion comprises of six parts: (1) relationships between educational inputs and educational processes; (2) relationships between educational inputs and educational outputs; (3) relationships between educational processes and educational outputs; (4) System Theory and I-E-O model in accounting education; (5) AICPA core competencies based on alumni's perception; and (6) the revised empirical model. Moreover, the discussion of AICPA core competencies based on alumni’s perception is discussed based on qualitative analysis to triangulate the applicability of AICPA core competencies in the work places.

6.2.1 Educational Inputs and Educational Processes

This section summaries some significant relationships between educational inputs and educational processes measured by Student Engagement and Student-Faculty Engagement. As previously mentioned, the study identifies some inputs for educational system i.e. student characteristics (psychological, academic and demographic characteristics), lecturer characteristics (psychological, academic and demographic characteristic), International Competency of Accounting Graduate-Teaching Contents (ICAG-Teaching Content), Comfort of Class Size, and Learning Facilities.

Student Characteristics

Correlation analyses provide results that psychological characteristic in term of Student Motivation measured by Expectancy Theory correlates significantly with Student Engagement. Likewise, simple regression also provides results that Student Motivation significantly affects Student Engagement. In addition, Structural Equation Modelling (SEM) using single composite indicator and Path Analysis also provides similar results. These findings are in line with the proposition that interests, need, and expectation are one input to an educational system (Mizikaci 2006). Correlation and regression results show moderate coefficients meaning that Student Motivation measured by Expectancy Theory and Student Engagement are different concepts. These findings support previous results that Student Motivation impacts on

Student Engagement (Heller et al. 2010; Krause 2005; Walker, Greene & Mansell 2006).

Even though the Expectancy Theory questionnaire was originally developed for measuring employee motivation (Chiang & Jang 2008; Chiang et al. 2008), the instrument has been shown to be applicable for measuring Student Motivation by adapting some items. In addition, Expectancy Theory is also employed to measure Student Motivation to pursue student achievements (Campbell, Baronina & Reider 2003; Geiger & Cooper 1995; Geiger & Cooper 1996; Geiger et al. 1998; Harrel, Caldwell & Doty 1985; Tsay & Brady 2010), but the study provides an additional perspective that Expectancy Theory is also useful for measuring Student Motivation to participate in Student Engagement activities.

The second student characteristic is Previous Achievements that student earned from previous schoolings. Previous Achievements, measured by average grades, has a significant correlation with Student Engagement. Regression analysis also provides results that Previous Achievements affect Student Engagement. In addition, SEM and Path Analyses also show that Previous Achievements has a positive and significant contribution to Student Engagement. These findings support a previous study that pre-college academic success correlates significantly with Academic Achievements (Agronow 2008). In addition, the study finds that Previous Achievements in terms of average grades is considered a useful proxy, since nationally-tested grades (NEM) from previous schoolings has a smaller correlation with Student Engagement. Likewise, other academic characteristics i.e. type of previous school, previous major, and group of major, do not associate with Student Engagement.

Age as a students' demographic characteristic is found to negatively correlate with Student Engagement. Moreover, regression analysis also provides evidence that Age has a negative effect on Student Engagement. Regression analysis also provides the same result. This finding is somewhat different from a previous study. Strayhorn (2008) found that Age has positive correlations with two dimensions of Student Engagement i.e. Student-Faculty Interaction and Active Learning. On the other hand, SEM and Path Analyses do not provide evidence that Age has an effect on Student Engagement. As a comparison, Age also negatively correlates with Student Motivation, Previous Achievements, and grades of nationally-tested subjects (NEM). Simply put, older students are more likely to have lower motivation and lower previous achievements. This phenomenon could be caused by a condition that regular accounting students tend to have the same age. This is supported by the facts that 82% of accounting students have age of 20 to 22 years old making the Kurtosis coefficient quite high. Negative correlation of Age and Student Engagement and other input variables may be caused by the condition that younger students may meet more qualifications as accounting students than older students. In addition, the study's samples contained mainly regular[26] students making ages of students homogenous, since the more mature students are not admitted into regular accounting classes.

In relation to Gender, the study finds that a student's gender does not correlate with Student Engagement. Nevertheless, female students tend to have

[26] Some universities admit two types of accounting students i.e. regular and non-regular. Regular students are students admitted from fresh High School graduates to become full-time students. These students come to the class in regular working hours or days. Non-regular students are admitted not only from fresh High School graduates, but also students who have already graduated long time before and have jobs. These students come to the class after working hours or during weekend.

higher engagement in Active Learning. These findings are somewhat different from previous findings in the Australian university context (AUSSE 2010a) as well as in American universities (Kinzie et al. 2007) where Gender has a small correlation with Student Engagement. The different result may be caused by the proportion of student by gender in the sample 67% female students and 33% male students.

In summary, Student Motivation and Previous Achievements are two important inputs for educational system. Despite its correlation magnitude, Age and Gender does not provide enough power to affect Student Engagement indicated by insignificant unstandardised estimate in both SEM and Path analyses.

Lecturer Characteristics

The study includes a psychological input to measure lecturer motivation by employing Herzberg's Motivation Theory to measure Lecturer Job Satisfaction. The analysis shows that Lecturer Job Satisfaction correlates significantly with Student-Faculty Engagement. Likewise, regression, SEM, and Path Analysis also provide the same results. These results are in line with a previous study that Lecturer Job Satisfaction influence work engagement (Hermsen & Rosser 2008). Even though, Herzberg's Motivation Theory was initially employed to measure job satisfaction among industrial workers (Zhang & Zheng 2009), this study has shown that the theory is also applicable for measuring job satisfaction of lecturers. Therefore, these results are in line with previous findings that job satisfaction is applicable to measure lecturers' motivation (Ololube 2006; Sudiro 2008; Woods & Weasmer 2004). One previous study reveals that Lecturer Job Satisfaction enhances collegiality and job performance (Woods & Weasmer 2004). The finding provides an additional perspective that Lecturer Job Satisfaction also impacts Student-Faculty Engagement, since previous studies on the relation between Lecturer Job Satisfaction and Student-Faculty Engagement in developing countries seems to be limited.

The questionnaire for measuring Lecturer Job Satisfaction was initially developed to measure job satisfaction of a pharmacy faculty in an American university setting (Conklin & Desselle 2007). The study finds that the adopted and adapted questionnaire is applicable for measuring job satisfaction among accounting lecturers in an Indonesian university setting indicated by high factor loadings and reliabilities of questions. In addition, the dimensions of Lecturer Job Satisfaction also correlate significantly with all Student-Faculty Engagement dimensions. However, the study made small adaptations to Lecturer Job Satisfaction questionnaires to ensure all items are in line with the Indonesian university context. Conceptual model shows that the association between Lecturer Job Satisfaction and Student-Faculty Engagement are directly correlated (without any mediating). Nevertheless, empirical findings show that ICAG-Teaching Content is a mediator between Lecturer Job Satisfaction and Student-Faculty Engagement. Separate section discusses more details about this matter.

The study employs Lecturer Academic Characteristics as inputs to an educational system. The study identifies eight academic characteristics i.e. Work Experience, Education Attainment, Current Appointment, Lecturer Certification, Research Productivity, Articles Published, Books Published, and Academic Productivity. The last characteristic is a combination of Education Attainment, Current Appointment, Research Productivity, Articles Published, and Books Published. The study found that none of the above academic characteristics has a significant correlation with Student-Faculty Engagement. These findings are inconsistent with previous studies that lecturer education attainment have positive and significant influence on lecturers' performance in Indonesian universities (Riduwan 2006; Yusuf 2006). Nevertheless, an insignificant correlation between lecturer education attainment and Student-Faculty Engagement support previous study that education attainment does not affect teaching performance of a lecturer (Verceles & Rivera 2010).

Previous findings show that the impact of licensure or certification on lecturer performance is significant (Harris & Sass 2009; Wang, Smith & Steve Oliver 2006). This study shows a different result that Lecturer Certification does not correlate with Student-Faculty Engagement. Likewise, Current Appointment is also insignificantly associated with Student-Faculty Engagement. These findings are quite similar to previous findings that lecturer rank minimally correlates with teaching performance based on students' evaluations (Kogan, Schoenfeld-Tacher & Hellyer 2010).

Insignificant correlation between Lecturer Academic Characteristics and Student-Faculty Engagement may be caused by three factors. *First*, the correlation between teaching experience and teaching effectiveness is non-linear (Wang, Smith & Steve Oliver 2006). This means that over a number of years of teaching experience, teaching performance declines. This proposition is supported by Kinney and Smith (1992) who found teaching performance tends to decline when lecturers' ages reach early forties and the mid-sixties.

Second, insignificant correlation between Lecturer Academic Characteristics and Student-Faculty Engagement may be caused by lecturers' perceptions that their academic characteristics are intended to improve their academic performance rather improve their teaching performance. In other words, lecturers may have perceptions that teaching and other academic activities are two separate and uncorrelated activities. This conjecture is supported by findings that almost all correlations among Lecturer Academic Characteristics variables are positively significant. For example, correlations of work experience with the rest of Lecturer Academic Characteristics variables are significant, except Book Published. Likewise, correlations between Education Attainment and the rest of Lecturer Academic Characteristics variables are also positively significant, except Book published.

Third, insignificant correlation between Research Productivity and Student-Faculty Engagement is different from previous findings that Research Productivity impacts student achievement (De Paola 2009). Topics researched by lecturer may be the reason behind this insignificant correlation. Most research conducted by lecturers may focus on theory of accounting that does not aim to improve the teaching and learning of accounting in universities. Research on accounting education and classroom action research may provide different impacts on improving teaching-learning processes of accounting at a university.

Age as a demographic characteristic does not correlate with Student-Faculty Engagement. Despite a small magnitude, Age correlates with Active Learning. This finding is different from previous finding that Age of lecturer has an association with teaching performance (Kinney & Smith 1992). On the other hand, another finding shows that Age does not correlate with job performance (Kemper 2010). Since Age is not associated with Student-Faculty Engagement, this variable is not included in SEM and Path Analyses to revise models.

The study reveals that Gender and Student-Faculty Engagement are not associated. In other words, female and male lecturers have the same Student-Faculty Engagement. Previous research concludes that gender interactions between teachers and students impact student outcomes (Dee 2007). This study's finding is in line with previous studies that Gender does not impact a lecturer's performance (Buck & Tiene 1989; Verceles & Rivera 2010). Nevertheless, the proportion of male (54%) and female (46%) lecturers may cause this insignificant correlation between gender and Student-Faculty Engagement.

In summary, Lecturer Job Satisfaction is the only lecturer characteristic that has a significant association with Student-Faculty Engagement. Academic and demographic characteristics do not correlate with Student-Faculty Engagement. Therefore, only Lecturer Job Satisfaction is included in the revised model.

ICAG-Teaching Content

ICAG-Teaching Content measures how much lecturers include ICAG in their teaching-learning process. The study found that ICAG-Teaching Content and Student-Faculty Engagement are closely associated. ICAG-Teaching Content, as a proxy for curricula or subject matter, correlates with Student-Faculty Engagement as a process. This finding is in line with the proposition contended by Nearon (2002) that subject matter is an important input to an educational system. In this case, ICAG-Teaching Content is considered as a set of courses (Toombs & Tierney 1993). However, competency contents are not only contained in courses offered, but also contained in the process of teaching and learning, since curricula also comprise instruction element (Frey 1998). Moreover, Mizikaci (2006) classified content and delivery as transforming process.

Previous studies find that lecturers should use many strategies to build student accounting competency such as using of case studies (Weil, Oyelere & Rainsbury 2004), integrating content learnt with real world (Jayaprakash 2005), using multiple teaching methods (Bonner 1999), and using mental reflection, physical action, and skills (Azemikhah 2006). In addition, Tigelaar et al. (2004) validate framework for teaching competencies that emphasise a lecturer's characteristics. The above findings show that competency contents are not only listed in curricula, but also contained in the process of teaching and learning. On the other hand, development of accounting curricula has to follow government regulations (Depdiknas 2000) and previous research finds that accounting curricula used by universities are mostly similar (Hamzah 2009). Based on the above findings, ICAG-Teaching Content is more likely depend on lecturers' efforts; therefore this construct is classified as a transforming process rather than an input. In other words, ICAG-Teaching Content could function as a mediating variable between lecturer characteristics as inputs and Student-Faculty Engagement.

The study finds that correlations between Lecturer Job Satisfaction and ICAG-Teaching Content are significant with moderate correlation coefficient. Regression analysis also shows that Lecturer Job Satisfaction impacts ICAG-Teaching Content. Sobel and Aroian tests (Preacher & Hayes 2004; Preacher & Leonardelli 2010) also show that ICAG-Teaching Content is a mediator between Lecturer Job Satisfaction and Student-Faculty Engagement. Nevertheless, correlations between Lecturers' Academic Characteristics and ICAG-Teaching

Content are statistically insignificant. Likewise, demographic characteristics (Age and Gender) and ICAG-Teaching Content are also insignificantly correlated.

Comfort of Class Size

The study collects the data on Comfort of Class Size based on student and lecturer perceptions. The study finds that based on students' perceptions, Comfort of Class Size correlates positively with Student Engagement. Regression analysis also finds that Comfort of Class Size impacts Student Engagement significantly. These findings are in line with the proposition contended by Cotten and Wilson (2006) that a smaller class size creates substantive engagement between students and teacher. SEM analysis using single composite indicator show that Comfort of Class Size does not significantly affect Student Engagement. On the other hand, Path Analysis shows a different picture that Comfort of Class Size significantly affects Student Engagement. The use of single composite indicator for both Comfort of Class Size and Student Engagement may cause these different results.

Based on lecturers' perceptions, Comfort of Class Size does not correlate with both Student-Faculty Engagement and ICAG-Teaching Content. This insignificant correlation may be caused by the condition that the class size in Indonesian universities is considered reasonable. Another possible reason is that lecturers do not take class size into account, since they still can employ teaching methods that are commonly used in small classes (Exeter et al. 2010).

Learning Facilities

Based on students' perceptions, Learning Facilities and dimensions of Student Engagement as well as overall Student Engagement are closely correlated.

Regression analysis also finds that Learning Facilities impact Student Engagement significantly. This result supports previous finding that academic support facilities could be major drivers of educational processes (Dolan, Jung Jr & Schmidt 1985). More specifically, this finding also supports propositions that a library could increase student engagement (Kuh & Gonyea 2003) and internet access and computers improve student engagement (Chen, Lambert & Guidry 2010; Heiberger & Harper 2008; Khan 2009). SEM and Path Analyses provide results that Learning Facilities is an important input to an educational system based on students' perceptions.

Learning Facilities based on lecturers' perspectives closely correlates with Student-Faculty Engagement. Regression analysis also shows that Learning Facilities has a significant impact on Comfort of Class Size. This finding also support previous studies, that Learning Facilities enhance quality of students and lecturers (Dolan, Jung Jr & Schmidt 1985), the use of appropriate learning facilities improves the productivity of teaching and learning (Boyce cited in Herring III & Bryans 2001), the use of technology as a learning facility leads to more intensive engagement for both lecturers and students (Chen, Lambert & Guidry 2010; Heiberger & Harper 2008). Based on SEM and Path Analysis, Learning Facilities significantly impacts Student-Faculty Engagement. Therefore, Learning Facilities are important inputs based on students' and lecturers' perspectives.

The study finds that correlations between Learning Facilities with ICAG-Teaching Content are significant and considered moderate in magnitude. Further analysis using simple regression also shows that Learning Facilities significantly impact ICAG-Teaching Content. SEM and Path Analysis also reveal that Learning Facilities significantly affect ICAG-Teaching Content. In other words, lecturers take into account of the availability of learning facilities in including accounting competencies in their teaching and learning process. This is plausible since teaching accounting competencies should use mental reflection, physical action, and use of skills (Azemikhah 2006), integrate teaching contents with real world experience by using simulation case studies, and group work (Jayaprakash 2005), as well as employ multiple teaching methods (Bonner 1999).

The conceptual model (Figure 3.2) shows that Lecturer Job Satisfaction and Learning Facilities are exogenous constructs. Therefore, the study draws a covariance line between these constructs. Analyses show that correlations between Learning Facilities and Lecturer Job Satisfaction are positive and considered moderate. However, Grewal et al. (2004) contended that the correlation is substantial.

In view of the above findings, Lecturer Job Satisfaction developed by Conklin and Desselle (2007) comprises six dimensions i.e. Resource for Scholarship, Institutional Support and Reward, Requirements for Promotion and Tenure, Availability of a Graduate Program, Collegiality, and Teaching Environment is fully applicable to the Indonesian context. On the other hand, learning facility items are designed to collect data on the availability of facilities for teaching and research activities. Teaching environment and learning facilities are closely correlated. Therefore, the availability of Learning Facilities may significantly affect Lecturer Job Satisfaction.

Further analysis using SEM and Path Analysis show that Learning Facilities significantly impacts Lecturer Job Satisfaction, while Lecturer Job Satisfaction is not exogenous, but endogenous that influenced by Learning Facilities. On the other hand, Learning Facilities remains an exogenous construct. Therefore, the study modifies the conceptual model by treating Lecturer Job Satisfaction as an endogenous.

6.2.2 Educational inputs and educational outputs

The previous section describes relationships between inputs and Student Engagement as a proxy for process or environment. This section presents relationships between inputs and ICAG and GPA as proxies for outputs. As previously mentioned, this study employs System Theory and Input-Environment-Outcome (I-E-O) model as underpinning theories. I-E-O model contends that relationship between environment and student outcomes cannot be understood without taking into account student inputs (Astin 1993a).

Student Characteristics

Correlations between Student Motivation measured by Expectancy Theory and accounting competency (ICAG) are significantly related. Regression analysis also provides the same result that Expectancy Theory impacts ICAG. Likewise, correlations between Student Motivation and GPA are also positively associated. Regression analysis provides the same result, Student Motivation affects GPA. The above findings are in line with previous studies (Geiger & Cooper 1996; Harrel, Caldwell & Doty 1985; Yining & Hoshower 1998).

SEM and Path Analysis provide different results, that Student Motivation does not affect ICAG. However, Student Motivation significantly impact students' GPAs. Insignificant influence of Expectancy Theory on ICAG may be caused by slight multicolliniearity. Even though, correlations between Student Motivation and other exogenous constructs are considered small or less than 0.4 (Grewal, Cote & Baumgartner 2004), but these correlation may affect the influence of Student Motivation on ICAG. This reason is quite plausible, since correlation as well regression analyses provide results that Expectancy Theory has a positive impact on ICAG.

Previous Achievements, measured by grades average from previous schoolings, correlate significantly with ICAG. Regression analysis also provides results that Previous Achievements influence ICAG. Correlation and regression analyses provide results that Previous Achievements have a significant relationship with GPA of current studies. Likewise, SEM and Path Analysis found that Previous Achievements significantly impact both ICAG and GPA. The above results support previous studies (Astin 1971, 1993a; Credé & Kuncel 2008; Dickson & Fleet 2000; Duff 2004). Grades average of previous studies is a predictor of Student Engagement, ICAG, and GPA. On the other hand, grades of Nationally-tested Subject Matters (NEM) significantly correlate with GPA, but insignificantly correlate with ICAG.

Students' exposure to accounting in previous school education does not correlate with GPA. This finding is different from previous study that students who studied accounting previously tend to have higher GPAs in the first year (Rohde & Kavanagh 1996). Conversely, students who graduated from a Natural Sciences major group, but do not have any accounting exposure during their high school attendance, tend to have higher GPA than students from Social Studies group, who have accounting exposure in high school. For students who graduated from Natural Sciences major, the first year could be adaptation period for them to study accounting making students graduating from Social Studies group (who have accounting exposures in high schools) have better GPA. In the following years, students graduated from Sciences major tend to be more superior academically. Stronger mathematical background may cause students from Natural Sciences to have higher overall GPAs.

Age as a demographic characteristic does not correlate with ICAG. On the other hand, this variable correlates negatively with GPA, even though the correlation is small in magnitude. This result is in line with previous findings (Astin 1971; Duff 2004) that gender has a small association with student achievements. More specifically, Strayhorn (2008) also found that Age correlates negatively with learning outcomes.

Gender correlates negatively with GPA, but insignificantly correlates with ICAG. The study found that female students tend to have higher GPAs than their counterparts. This finding supports previous results that female students are more likely to have higher GPAs than male students (AUSSE 2010a; Strayhorn 2008). Self-perceived competencies to measure ICAG may cause an insignificant correlation between Gender and ICAG. Self-assessment on ICAG could be affected by negative or apathetic attitudes (Kavanagh & Drennan 2008). Notwithstanding, this self-assessment of competencies is still considered effective (Hansson 2001).

Teacher Characteristics

The study correlates some lecturers' with students' variables by using means of each variable. Analysing data using non-parametric statistics is considered having flaws (King cited in Umbach & Wawrzynski 2005), since data are masked. Lecturer Job

Satisfaction, Lecturer Academic Characteristics, and Student-Faculty Engagement do not correlate significantly with ICAG, Student Engagement, and GPA. Despite analysis flaw, these findings support previous studies conducted by Hoffmann and Oreopoulos (2009a) that commonly observed lecturer traits, such as rank, status, and salary, virtually have no effect on student achievements. Analysis technique and number of group (university) may cause insignificant correlation. To correlate nesting data (lecturers' and students' data) the study should use Hierarchical Linear Modelling (HLM) with at least 30 groups (Porter 2005). Nevertheless, ICAG-Teaching Content correlates significantly with ICAG and Student Engagement.

Comfort of Class Size

The study uses student perception about Comfort of Class Size, instead of the number of students in every class. The correlation between Comfort of Class Size and ICAG is inconsistent. Despite its magnitude, the correlation between Comfort of Class Size with ICAG is positive and significant. On the other hand, SEM and Path Analysis provide result that Comfort of Class Size does not affect ICAG. Moreover, the correlation between Comfort of Class Size and GPA is insignificant. Nonetheless, SEM and Path Analysis provide a result that Comfort of Class Size negatively impacts GPA.

Correlation between Comfort of Class Size and ICAG are in line with previous research results that class size correlates with student achievements (Johnson 2010; Kokkelenberg, Dillon & Christy 2008; Konstantopoulos 2007; Murdoch & Guy 2002). Moreover, the following possibilities may cause inconsistent relationships between Comfort of Class Size and GPA. The first possibility is model error, indicated by the shrinking impact of Comfort of Class Size on Student Engagement and at the same time negative influence of Comfort of Class Size on GPA is strengthening, every time the study adds one more exogenous variable. The second possible reason is that class size in higher education has a negative logarithmic relationship with student achievements (Dillon & Kokkelenberg 2002). Lastly, universities included in this study have different grading system making GPA earned by students not nationally-standardised.

Learning Facilities

Based on student perceptions, Learning Facilities correlate significantly with ICAG and GPA. Regression analysis also finds that Learning Facilities have a significant impact on both ICAG and GPA. Nonetheless, the influence of Learning Facilities on GPA is smaller than the impact of Learning Facilities on ICAG. Moreover, SEM and Path Analyses also provide similar results. These findings support previous studies that learning facilities improve the productivity of teaching and learning (Boyce cited in Herring III & Bryans 2001). Learning facilities also improve students' achievements (Chen, Lambert & Guidry 2010; Mohamed & Lashine 2003), critical thinking (Springer & Borthick 2004), creativity to find managerial solutions (Wynder 2004), and improves students' attitudes as well as perceptions (Jack, Smith & Clay. Jr 1986). The finding is also in line with a previous study that good learning facilities may not guarantee good outputs from an education system, but poor facilities certainly affect the quality of outputs from an education system (Mohamed & Lashine 2003). In summary, Learning Facilities are important inputs to improve the quality of outputs in terms of ICAG and GPA.

The impacts of Learning Facilities on Student Engagement and Student-Faculty Engagement, as proxies for educational process have been discussed in this section. The following section discusses about relationships between Student Engagement and ICAG, as well as GPA.

6.2.3 Educational Processes and Educational Outputs

As previously mentioned, the study uses Student Engagement as a proxy for educational processes in universities. In relation to underpinning theories, System Theory uses the term “transforming process” (Slack, Chambers & Johnston 2004) while Input-Environment-Outcome (I-E-O) model uses “environments” (Astin 1993a). The following sections discuss relationships between Student Engagement and educational outputs in terms of ICAG and GPA. Briefly, Student Engagement has a positive impact on educational outputs in terms of ICAG and GPA.

These findings support some theories i.e. students learn by becoming involved (Astin 1987, 1999), academic and social integration influence outcomes (Pascarella & Terenzini 1991), students’ interactions with agents of socialisation impact student learning and interaction (Tinto 1993), and seven principles for good practice in undergraduate education (Chickering & Gamson 1987, 1999). In addition, findings are also in line with a previous study that Student Engagement is a mediating construct that influences student outcomes (Alvermann 2001) and Student Engagement can be a good proxy for overall education quality (UVic 2006).

As previously discussed in Chapter 2, the study employs Student Engagement comprising of five dimensions i.e. Academic Challenge, Active Learning, Student-Staff Interaction, Enriching Educational Experience, Supportive Learning

Environment (AUSSE 2010b; Kuh 2006). Likewise, the study also uses ICAG with three groups of competencies i.e. Functional, Personal, and Broad-business Perspective Competencies (Mula 2007; Wolcot, S. K. 2006). Academic Challenge correlates significantly with Functional Competency, Personal Competency, and Broad-business Perspective Competency. Likewise, Regression analysis also provides the same results that Academic Challenge significantly impacts all ICAG dimensions. In addition, correlation and regression analyses provide results that Academic Challenge positively influences GPA. These findings show that academic challenge relates to student learning (Kuh 2009), since students will be motivated if they get appropriate academic challenges (Chickering & Gamson 1987, 1999). In addition, Academic Challenge is an important dimension, since it impacts ICAG as well as GPA.

Active Learning significantly correlates with all ICAG dimensions. On the other hand, regression analyses provide different results that Active Learning impacts only Personal Competency. In addition, correlation and regression analysis concludes that Active Learning positively influences GPA. These findings are in line with the proposition that students should learn actively by talking, writing, relating to past experience, and applying to their daily lives what they have already learnt (Chickering & Gamson 1987, 1999).

Insignificant influence of Active Learning on Functional Competency and Broad-business Perspective Competency may be caused by some factors. *First*, some measures of Active Learning also relate to cooperative learning. Significant impacts of Active Learning on Personal Competency are very much in line with previous finding that cooperative learning influence accounting students’ interpersonal and communication skills (Ballantine & McCourt Larres 2009). In other words, Active Learning is suitable for enhancing Personal Competency, but Active Learning may have limited use for building Functional Competency and Broad-business Perspective Competency. *Second*, cooperative learning may not provide automatic results unless students know how to help each other (Chan 2010). *Lastly*, regression models have Variance Inflation Factor (VIF) less than 2; this slight multicolliniearity may lessen the influence of Active Learning on Functional Competency and Broad-business Perspective Competency, since Active Learning correlates significantly with Academic Challenge and Student-Staff Interaction.

Correlation analysis shows that all Students-Staff Interaction measures correlate with all ICAG dimensions. Nevertheless, regression analysis provides results that Student-Staff Interaction only significantly impacts Broad-business Perspective Competency. The influence of Student-Staff Interaction on GPA is also insignificant. It is found that Student-Staff Interaction is an important dimension for building Broad-business Perspective Competency. This finding support previous research that relationships between students and lecturers relate to psychological outcomes (Komarraju, Musulkin & Bhattacharya 2010). Interaction with agents of socialisation such as faculty, impacts student learning and cognitive development (Tinto 1993), since teacher behaviour affects students' scholastic competencies (Woodside, Wong & Wiest 1999). Insignificant effect of Student-Staff Interaction on GPA is different from the result of a previous study that the interaction between students and lecturers is more likely to affect students' academic achievements (Ullah & Wilson 2007). Nevertheless, students may not know the benefits of interacting with lecturers (Cotten & Wilson 2006).

Insignificant influence of Student-Staff Interaction on Functional Competency and Personal Competency may be caused by a number of reasons. *First*, correlations between Student-Staff Interaction and Functional Competency as well as Personal Competency are small in magnitude. The effects of Student-Staff Interaction on Personal Competency, Broad-business Perspective Competency, and GPA weaken due to slight multicollinearity, since the correlation between Student-Staff Interaction and Active Learning is considered moderate despite very low Variance Inflation Factor (VIF) coefficient. *Second*, insignificant effects of Student-Staff Interaction on Personal Competency, Broad-business Perspective Competency, and GPA may be caused by the condition that students are not aware of benefits to engage with lecturers (Astin 1987, 1999; Cotten & Wilson 2006). A previous study also reveals that interactions between students and teacher influence student achievements (Ullah & Wilson 2007). Therefore, lecturers should take more initiatives to involve students in student engagement activities (Rendon 2002). Moreover, lecturers', counsellors', and personnel workers' attention should be given to passive, reticent, or unprepared students (Astin 1987). *Third*, student to lecturer ratio in sampled universities is still considered high, one lecturer to 40 students (DIKTI 2009), making productive interaction between students and lecturers difficult. At the same time, lecturers also should conduct research, perform community service, and fulfill non-academic activities (DIKTI 2010). Therefore, lecturers may have limited time to interact intensively with all students.

Despite their small magnitude, correlations between Enriching Education Experience with all dimensions of ICAG are positively significant. Nevertheless, regression analyses show that Enriching Education Experience does not significantly affect Functional Competency, Personal Competency, and Broad-business Perspective Competency. Small correlations may cause an insignificant impact of Enriching Education Experience on ICAG dimensions. Moreover, Variance Inflation Factor (VIF) and correlations between Enriching Education Experience with other Student Engagement dimensions are considered small. Correlation analysis also shows that Enriching Education Experience does not correlate with GPA. On the other hand, multiple regression analysis provides a different picture; Enriching Education Experience negatively impacts GPA. The more students engage in Enriching Education Experience activities, the lower their GPA. These findings are somewhat in line with previous studies about insignificant impacts of extracurricular activities on student achievement (Baker 2008; Hunt 2005).

The above findings (small correlations of Enriching Education Experience with ICAG dimensions and negative impact of this dimension on GPA) do not mean that Enriching Education Experience is not an important dimension in university education. Enriching Education Experience may be important to improve other university outcomes such as employment (Gordon, Ludlum & Hoey 2008), critical thinking (Carini, Kuh & Klein 2006), personal/social learning, communication and social skills (Hardern 1995; Strayhorn 2008). Moreover, students participating in a certain extracurricular activities are more likely to have both negative and positive learning outcomes (Astin 1987, 1999).

Supportive Learning Environment correlates significantly with all ICAG dimensions (Functional Competency, Personal Competency, and Broad-business Perspective Competency). Likewise, regression analyses provide the same results that Supportive Learning Environment significantly influences all dimensions of

ICAG. These findings are in line with a proposition that a supportive learning environment leads to students' satisfaction, commitment, and success (Kuh 2009). In other words, this dimension is considered important, since it can affect all ICAG dimensions.

Even though, the correlation between Supportive Learning Environment and GPA is significant, its magnitude is considerably minimal. This finding supports a previous study that the relationship between Supportive Learning Environment and GPA is significant (Carini, Kuh & Klein 2006). Nonetheless, regression analysis does not provide enough evidence that Supportive Learning Environment significantly impact GPA. This finding is different from a previous study that Supportive Learning Environment influences average overall grades in Australian universities (AUSSE 2010a). The insignificant result may not be caused by the regression model, since Variance Inflation Factor (VIF), Normal P-P Plot, and Homoscedasticity show a good fit. Different grading systems employed by sampled universities may cause the insignificant influence of Supportive Learning Environment on GPA.

6.2.4 System Theory and I-E-O Model in Accounting Education

The study employs System Theory (Bertalanffy 1968) applied to education sector (Cromwell & Scileppi 1995; Deming 1995; Johnson 1984; Mizikaci 2006) consisting of three elements i.e. input, process, and output (Becket & Brookes 2006; Bushnell 1990; Heylighen 1998; Nearon 2002). Moreover, the study also employs I-E-O model posed by Astin (1993a) consisting three elements i.e. Input, Environment, and Output (I-E-O).

Previous sections discuss relationships among inputs, processes/ environments, and outputs. The discussions are distributed over three parts i.e. relationships between inputs and processes/environments, relationships between inputs and outputs, and relationships between processes/environment and outputs. In relation to this, the study uses Input-Process-Output (I-P-O) terms.

This section discusses relationships among inputs, processes/environment, and output at the same time based on Input-Process-Output (I-P-O) (Slack, Chambers & Johnston 2004) and Input-Environment-Outcome (I-E-O) (Astin 1993a) frameworks. Regression analyses show that educational inputs i.e. Student Motivation, Previous Achievements, Age, Comfort of Class Size, and Learning Facilities influence Student Engagement. Student Engagement, in turn, also significantly affects ICAG. Likewise, these inputs also significantly influence output (ICAG). In turn, Student Engagement also significantly affects ICAG. In addition, mediation tests using Sobel and Aroian tests (Preacher & Hayes 2004; Preacher & Leonardelli 2010) show that Student Engagement is a mediating construct between the above inputs and ICAG. These findings support a previous study conducted by Kelly (1996) on the use of I-E-O model. The study provides evidences that System Theory (Bertalanffy 1968; Slack, Chambers & Johnston 2004) and the I-E-O model (Astin 1993a) are applicable to building ICAG in the Indonesian university setting.

The study also analyses relationships among inputs, Student Engagement, and output (GPA). Regression analyses show that Student Motivation, Previous Achievements, Age, and Learning Facilities significantly impact Student Engagement. The above inputs also affect educational output in term of GPA. Student Engagement, in turn, influences GPA. Nevertheless, the impact of Age on

Student Engagement and GPA are negative. In this case, Sobel and Aroian tests are inappropriate for testing mediation effects (Preacher & Hayes 2004; Preacher & Leonardelli 2010). These findings show that relationships between aforementioned inputs (Student Motivation, Previous Achievements, Age, and Learning Facilities) and Student Engagement and GPA are in line with System Theory (Bertalanffy 1968; Slack, Chambers & Johnston 2004) and I-E-O model (Astin 1993a). The study does not have enough evidence to support relationships between Comfort of Class Size and Student Engagement, as well as GPA being in line with System Theory and I-E-O model. Nevertheless, the study concludes that, System Theory and I-E-O model are applicable for improving student achievements measured by GPA.

Previous discussions are based on regression analyses to identify the impacts of certain inputs on processes and outputs. To find a fit model that describe influences of some inputs on Student Engagement and outputs (ICAG and GPA) simultaneously, the study employs SEM using single composite indicator and Path Analysis. SEM shows that three inputs Student Motivation, Learning Facilities, and Previous Achievements impact Student Engagement. In turn, Student Engagement also significantly impacts ICAG. Nevertheless, only Learning Facilities directly influences ICAG. Other inputs i.e. Student Motivation and Previous Achievement do not directly affect ICAG. In comparison, Path Analysis provides almost similar results. In this model Comfort of Class Size significantly influences Student Engagement. The above results are partially in line with I-E-O model (Astin 1993a), since the model shows only Learning Facilities have a direct impact on ICAG, while other inputs significantly influences ICAG. Previous studies using the I-E-O framework (Norwani 2005; Thurmond, Wambach & Connors 2002) found that three relationships i.e. input and environment, input and outputs, and environment and output were not all significantly established. This study shows that System Theory (Input-Process-Output) framework (Bertalanffy 1968; Slack, Chambers & Johnston 2004) is more conformable to building accounting competency. This finding supports previous studies on the use of the ST framework (Mizikaci 2006; Nearon 2002; Owlia & Aspinwall 1996).

SEM using single composite indicator analysis is also used to identify relationships among inputs, processes, and outputs (GPA). The analysis shows that Student Motivation, Learning Facilities, and Previous Achievements influence Student Engagement. At the same time, Student Motivation and Previous Achievements also impact GPA. Lastly, Student Engagement significantly affects GPA. Comfort of Class Size does not affect Student Engagement, but it negatively influences GPA. In comparison, Path Analysis shows that Student Motivation, Comfort of Class Size, Learning Facilities, and Previous Achievements impact Student Engagement. At the same time, Student Motivation, Comfort of Class Size, and Previous Achievements also influence GPA. Student Engagement significantly influences GPA. In addition, Learning Facilities do not impact GPA. Despite insignificant correlation between Comfort of Class Size and GPA, Path Analysis shows that the impact of Comfort of Class Size on GPA is negative and significant. Based on the above results, System Theory (Bertalanffy 1968; Mizikaci 2006; Nearon 2002) is considered to be an applicable framework for improving a student's GPA. In comparison, I-E-O model (Astin 1993a) is partially applicable, since only Student Motivation and Previous Achievements have direct effects on GPA.

In summary, based on student perceptions, System Theory is more useful to improve students' accounting competency (ICAG) and students' achievements (GPA), than the I-E-O model. The reason is that I-E-O requires significant relationships between input and output. When this study uses correlation and regression to identify relationships among a certain input, and output, I-E-O model is suitable. On the other hand, when this study uses SEM or Path Analysis to identify relationships among many inputs, processes/environment, and outputs simultaneously, the power of I-E-O model wanes and System Theory becomes more appropriate.

The above discussion of System Theory and I-E-O model in accounting education focuses on student perspectives. The application of System Theory and I-E-O model based on lecturer perspectives are quite different. Based on regression analyses, Learning Facilities and Lecturer Job Satisfaction are important inputs, since they have significant impact on Student-Faculty Engagement. In addition, the study found the role of ICAG-Teaching Content in the model based on lecturer perspective. SEM and Path analyses show that Learning Facilities impact Lecturer Job Satisfaction and ICAG-Teaching Content. At the same time, Lecturer Job Satisfaction and ICAG-Teaching Content influence Student-Faculty Engagement. These findings are in line with a previous study that Lecturer Job Satisfaction is a mediator (Conklin & Desselle 2007).

ICAG-Teaching Content is considered a process or environment element, rather than an input, since the inclusion of accounting competencies is in the process of teaching and learning by using mental reflection, physical action, and skills (Azemikhah 2006), cooperative learning, contextual learning, and e-portfolio learning (Wu 2008), interactive case studies, simulations and games, group work (Jayaprakash 2005), and multiple teaching methods (Bonner 1999). In other words, competency contents are embedded in courses (Hancock et al. 2009b). The study finds that ICAG-Teaching Content is impacted by both Learning Facilities and Lecturer Job Satisfaction. ICAG-Teaching Content, in turn, influences Student-Faculty Engagement. In other words, ICAG-Teaching Content is considered a mediator. Mediating-effect tests also provide results that ICAG-Teaching Content mediates Learning Facilities and Lecturer Job Satisfaction with Student-Faculty Engagement.

6.2.5 AICPA Core Competencies Based on Alumni's Perceptions

As has been noted, the purpose of using a qualitative approach by employing Focus Group Discussion (FGD) is mainly to triangulate the applicability of AICPA core competencies in work places based on alumni perceptions. This section discusses three dimensions of AICPA core competencies i.e. Functional Competency, Personal Competency, and Broad-business Perspective Competency.

Functional Competencies consisting of six indicators i.e. Decision Modelling, Risk Analysis, Measurement, Reporting, Research, and Leveraging Technology (Mula 2007; Wolcot, S. K. 2006), are closely related to working requirements at alumni's companies. These qualitative and quantitative findings are closely related. Based on lecturers' and students' perceptions, accounting programs have already equipped students with these competencies. Nevertheless, alumni who work in small and medium sized or new companies need an additional competency, accounting system. Previous study also shows that alumni who work in small companies need more technical competencies (Hancock et al. 2009a).

Competencies required by alumni to work in an Indonesian company setting are in line with Australian employers' expectation on graduate competencies (Kavanagh & Drennan 2008), seven competencies that graduates should posses (Mohamed & Lashine 2003), business employability skills (BIHECC 2007), technical and non-technical competencies (Hancock et al. 2009a), and competencies of management professionals in Indonesia (Irianto 2010). However, alumni perceived that most functional competencies are developed significantly on the job. This phenomenon was also found by previous studies that university accounting programmes are not developing 'essential' non-technical and professional skills and attributes (Irianto 2010; Kavanagh & Drennan 2008).

Bringing accounting education closer to a real-world environment such as more use of an internship course, balancing theories and practices, and implementing better field trip management are suggested by alumni to improve graduates' functional competency. Basically these findings support previous studies that accounting education should integrate content learnt with real-world experience (Jayaprakash 2005) and the teaching-learning process should employ mental reflection, physical action, and skills (Azemikhah 2006).

Alumni consider personal competencies are important, indicated by all personal competency indicators being rated as applicable in alumni's work places. This qualitative conclusion is supported by quantitative data based on lecturers' and students' perceptions. Both students and lecturers report that accounting programs have already equipped accounting students with necessary personal competencies.

These findings are in line with personal competencies identified by previous studies (Hardern 1995; Kavanagh & Drennan 2008; Mohamed & Lashine 2003).

Universities could do more to cultivate student personal competencies by embedding personal competency contents in relevant subjects, providing exclusive personal subjects, and providing extracurricular activities for students. Even though, extracurricular activities do not affect students' academic performances (Baker 2008; Hunt 2005), extracurricular activity is considered feasible, since activities would not infringe on formal curricula. Despite difficulties to design attractive and productive policies and programs (Friedlander & MacDougall 1992), a university should provide extracurricular activities for developing students' personal competencies. This strategy is plausible, since every extracurricular activity would affects students' personalities (Astin 1987, 1999). Previous studies on graduates' competencies arrived at a similar conclusion that communication competency is critical in work places (BIHECC 2007; Kavanagh & Drennan 2008; Mohamed & Lashine 2003; Mula 2007; Wolcot, S. K. 2006).

Alumni consider Broad-business Perspective Competency, consisting of seven competency areas (Mula 2007; Wolcot, S. K. 2006) as important in their work places. Despite the condition that alumni need more business perspective competencies from universities, quantitative data based on students' and lecturers' perceptions show that accounting students have been equipped with these competencies.

Critical thinking, knowledge of global issues, and computer skills suggested by Mohamed and Lashine (2003) are similar to some indicators of Broad-business Perspective Competency. Moreover, other similar indicators of Broad-business

Perspective Competency are also identified by previous studies. Kavanagh and Drennan (2008) suggest an understanding of the interdisciplinary nature of business competency, while BIHECC (2007) suggest initiative and enterprise skills as well as technology skills.

Alumni suggestion to provide more time for internships to ensure student learn more about real business is in line with the proposition that students should learn content that is closely related to real world experiences (Jayaprakash 2005) and contextual learning (Wu 2008). Likewise, teaching-learning processes should provide more case studies, laboratory work, and more lectures from professionals is supported by previous finding that lecturers should use more case studies and simulation (Weil, Oyelere & Rainsbury 2004), laboratory work (Jack, Smith & Clay. Jr 1986; Springer & Borthick 2004; Wynder 2004). Lastly, universities should invite lectures from professionals or practitioners. This strategy is one element of Contextual Teaching and Learning (CTL) suggested by Wu (2008).

In summary, AICPA core competencies are in line with competencies required by alumni to perform their work. On the other hand, lecturers and students report that accounting programs have already equipped students with AICPA core competencies. Nonetheless, alumni contend that competencies they gained from university education are limited. In other words, there are gaps between competencies students gained at a university and competencies they need to perform work in their companies. These gaps may be mundane, since previous studies also found the same phenomenon (Irianto 2010; Kavanagh & Drennan 2008), since developing all competencies in a university is unrealistic (Cranmer 2006). Most importantly, alumni are able to adjust to new working environments meaning that alumni have enough core competencies for their jobs.

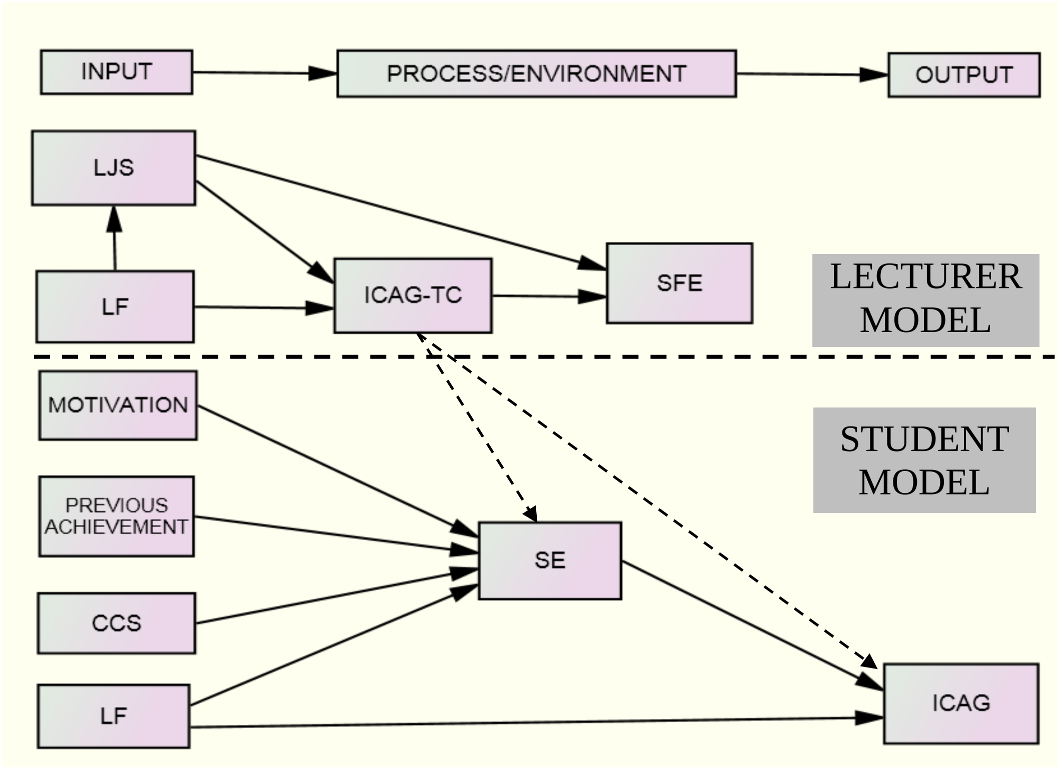
6.2.6 Empirical Models

Results and discussions provide evidences to revise the conceptual model for building students' accounting competencies. Since, the study uses some analyses (Correlation, Regression, Non-parametric, SEM, and Path Analyses) SEM and Path analysis are employed to revise the model, as these analyses include all data (inputs, processes, and outputs) simultaneously. The previous hypotheses testing methods analysed using Pearson's and Kendall's Tau correlations. These revised models are based on Figure 5.9, 5.10, 5.15, and 5.16 for developing ICAG and Figure 5.11, 5.12, 5.15, and 5.16 for developing GPA. Two models are developed, since the study employs two types of output i.e. ICAG and GPA. In addition the models are combinations of student and lecturer models. Based on Input, Processes/ Environment, Output (I-E-O) framework, there are five inputs i.e. Student Motivation, Previous Achievements, Comfort of Class Size, Learning Facilities, and Lecturer Job Satisfaction that influence processes/environment.

Based on student perspectives, Student Engagement is a proxy for processes/environments; therefore Student Engagement influences ICAG. In comparison, based on lecturers' perspectives, ICAG-Teaching Content and Student-Faculty Engagement are proxies for processes/environments. Non-parametric analysis provides results that ICAG-Teaching Content (based on lecturer perception) significantly correlates with both Student Engagement and ICAG (based on student perception) (Figure 6.1)

Compared to the conceptual model presented in Chapter 3 (Research Design), the empirical model for developing ICAG is slightly difference. The main differences are: (1) the exclusion of Lecturer Academic Characteristics; (2) Lecturer Demographic Characteristics; (3) Student Demographic Characteristics; and (4) the conversion of Lecturer Job Satisfaction from an exogenous construct to an endogenous construct.

Based on lecturers' perceptions, Lecturer Academic Characteristics and Lecturer Demographic Characteristics do not influence ICAG-Teaching Content, Student-Faculty Engagement, and ICAG. Therefore, these factors are excluded from the revised model. In addition, SEM and Path Analysis provide evidence that Lecturer Job Satisfaction is not an exogenous construct, but an endogenous construct that significantly is affected by Learning Facilities. At the same time, Lecturer Job Satisfaction impacts on both ICAG-Teaching Content and Student-Faculty Engagement. Moreover, Student Demographic Characteristics (as inputs) also do not affect Student Engagement and ICAG. Therefore, these factors are excluded from the model. Non-parametric analysis provides results that ICAG-Teaching Content (based on lecturer perception) significantly correlates with both Student Engagement and ICAG (based on student perception) (Figure 6.1)



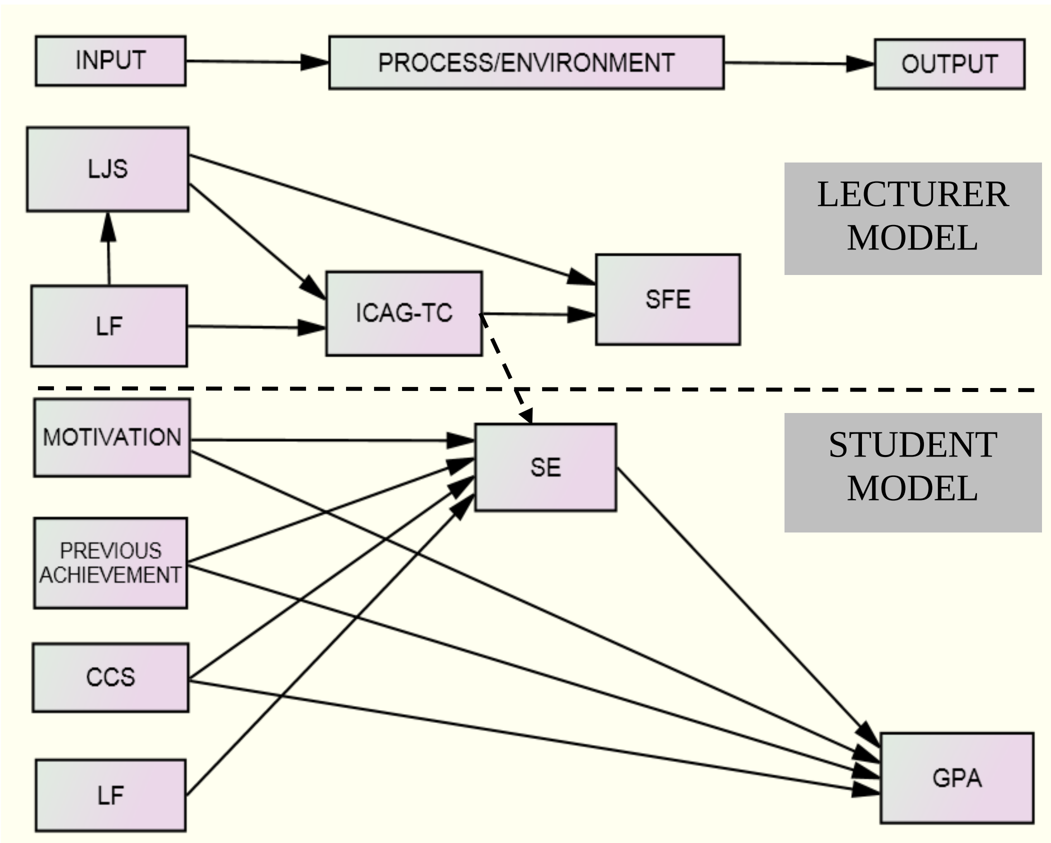
- - - - ► : Significant correlation between aggregate data of Lecturers and students using non parametric statistics

LJS: Lecturer Job Satisfaction **LF:** Learning Facilities **ICAG-TC:** ICAG-Teaching Content
SE: Student Engagement **CCS:** Comfort of Class Size **SFE:** Student-Faculty Engagement

Figure 6.1: Revised Model with ICAG Output

By employing GPA as an education output, the model changes significantly, since there is only a significant relationship between lecturers' and students' models i.e. correlation between ICAG-Teaching Content and Student Engagement. Based on the student model, there are four inputs Student Motivation, Previous Achievements, Comfort of Class Size, and Learning Facilities that impact Student Engagement. At the same time, Student Motivation, Previous Achievements, and Comfort of Class Size influence GPA directly. Lastly, Student Engagement also significantly influences GPA (Figure 6.2). Only one significant relationship between lecturer and student models (correlation between ICAG-Teaching Content and Student Engagement) may be caused by use of inappropriate analysis techniques.

As previously discussed, Lecturer Academic Characteristics, Lecturer Demographic Characteristics, and Student Demographic Characteristics do not impact on educational processes. Thus, the study excludes these factors from the models.



- - - - -►: Significant correlation between aggregate data of Lecturers and students using non parametric statistics

LJS: Lecturer Job Satisfaction **LF:** Learning Facilities **ICAG-TC:** ICAG-Teaching Content
SE: Student Engagement **CCS:** Comfort of Class Size **SFE:** Student-Faculty Engagement

Figure 6.2: Revised Model with GPA Output

6.3 Conclusions

The objective of this study is to build models comprising of input, process, and output constructs for developing students' accounting competencies and GPA in the context of Indonesian universities. To achieve the above research objective, the study proposes six main research questions as presented in Chapter 1 (Introduction). The research questions are as follow; (1) What educational inputs have significant relationships with educational processes? (2) What educational inputs have significant relationships with educational outputs in terms of ICAG and Student Achievements? (3) Is there any significant relationships between educational processes and educational outputs in terms of ICAG and Student Achievements? (4) What is the model for improving ICAG using input-process-output approach in the Indonesian University context? (5) What is the model for improving Student Achievements (GPA) using input-process-output approach in the Indonesian University context? And (6) Based on alumni perceptions, to what extent are AICPA core competencies applicable in the Indonesian business context? Responses to these questions based on empirical findings are as follows;

Research Question 1

(1) Based on students' perceptions, Student Motivation measured by Expectancy Theory, Previous Achievements in term of average grades earned from previous schoolings, Comfort of Class Size, and Learning Facilities as educational inputs, positively correlate with Student Engagement as a proxy for educational processes.

(2) Student Demographic Characteristics in term of student Age negatively correlates with Student Engagement. Older students are more likely to have lower Student Engagement. The study finds that student Gender does not correlate with Student Engagement.

(3) Lecturer Job Satisfaction as an educational input significantly correlates with how much lecturers include AICPA core competencies in their teaching and learning processes (ICAG-Teaching Content) and Student-Faculty Engagement as proxies for educational process based on lecturers' perceptions. Learning Facilities as educational inputs significantly correlate with ICAG-Teaching Content and Student-Faculty Engagement. At the same time Learning Facilities also correlate with Lecturer Job Satisfaction.

Research Question 2

(4) Based on students' perceptions, Student Motivation, Student Previous Achievements, Comfort of Class Size, and Learning Facilities as educational inputs significantly correlate with ICAG as an educational output. Student Age and student Gender do not correlate with ICAG.

(5) Student Motivation, Student Previous Achievements, and Learning Facilities as educational inputs correlate with Student Achievements in term of GPA. Comfort of Class Size does not correlate with GPA. Student Age and Gender negatively correlates with GPA. Older students are more likely to have lower GPA than younger students. Female students tend to have higher GPA than their counterparts.

(6) ICAG-Teaching Content, measuring how much lecturers include AICPA core competencies in their teaching and learning, correlates significantly with ICAG gained by students as well as Student Engagement.

Research Question 3

(7) Overall Student Engagement as a proxy for educational processes correlates significantly with overall ICAG. All dimensions of Student Engagement (Academic Challenge, Active Learning, Student-Staff Interaction, Enriching Education Experience, and Supportive Learning Environment) correlate significantly with all ICAG dimensions (Functional, Personal, and Broad-business Perspective Competency). Student Engagement is found to be an important proxy for measuring educational processes in Indonesian university context.

(8) Overall Student Engagement significantly correlates with GPA. All Student Engagement dimensions except Enriching Education Experience correlate with GPA.

Research Question 4

(9) Using separate simple and multiple regression techniques for each input, results show that the I-E-O model is still capable of predicting educational output in terms of ICAG. Student Motivation, Previous Achievements, Comfort of Class Size, and Learning Facilities as educational inputs individually influence Student Engagement and ICAG. At the same time Student Engagement significantly influences ICAG. The study also concludes that Student Engagement is a powerful mediator between the above educational inputs and ICAG.

(10) SEM single composite indicator and Path Analysis are employed to build a model for improving ICAG in Indonesian universities. Based on the Input-Process-Output approach developed by System Theory the study concludes that Student Motivation, Student Previous Achievements, Comfort of Class Size, and Learning Facilities are important inputs that affect Student Engagement. In turn, Student Engagement significantly affects ICAG.

Research Question 5

(11) When the study uses GPA as an educational output, I-E-O model is also applicable. Student Motivation, Student Previous Achievements, Grades of Nationally-tested Subject Matters (NEM), Age, and Learning Facilities significantly affect Student Engagement and GPA. In turn, Student Engagement also significantly impacts GPA. Student Engagement is a strong mediator between the aforementioned educational inputs and GPA.

(12) By employing the Input-Process-Output approach from System Theory, the study finds that Student Motivation, Student Previous Achievements, and Learning Facilities are important educational inputs that affect Student Engagement. In turn, Student Engagement impacts GPA. Due to the model and or GPA measurement errors Comfort of Class Size negatively influences GPA.

Research Question 6

(13) Despite insufficient competency development in university education, alumni perceive that AICPA core competencies consisting of Functional, Personal, and Broad-business Perspective Competencies are in line with working requirements in an Indonesian business setting.

6.4 Theoretical Implications

The study employs two underpinning theories as research frameworks, System Theory (ST) and I-E-O model. Input-Process-Output from System Theory is more applicable when the study employs simultaneous analysis for validating a model by including many educational inputs at the same time. In comparison, the I-E-O framework works well when simultaneous analysis includes strong inputs. Moreover, the I-E-O model is applicable when the study identifies relationships of a certain input with, environment, and output. In other words, System Theory and I-E-O model could be employed simultaneously to identify relationships among inputs, processes/environment, and outputs.

Using student engagement as a proxy for educational processes in a university, the study supports the application of Involvement Theory, where students learn by being involved in academic and non-academic activities conducted in a university. More specifically, students having more involvement in Academic Challenge, Active Learning, Student-Staff Interaction, Enriching Education Experience, and Supporting Learning Environment are more likely to have higher ICAG and GPA.

Even though Expectancy Theory questionnaires were designed to measure employees' motivation in a hotel company (Chiang & Jang 2008; Chiang et al. 2008), the study finds that Expectancy Theory and questionnaires are applicable for gauging students' motivations at university level. Student Motivation measured by Expectancy Theory is a strong predictor for Student Engagement, ICAG, and GPA.

Herzberg's Motivation Theory (HMT) is applicable to measure Lecturer Job Satisfaction. This construct is a strong predictor of ICAG-Teaching Content and

Student-Faculty Engagement in an Indonesian universities context. Lecturers having higher Lecturer Job Satisfaction are more likely to include more ICAG-Teaching Content and have better Student-Faculty Engagement. In addition, multidimensional scales for measuring work satisfaction among pharmacy faculty members (Conklin & Desselle 2007) are applicable to measuring Lecturer Job Satisfaction among accounting lecturers in the Indonesian university context.

6.5 Practical Implications

Accounting education in Higher Education plays an important role in harmonising Indonesian accounting practices with the west. To improve students' accounting competencies in terms of ICAG based on AICPA core competencies, universities and other policy makers should pay more attention to the educational inputs Student Motivation, Student Previous Achievements, Learning Facilities, Comfort of Class Size, and Lecturer Job Satisfaction. To improve International Competency of Accounting Graduates (ICAG), universities should improve Student Engagement and encourage lecturers to include more AICPA core competencies in their teaching-learning processes (ICAG-Teaching Content).

Lecturers could improve ICAG-Teaching Content by including more real-world practices and experiences into classrooms by employing more case studies, cooperative learning, contextual teaching and learning. In addition, extending internship periods and providing more field trip activities for students, are also plausible strategies to enhance ICAG. Finally, improving Lecturer Job Satisfaction and Learning Facilities lead to the improvement of ICAG-Teaching Content in an Indonesian university context.

To improve student achievement in term of GPA, a university should pay attention to Student Motivation, Comfort of Class Size, Learning Facilities, and Student Previous Achievements. Likewise, improving Student Engagement is a good strategy to improve Student Achievements. Even though, Student-Faculty Engagement does not correlate with Student Engagement due to a statistical analysis flaw, Student-Faculty Engagement is considered an important proxy for educational processes based on lecturers' perceptions, since Student-Faculty Engagement is the mirror of Student Engagement (Kuh, Nelson Laird & Umbach 2004). The role of Lecturer Job Satisfaction is pivotal to improving ICAG as well as GPA; therefore providing more attention to Lecturer Job Satisfaction could lead to positive impacts on ICAG and GPA.

Student Engagement is considered effective for measuring educational processes in a university, since Student Engagement significantly affects ICAG and GPA as educational outputs. Directorate of Higher Education (DIKTI) working with all Indonesian universities should consider implementing a student engagement surveys for benchmarking and for improvement purposes. By implementing the survey, a university could develop a benchmark with other universities in Indonesia as well as with other universities that have implemented the Student Engagement survey in developed countries. Moreover, data gathered from student engagement surveys could be used widely for research and development purposes by higher education institutions.

6.6 Limitations

The study classifies limitations into three categories i.e. study design/theories, data collection, and data analysis. Student Engagement used by the study is a general student engagement survey. As has been noted, the study employs five dimensions of Student Engagement i.e. Academic Challenge, Active Learning, Student-staff Interaction, Enriching Education Experience, and Supportive Learning Environment (Kinzie et al. 2007; Kuh 2006). Work-integrated Learning, an additional dimension used by AUSSE (2010b), was not included in the study. The influence of Student Engagement on educational outputs in terms of ICAG and GPA could be different by the inclusion of Work-integrated Learning.

Even though, the study includes eight state universities based on study program accreditation and location, private universities and other types of higher education institutions having accounting programs, were not included. Research results may provide different conclusions by the inclusion of these universities in the study.

Collecting data on students’ competencies using a questionnaire has drawbacks. Response rate questionnaires may be affected by negative or apathetic attitudes (Kavanagh & Drennan 2008). Nonetheless, self-assessment on competency is considered valid (Hansson 2001). In addition, questionnaires used to assess students’ accounting competencies are also statistically valid and reliable; care must be taken while interpreting competency data collected using self-assessment questionnaires. Likewise, collecting data of class size by using comfort of class size based on students’ perceptions may provide inaccurate results.

Final-year students become participants in this study. In fact they have not graduated yet from universities. Most students still have one or two semesters to graduate. Therefore, data collected from student participants may not provide complete information. Nevertheless, assessing data from alumni who have graduated long time could be misleading, since alumni should response to questions when they were attending university education.

Grades earned by students from previous schoolings i.e. High School (SMA) or Vocational High School (SMK) are not the only measures used by students to gain admission into Indonesian universities. The Ministry of National Education (MONE) provides Indonesian universities with two types of procedures to screen student enrolment i.e. Nationally-administered Admission Test and University-administered Admission Test. Even though, Previous Achievements significantly impact Student Engagement and outputs in terms of ICAG and GPA, grades from admission tests are not included in the study.

The study employs Focus Group Discussion (FGD) by inviting 20 alumni to participate. Even though, participants are working in service, trading, banking, and manufacturing companies, participants may not be representative of all business sectors. In addition, FGD participants also graduate from a particular university. Therefore, their perceptions may not reflect alumni who graduated from other universities.

The study employs non-parametric analysis to identify correlations between lecturers' and students' data, averages of lecturers' and students' data in each university. This analysis has a salient flaw, since students' and lecturers' data are masked. In fact, students' data are nesting data that should be analysed using

Hierarchical Linear Modelling or HLM (Umbach & Wawrzynski 2005). Nevertheless, to analyse this type of data, HLM requires at least 30 groups (universities) (Porter 2005). Interpreting of these results from these correlations must be undertaken cautiously, since correlations between lecturers' and students' data may be inaccurate.

6.7 Directions of Future Research

The study uses five dimensions of student engagement i.e. Academic Challenge, Active Learning, Student-staff Interaction, Enriching Education Experience, and Supportive Learning Environment (Kinzie et al. 2007; Kuh 2006), while Work-integrated Learning (AUSSE 2010b) was not studied. Student Engagement significantly impacts educational outputs in terms of ICAG and GPA in an Indonesian university context. Future studies should pay attention to the impact of Work-integrated Learning on both ICAG and GPA.

Student Engagement as used in the study was interpreted for students in general, meaning that Student Engagement is not specifically designed for accounting students at university level. Some research has been conducted to design a narrower Student Engagement instrument such as student course engagement (Handelsman et al. 2005). Therefore, a narrower scoped Student Engagement questionnaire is required to measure the transforming or learning processes in accounting education. Student Engagement in accounting courses will provide more focus and a more accurate view of Student Engagement for predicting learning outcomes from accounting programs.

The study collects data of ICAG using questionnaires (self-assessed), responses on questionnaires may be affected by negative attitudes toward surveys (Kavanagh & Drennan 2008). Therefore, future research should employ different data collection techniques such as tests, observation and rating scales, as well as interviews. Future research should focus on self-assessment efficacy in measuring students' accounting competencies by comparing competency data collected using some techniques such as test, observation, and interviews.

The study recruited final year students, 7th semester out of 8 semesters. In fact, students have yet to graduate from their universities. Future study should focus on fresh graduates from accounting program as respondents. The recruitment of alumni who have significant working experience as respondents could be misleading, since they graduated some time ago, which could make recall of data when they were attending university such as Student Engagement and Motivation, difficult and inaccurate.

Some academic performance indicators from High School were analysed, such as previous grades, grades of nationally-tested subjects (NEM), type of previous schools, and major, yet only previous grades have significant impacts on Student Engagement, ICAG, and GPA. As previously mentioned, universities use two types of test to admit students, but the study does not include the results of both admission tests as inputs. Future studies should focus on the influence of the admission-test scores on Student Engagement and outputs in term of ICAG and GPA.

Future research should also investigate the applicability of AICPA core competency framework in the work places by recruiting alumni from other universities as well as more sectors in the Indonesian business context. To provide more complete pictures, future research could include employers to evaluate the applicability of this competency framework to their companies.

Identifying relationships between lecturers' and students' data by correlating averages of lecturers' and students' responses has a salient weakness. Future research should employ Hierarchical Linear Modelling (HLM) to identify correlations. In addition, future research should add some more universities (state and private) to ensure the research can apply HLM and provide a clearer picture of relationships between lecturers' characteristics with student engagement as well as students' learning outcomes in an Indonesian universities context. Moreover, including more universities (state and private universities as well as other higher institutions that have accounting programs) could provide more complete pictures on building ICAG.

Based on students' perceptions, the study finds that Comfort of Class Size correlates inconsistently with Student Engagement, ICAG, and GPA. Further studies should be undertaken to identify the roles of Comfort of Class Size in influencing Student Engagement, ICAG, and GPA in an Indonesian university context. A future studies also should pay attention to the behaviour of Comfort of Class Size or real class size in affecting ICAG, GPA, ICAG-Teaching Content and Student-Faculty Engagement.

Even though the study employs eight variables for measuring Lecturer Academic Characteristics, none of them has significant relationships with ICAG-Teaching Content, Student-Faculty Engagement, and students' learning outcomes. Further research is required to identify the impact of Lecturer Academic Characteristics on educational processes and outputs. So far, only variables within construct of Lecturer Academic Characteristics have significant correlations.

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APPENDICES

TABLE OF APPENDICES

Appendix A1: Questionnaire for Student-English Version

QS

1 Please tick (√) the box that describes the degree to which education at this university enhances your competencies in the following areas:

Functional Competencies	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Make business decisions rationally (using quantitative techniques and integrating data, knowledge, and insight)	☐	☐	☐	☐	☐
Assess audit and business risks (identifying, evaluating, controlling, recommending corrective action, and communicating the impact of risks)	☐	☐	☐	☐	☐
Perform measurement quantitatively and qualitatively (selecting appropriate methods, presenting measurement results, and resolving estimation measurement ambiguities)	☐	☐	☐	☐	☐
Prepare reports with objectivity, conciseness, and clarity (by describing work scope, conclusions, and suggestion using appropriate media)	☐	☐	☐	☐	☐
Conduct research (accessing, evaluating, reconciling data/information, and making analogies for unclear problems)	☐	☐	☐	☐	☐
Use information technology to develop and enhance functional competencies (decision making, risk analysis, measurement, reporting, and research)	☐	☐	☐	☐	☐

Personal Competencies	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Act professionally (obeying professional ethics, committing to work quality and efficiency, considering professional criticism, and dressing appropriately)	☐	☐	☐	☐	☐
Think critically and creatively in problem solving and decision making (identifying and evaluating problems, solutions, anticipating contingencies, and following direction)	☐	☐	☐	☐	☐
Work productively and harmoniously with a diversity of team members to achieve goals	☐	☐	☐	☐	☐
Practice effective leadership to achieve goals (leading, motivating, facilitating the team and valuing members' inputs)	☐	☐	☐	☐	☐
Perform effective spoken and written communications for exchanging information (expressing and responding messages appropriately, using appropriate media, and facilitating effective interaction)	☐	☐	☐	☐	☐
Manage a project (planning, implementing, evaluating, and taking corrective action as needed)	☐	☐	☐	☐	☐
Use technology to develop and enhance professional and personal competencies (exchanging information, exploring new technology and skills with due regard to privacy, property rights, and security)	☐	☐	☐	☐	☐

Broad-Business Perspective Competencies	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Understand strategic planning process (analysing SWOT, analysing and preparing strategic information such as market share and competitors, and transferring knowledge into other situation)	☐	☐	☐	☐	☐
Understand business context of Industry/sector (by recognising opportunities and risks of business and communicating organisation's performance)	☐	☐	☐	☐	☐
Understand the perspectives of global business (e.g global market expansion, global customer and supplier analysis, global human and financial resources analysis)	☐	☐	☐	☐	☐
Manage organisation's resources (identifying and allocating resources, analysing the impacts of market forces and access to resources on organisation's performance)	☐	☐	☐	☐	☐
Understand legal, regulations, politic, and environment factors which entity operates and analyse their impacts on accounting standard and profession regulations	☐	☐	☐	☐	☐
Understand how to build good working relationships with employer/customers (by understanding their colleagues protocols, expectation, and motivations)	☐	☐	☐	☐	☐
Use technology to develop and enhance business perspective competencies (e.g. identifying risks and opportunities, mining electronic data, developing strategic information, and e-commerce)	☐	☐	☐	☐	☐

2 In your experience at your university during the current academic year, about how often have you done each of the following?

	Never	Rarely	Sometimes	Often	Very Often
Asked questions or contributed to discussions in class	☐	☐	☐	☐	☐
Sought advice from academic staff about courses and careers	☐	☐	☐	☐	☐
Made a class presentation	☐	☐	☐	☐	☐
Worked hard to master difficult content	☐	☐	☐	☐	☐
Worked on an assignment that required integrating ideas or information from various sources	☐	☐	☐	☐	☐
Included diverse perspectives (e.g. different races, religions, genders, political beliefs, etc.) in class discussions or written assignments	☐	☐	☐	☐	☐
Came to class having completed reading or assignments	☐	☐	☐	☐	☐
Worked with other students on projects **during class**	☐	☐	☐	☐	☐
Worked with other students **outside class** to prepare assignments	☐	☐	☐	☐	☐
Put together ideas or concepts from different subjects when completing assignments or during class discussions	☐	☐	☐	☐	☐
Tutored or taught other university students (paid or voluntary)	☐	☐	☐	☐	☐
Participated in a community-based project as part of your studies	☐	☐	☐	☐	☐
Used email or SMS to communicate with teaching staff	☐	☐	☐	☐	☐
Discussed your grades or assignments with teaching staff	☐	☐	☐	☐	☐
Discussed ideas from your readings or classes with teaching staff outside classes	☐	☐	☐	☐	☐
Received prompt written or oral feedback from teacher/tutors on your academic performance or assignments/exam	☐	☐	☐	☐	☐
Worked harder than you thought you could to meet a teacher's standards or expectations	☐	☐	☐	☐	☐
Worked with teaching staff on activities other than coursework (e.g. committees, orientation, student organisations, etc.)	☐	☐	☐	☐	☐
Discussed your ideas from your readings or classes with others outside classes (e.g. students, family members, etc.)	☐	☐	☐	☐	☐
Had conversations with students of a different ethnic group than your own	☐	☐	☐	☐	☐
Had conversations with students who have different religious beliefs, political opinions or personal values	☐	☐	☐	☐	☐

3 During the current academic year, how much has your coursework emphasised the following intellectual activities?

	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Analysing the basic element of an idea, experience or theory, such as examining a particular case or situation in depth and considering its components	☐	☐	☐	☐	☐
Synthesising and organising ideas, information or experiences into new, more complex interpretations and relationships	☐	☐	☐	☐	☐
Making judgements about the value of information, arguments or methods, such as examining how others gather and interpret data and assessing the soundness of their conclusions	☐	☐	☐	☐	☐
Applying theories or concepts to practical problems or in new situations	☐	☐	☐	☐	☐

4 During the current academic year, about much reading and writing have you done?

	None	1 to 4	5 to 10	11 to 20	More than 20
Number of assigned textbooks	☐	☐	☐	☐	☐
Number of written assignments of **up to 1,000 words**	☐	☐	☐	☐	☐
Number of written assignments of **more than 1,000 words**	☐	☐	☐	☐	☐

5 About how many hours do you spend in a typical seven-day week doing each of the following?

	None	1 to 10	11 to 20	20 to 30	Over 30
Preparing for class (e.g. studying, reading, writing, doing homework or lab work, analysing data, rehearsing and other academic activities)	☐	☐	☐	☐	☐
Participating in extracurricular activities (e.g. organisations, campus publications, student associations, clubs and societies, sports, etc.)	☐	☐	☐	☐	☐
Spending time on campus, **including** time spent in classes	☐	☐	☐	☐	☐

6 Please tick (√) the box which represents the degree of your agreement or disagreement with the statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The number of students in every class in accounting department is reasonable	☐	☐	☐	☐	☐
The number of students in every class makes it easy to concentrate on my learning	☐	☐	☐	☐	☐
The number of student in every class enables students and lecturers to use active learning methods (e.g. group discussion)	☐	☐	☐	☐	☐

7 To what extent does your institution provide support each of the following?

	None	Little	Some-what	Much	A Great Deal
Library book collections for your study purposes	☐	☐	☐	☐	☐
The access to hard copy journals and e-journals (e.g. EBSCO and Pro Quest, Science Direct) for your study purposes	☐	☐	☐	☐	☐
Other collections (e.g. research reports, theses, final project report) for reference, research, and to complete assignments	☐	☐	☐	☐	☐
Accounting practice books and manuals of accounting simulation (e.g. auditing, cost accounting)	☐	☐	☐	☐	☐
The accounting software (e.g. MYOB)	☐	☐	☐	☐	☐
Computers and internet access for study purposes	☐	☐	☐	☐	☐
Well-equipped lecture room (e.g. furniture, education technology)	☐	☐	☐	☐	☐

8 To what extent does your institution emphasise each of the following?

	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Spending significant amounts of time studying and on academic work	☐	☐	☐	☐	☐
Providing the support you need to help you succeed academically	☐	☐	☐	☐	☐
Encouraging contact among students from different economic, social and ethnic backgrounds	☐	☐	☐	☐	☐
Attending campus events and activities (e.g. special speakers, cultural performances, sporting events, etc.)	☐	☐	☐	☐	☐

9 Please tick (√) on the box which represents the degree of your agreement or disagreement with the statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
If I study hard, my academic achievement will improve	☐	☐	☐	☐	☐
If I study hard, my accounting knowledge and skills will improve	☐	☐	☐	☐	☐
If I study hard, I will have deeper and broader academic experiences	☐	☐	☐	☐	☐
If I study hard, my professionalism in accounting will improve	☐	☐	☐	☐	☐
If I study hard, I can complete my degree on time	☐	☐	☐	☐	☐
Performing well will result in a better GPA	☐	☐	☐	☐	☐

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Performing well will result in getting scholarship	▢	▢	▢	▢	▢
Performing well will result in getting praise from teachers, parents, and friends	▢	▢	▢	▢	▢
Having good achievements result in having a feeling of accomplishment	▢	▢	▢	▢	▢
Performing well will result in feeling very good about myself	▢	▢	▢	▢	▢
Performing well will result in feeling satisfaction of self-actualization	▢	▢	▢	▢	▢
Better accomplishment in university education results it being easier to find a god job	▢	▢	▢	▢	▢
Better accomplishment in university education result will result it being easier to earn a good salary	▢	▢	▢	▢	▢
Better accomplishment in university education will result it being easier to get higher achievement at work	▢	▢	▢	▢	▢
Better accomplishment in university education will result it being easier to continue my studies for a higher degree	▢	▢	▢	▢	▢
Good accomplishment in university education is my responsibility	▢	▢	▢	▢	▢
My accomplishment in university education is the opportunity to use all my potential both skills and ability	▢	▢	▢	▢	▢
Good accomplishment in university education will result in a feeling of satisfaction	▢	▢	▢	▢	▢

10 Please answer all the questions by filling the gap or ticking the options.

1. Age in years: ________ Sex:.........Male ▢ Female ▢
2. Previous School: Senior High School (SMA) ▢ Vocational High School (SMK) ▢
3. What was your department when you were in SMA or SMK: __________________________
4. Your average grade at High School as written on your Certificate : __________
5. Your average grade of National Test as written on NEM Certificate : __________
6. Your current Cumulative Grade Point Average (CGPA): _______

Appendix A2: Questionnaire for Student-Indonesian Version

QS

1 Selama Anda kuliah di jurusan Akuntansi di universitas ini, seberapa banyak Anda bisa mengembangkan kompetensi pada bidang-bidang berikut ini? Berilah tanda cek (√) pada kotak yang sesuai.

Kompetensi Fungsional	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Mengambil keputusan bisnis secara rasional (menggunakan teknik kuantitatif/ penghitungan, data, pengetahuan, maupun wawasan)	☐	☐	☐	☐	☐
Mengakses resiko audit maupun resiko bisnis (mengidentifikasi, mengevaluasi, mengen-dalikan, dan mengkomunikasikan resiko, serta menyarankan perbaikan)	☐	☐	☐	☐	☐
Melakukan pengukuran secara kuantitatif dan kualitatif (memilih metode yang tepat, menyajikan hasil, dan menjelaskan pengukuran yang menggunakan estimasi/perkiraan)	☐	☐	☐	☐	☐
Membuat laporan dengan obyektif, singkat, dan jelas (memaparkan lingkup pekerjaan, kesimpulan, dan saran dengan menggunakan media/sarana yang tepat)	☐	☐	☐	☐	☐
Melakukan riset (mengakses, mengevaluasi, dan menyelaraskan data/informasi, serta menganalogikan masalah yang tidak jelas)	☐	☐	☐	☐	☐
Menggunakan teknologi informasi untuk mengembangkan dan meningkatkan kompetensi fungsional (pengambilan keputusan, analisis resiko, pengukuran, pelaporan, dan riset)	☐	☐	☐	☐	☐

Kompetensi Personal	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Bertindak profesional (mematuhi etika profesi, berkomitmen terhadap kualitas dan efisiensi kerja, memperhatikan kritik profesional, serta berpenampilan sopan)	☐	☐	☐	☐	☐
Berpikir kritis dan kreatif dalam memecahkan masalah dan mengambil keputusan (identifi-kasi dan evaluasi masalah maupun solusi, mengantisipasi kemungkinan, dan mengikuti petunjuk)	☐	☐	☐	☐	☐
Bekerja produktif dan harmonis untuk mencapai tujuan dalam keragaman anggota tim	☐	☐	☐	☐	☐
Melaksanakan kepemimpinan yang efektif (memimpin, memotivasi, dan memfasilitasi sebuah tim, serta menghargai masukan dari anggota)	☐	☐	☐	☐	☐
Melakukan komunikasi dengan efektif baik secara lisan maupun tertulis untuk pertukaran informasi (menyampaikan dan menanggapi pesan dengan tepat, menggunakan media yang sesuai, dan memfasilitasi interaksi dengan efektif)	☐	☐	☐	☐	☐
Mengelola proyek (merencanakan, melaksanakan, mengevaluasi, dan melakukan perbaikan proyek bila dianggap perlu)	☐	☐	☐	☐	☐
Menggunakan teknologi untuk mengembangkan dan meningkatkan kompetensi personal dan profesional (pertukaran informasi, eksplorasi teknologi dan ketrampilan dengan memperhatikan privasi, hak cipta, dan keamanan)	☐	☐	☐	☐	☐

Kompetensi Perspektif Binis	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Memahami proses perencanan strategis (analisis SWOT, analisis dan penyiapan infor-masi strategis seperti pangsa pasar dan pesaing, serta menerapkan pengetahuan dari satu situasi ke dalam situasi lain)	☐	☐	☐	☐	☐
Memahami stuasi bisnis dari industri/sektor (memahami kesempatan dan resiko binsnis serta mengkomunikasikan kinerja organisasi)	☐	☐	☐	☐	☐
Memiliki wawasan bisnis global (misal ekspansi pasar global, analisis pelanggan dan pemasok global, analisis sumberdaya manusia dan keuangan global)	☐	☐	☐	☐	☐
Mengelola sumberdaya organisasi (identifikasi dan alokasi sumberdaya dan anailsis dampak kekuatan pasar maupun akses sumberdaya terhadap kinerja organisasi)	☐	☐	☐	☐	☐
Memahami faktor hukum, peraturan, politik, dan lingkungan dimana organisasi beroperasi dan menganalisis dampaknya terhadap standar akuntansi dan peraturan profesi	☐	☐	☐	☐	☐
Memahami bagaimana menjalin hubungan kerja yang baik dengan atasan dan pelanggan (dengan memahami peraturan, harapan, dan motivasi mereka)	☐	☐	☐	☐	☐
Menggunakan teknologi untuk mengembangkan dan meningkatkan kompetensi perspektif bisnis (mengidentifikasi kesempatan dan resiko bisnis, menggali data elektronik, mengembangkan informasi strategis, dan *e-commerce*)	☐	☐	☐	☐	☐

Berdasarkan pengalaman Anda belajar di Jurusan Akuntansi, berapa sering Anda melakukan hal-hal berikut ini selama dua semester terakhir?

	Tidak Pernah	Jarang	Kadang-kadang	Sering	Selalu
Mengajukan pertanyaan atau memberikan kontribusi dalam diskusi kelas	☐	☐	☐	☐	☐
Meminta nasehat kepada dosen tentang kuliah dan karir	☐	☐	☐	☐	☐
Melakukan presentasi di kelas	☐	☐	☐	☐	☐
Belajar dengan giat agar bisa menguasai materi yang sulit	☐	☐	☐	☐	☐
Mengerjakan tugas yang memerlukan penggabungan ide-ide atau informasi dari berbagai sumber	☐	☐	☐	☐	☐
Memasukkan berbagai perspektif (misal ras, agama, gender, pandangan politik yang berbeda) dalam diskusi kelas atau dalam tugas tertulis	☐	☐	☐	☐	☐
Datang ke kelas dengan sudah menyelesaikan tugas bacaan atau tugas lainnya	☐	☐	☐	☐	☐
Bekerjasama dengan mahasiswa lain dalam menyelesaikan tugas di dalam kelas	☐	☐	☐	☐	☐
Bekerjasama dengan mahasiswa lain untuk menyelesaikan tugas di luar kelas	☐	☐	☐	☐	☐
Memasukkan ide-ide dan konsep dari berbagai matakuliah ke dalam tugas maupun di dalam diskusi kelas	☐	☐	☐	☐	☐
Mengajari atau memberikan tutor kepada mahasiswa lain (dibayar atau sukarela)	☐	☐	☐	☐	☐
Berperanserta dalam kegiatan kemasyarakatan sebagai bagian dari kuliah	☐	☐	☐	☐	☐
Menggunakan email atau SMS untuk berkomunikasi dengan dosen	☐	☐	☐	☐	☐
Berdiskusi dengan dosen tentang nilai matakuliah atau tugas-tugas	☐	☐	☐	☐	☐
Berdiskusi dengan dosen tentang matakuliah atau bacaan di luar jam kuliah	☐	☐	☐	☐	☐
Menerima umpan balik tentang kinerja akademik, tugas atau ujian secara lisan atau tertulis tepat pada waktunya	☐	☐	☐	☐	☐
Belajar lebih giat agar bisa memenuhi standar atau harapan dosen	☐	☐	☐	☐	☐
Bekerjasama dengan dosen dalam kegiatan di luar kuliah (misal panitia, orientasi, organisasi kemahasiswaan, dll)	☐	☐	☐	☐	☐
Berdiskusi tentang ide-ide dari bacaan atau kuliah dengan orang lain (misal mahasiswa, anggota keluarga, teman kerja, dll)	☐	☐	☐	☐	☐
Berbincang-bincang dengan mahasiswa lain dari kelompok etnis/suku yang berbeda	☐	☐	☐	☐	☐
Berbincang-bincang dengan mahasiswa lain yang mempunyai kepercayaan agama, pandangan politik, dan nilai pribadi yang berbeda	☐	☐	☐	☐	☐

3 Selama dua semester terakhir, berapa banyak kuliah yang Anda ikuti menitikberatkan pada aktivitas intelektual berikut ini?

	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Menganalisis unsur dasar dari sebuah ide, pengalaman atau teori, seperti mencermati kasus atau situasi tertentu secara mendalam dan memikirkan unsur-unsurnya	☐	☐	☐	☐	☐
Menggabungkan dan menata ide-ide, informasi atau pengalaman menjadi interpretasi dan hubungan yang baru dan lebih kompleks	☐	☐	☐	☐	☐
Membuat penilaian terhadap nilai informasi, argumen atau metode, seperti menilai bagaimana orang lain mengumpulkan dan menafsirkan data serta menilai kekuatan kesimpulan yang mereka buat	☐	☐	☐	☐	☐
Menerapkan teori atau konsep ke dalam masalah praktis atau situasi baru	☐	☐	☐	☐	☐

4 Selama dua semester terakhir, berapa banyak bacaan dan tugas tertulis yang Anda selesaikan?

	Tidak Ada	1 s/d 4	5 s/d 10	11 s/d 20	Lebih dari20
Jumlah buku teks yang ditugaskan untuk dibaca/dipelajari	☐	☐	☐	☐	☐
Jumlah tugas tertulis sampai **dengan lima lembar** (jarak baris 2)	☐	☐	☐	☐	☐
Jumlah tugas tertulis yang **lebih dari lima lembar** (jarak baris 2)	☐	☐	☐	☐	☐

5 **Selama tujuh hari pada minggu-minggu yang sibuk, berapa jam Anda melakukan hal-hal berikut ini?**

	Tidak Ada	1 s/d 10	11 s/d 20	20 s/d 30	Lebih dari 30
Menyiapkan kuliah (seperti belajar, membaca, menulis, mengerjakan PR, menganalisis data, berlatih presentasi, dan kegiatan akademik lainnya) di luar jam kuliah	☐	☐	☐	☐	☐
Berperanserta dalam kegiatan ekstrakurikuler (seperti organisasi kampus, publikasi kampus, perhimpunan mahasiswa, perkumpulan, olahraga, dll.)	☐	☐	☐	☐	☐
Menghabiskan waktu di kampus termasuk untuk mengikuti kuliah	☐	☐	☐	☐	☐

6 Berilah tanda cek (√) pada kotak yang menunjukkan tingkat kesetujuan dan ketidaksetujuan Anda dengan pernyataan berikut ini.

	Sangat Tidak Setuju	Tidak Setuju	Netral	Setuju	Sangat Setuju
Jumlah mahasiswa di setiap kelas di jurusan Akuntansi ideal (tidak terlalu banyak)	☐	☐	☐	☐	☐
Jumlah mahasiswa di setiap kelas memudahkan saya untuk kosentrasi belajar	☐	☐	☐	☐	☐
Jumlah mahasiswa di setiap kelas memungkinkan mahasiswa dan dosen untuk menggunakan metode pembelajaran aktif seperti diskusi kelompok	☐	☐	☐	☐	☐

7 Sejauhmana lembaga dimana Anda sedang belajar saat ini menyediakan dukungan terhadap hal-hal berikut ini?

	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Koleksi buku perpustakaan untuk tujuan belajar Anda	☐	☐	☐	☐	☐
Akses terhadap jurnal cetak dan elektronik (seperti EBSCO, Pro Quest, Science Direct) untuk tujuan belajar Anda	☐	☐	☐	☐	☐
Koleksi lain (seperti laporan penelitian, tesis, skripsi) untuk referensi penelitian dan untuk menyelesaikan tugas	☐	☐	☐	☐	☐
Buku praktek akuntansi dan simulasi akuntansi secara manual (seperti auditing dan akuntansi biaya)	☐	☐	☐	☐	☐
Software untuk simulasi akuntansi dengan komputer (seperti MYOB)	☐	☐	☐	☐	☐
Komputer dan akses internet untuk tujuan belajar	☐	☐	☐	☐	☐
Ruang kelas dengan kelengkapan yang baik (seperti meja, kursi, dan teknologi pendidikan)	☐	☐	☐	☐	☐

8 Sejauh mana lembaga dimana Anda sedang belajar saat ini, menekankan hal-hal sebagai berikut?

	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Memanfaatkan sejumlah besar waktu Anda untuk melakukan kegiatan akademis	☐	☐	☐	☐	☐
Menyediakan dukungan yang Anda butuhkan agar Anda sukses secara akademis	☐	☐	☐	☐	☐
Mendorong para mahasiswa untuk melakukan kontak dengan mahasiswa yang mempunyai latar belakang ekonomi, sosial, etnis, suku, agama yang berbeda	☐	☐	☐	☐	☐
Menghadiri *event* atau kegiatan kampus (seperti seminar atau diskusi, pertunjukan budaya, *event* olahraga, dll.)	☐	☐	☐	☐	☐

9 **Berilah tanda cek (√) pada kotak yang menunjukkan tingkat kesetujuan dan ketidaksetujuan Anda dengan pernyataan berikut ini.**

	Sangat Tidak Setuju	Tidak Setuju	Netral	Setuju	Sangat Setuju
Jika saya belajar dengan giat, prestasi akademis saya akan meningkat	☐	☐	☐	☐	☐
Jika saya belajar dengan giat, pengetahuan dan ketrampilan akuntansi saya akan meningkat	☐	☐	☐	☐	☐
Jika saya belajar dengan giat, saya akan mempunyai pengalaman akademis yang lebih dalam dan lebih luas	☐	☐	☐	☐	☐

	Sangat Tidak Setuju	Tidak Setuju	Netral	Setuju	Sangat Setuju
Jika saya belajar dengan giat, profesionalisme saya akan meningkat	▢	▢	▢	▢	▢
Jika saya belajar dengan giat, saya bisa lulus tepat waktu	▢	▢	▢	▢	▢
Berkinerja baik akan menghasilkan Indeks Prestasi (IP) yang lebih baik	▢	▢	▢	▢	▢
Berkinerja baik akan bisa mendapatkan beasiswa	▢	▢	▢	▢	▢
Berkinerja baik akan mendatangkan pujian dari dosen, orangtua, dan teman	▢	▢	▢	▢	▢
Berkinerja baik akan mendatangkan perasaan berprestasi	▢	▢	▢	▢	▢
Berkinerja baik akan mendatangkan perasaan nyaman pada diri sendiri	▢	▢	▢	▢	▢
Berkinerja baik akan mendatangkan kepuasan aktualisasi diri	▢	▢	▢	▢	▢
Prestasi yang lebih baik selama pendidikan di universitas akan lebih memudahkan mendapatkan pekerjaan yang baik pula	▢	▢	▢	▢	▢
Prestasi yang lebih baik selama pendidikan di universitas akan lebih memudahkan untuk mendapatkan gaji yang tinggi	▢	▢	▢	▢	▢
Prestasi yang lebih baik selama pendidikan di universitas akan lebih memudahkan untuk memperoleh prestasi pada waktu bekerja	▢	▢	▢	▢	▢
Mencapai prestasi yang lebih baik selama pendidikan di universitas akan lebih memudahkan untuk melanjutkan kuliah ke jenjang yang lebih tinggi	▢	▢	▢	▢	▢
Mencapai prestasi yang baik selama pendidikan di universitas adalah tanggung-jawab saya	▢	▢	▢	▢	▢
Pencapaian prestasi selama pendidikan di universitas adalah kesempatan untuk menggunakan semua potensi saya baik kecakapan maupun kemampuan	▢	▢	▢	▢	▢
Mencapai prestasi yang baik selama pendidikan di universitas mendatangkan perasaan puas	▢	▢	▢	▢	▢

10 **Mohon menjawab semua pertanyaan di bawah ini dengan mengisinya atau dengan cara memberi tanda cek (√) pada jawaban yang sesuai.**

1. Umur Anda: ______ tahun Jenis kelamin……▢ Laki-laki ▢ Perempuan
2. Sekolah sebelumnya: ▢ SMA ▢ SMK
3. Apa jurusan Anda pada waktu di SMA atau SMK (sebutkan) _____________________________________
4. Berapa nilai rata-rata di Ijasah SMA/SMK Anda : __________
5. Berapa nilai rata-rata nilai UNAS/NEM Anda : __________
6. Berapa Indeks Prestasi Komulatif Anda sampai saat ini: _______

Appendix A3: Questionnaire for Lecturer-English Version

QL

1 Please tick (√) the box that describes the degree to which your courses cover students' competencies in the following areas:

Functional Competencies	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Make business decisions rationally (using quantitative techniques and integrating data, knowledge, and insight)	☐	☐	☐	☐	☐
Assess audit and business risks (identifying, evaluating, controlling, recommending corrective action, and communicating the impact of risks)	☐	☐	☐	☐	☐
Perform measurement quantitatively and qualitatively (selecting appropriate methods, presenting measurement results, and resolving estimation measurement ambiguities)	☐	☐	☐	☐	☐
Prepare reports with objectivity, conciseness, and clarity (by describing work scope, conclusions, and suggestion using appropriate media)	☐	☐	☐	☐	☐
Conduct research (accessing, evaluating, reconciling data/information, and making analogies for unclear problems)	☐	☐	☐	☐	☐
Use information technology to develop and enhance functional competencies (decision making, risk analysis, measurement, reporting, and research)	☐	☐	☐	☐	☐

Personal Competencies	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Act professionally (obeying professional ethics, committing to work quality and efficiency, considering professional criticism, and dressing appropriately)	☐	☐	☐	☐	☐
Think critically and creatively in problem solving and decision making (identifying and evaluating problems, solutions, anticipating contingencies, and following direction)	☐	☐	☐	☐	☐
Work productively and harmoniously with a diversity of team members to achieve goals	☐	☐	☐	☐	☐
Practice effective leadership to achieve goals (leading, motivating, facilitating the team and valuing members' inputs)	☐	☐	☐	☐	☐
Perform effective spoken and written communications for exchanging information (expressing and responding messages appropriately, using appropriate media, and facilitating effective interaction)	☐	☐	☐	☐	☐
Manage a project (planning, implementing, evaluating, and taking corrective action as needed)	☐	☐	☐	☐	☐
Use technology to develop and enhance professional and personal competencies (exchanging information, exploring new technology and skills with due regard to privacy, property rights, and security)	☐	☐	☐	☐	☐

Broad-Business Perspective Competencies	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Understand strategic planning process (analysing SWOT, analysing and preparing strategic information such as market share and competitors, and transferring knowledge into other situation)	☐	☐	☐	☐	☐
Understand business context of Industry/sector (by recognising opportunities and risks of business and communicating organisation's performance)	☐	☐	☐	☐	☐
Understand the perspectives of global business (e.g global market expansion, global customer and supplier analysis, global human and financial resources analysis)	☐	☐	☐	☐	☐
Manage organisation's resources (identifying and allocating resources, analysing the impacts of market forces and access to resources on organisation's performance)	☐	☐	☐	☐	☐
Understand legal, regulations, politic, and environment factors which entity operates and analyse their impacts on accounting standard and profession regulations	☐	☐	☐	☐	☐
Understand how to build good working relationships with employer/customers (by understanding their colleagues protocols, expectation, and motivations)	☐	☐	☐	☐	☐
Use technology to develop and enhance business perspective competencies (e.g. identifying risks and opportunities, mining electronic data, developing strategic information, and e-commerce)	☐	☐	☐	☐	☐

2 In your experience at your university during the current academic year, about how often have you done each of the following?

	Never	Rarely	Some-times	Often	Very Often
Encouraged students to asked questions or contributed to discussions in class					
Advised students about courses and careers					
Asked students to make a class presentation					
Encouraged students to worked hard to master difficult content					
Assigned an essay or other assignment that required integrating ideas or information from various sources					
Asked student to include diverse perspectives (e.g. different races, religions, genders, political beliefs, etc.) in class discussions or written assignments					
Encouraged students to come to class having completed readings or assignments					
Facilitated students to work cooperatively on projects during class					
Encouraged students to work cooperatively outside class to prepare assignments					
Asked students to put together ideas or concepts from different subjects when completing assignments or during class discussions					
Encouraged students to tutor or teach other university students (paid or voluntary)					
Asked students to participate in a community-based project as part of their studies					
Used email or SMS to communicate with students					
Discussed about grades and assignment with students					
Discussed with students about ideas from their readings or classes outside class					
Gave prompt written or oral feedback on students' academic performance or assignment/exam					
Encouraged students to work harder to meet your standards or expectations					
Worked with students on activities other than coursework (e.g. committees, orientation, student organisations, etc.)					
Encouraged students to discuss ideas from their readings or classes with others outside class (e.g. students, family members, co-workers, etc.)					
Encouraged students to have conversations with other students who have a different ethnic group					
Encouraged students to have conversations with other students who have different religious beliefs, political opinions or personal values					

3 During the current academic year, to what extent do you believe your teaching of students has emphasised the following intellectual activities?

	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Analysing the basic element of an idea, experience or theory, such as examining a particular case or situation in depth and considering its components					
Synthesising and organising ideas, information or experiences into new, more complex interpretations and relationships					
Making judgements about the value of information, arguments or methods, such as examining how others gather and interpret data and assessing the soundness of their conclusions					
Applying theories or concepts to practical problems or in new situations					

4 During the current academic year, about how much reading and writing have you assigned your students?

	None	1 to 4	5 to 10	11 to 20	More than 20
Number of assigned textbooks					
Number of written assignments of up to 1,000 words					
Number of written assignments of more than 1,000 words					

5 If you were offering full-time student advice on succeeding in your courses, about how many hours per seven-day week would you recommend they spend on each of the following activities?

	None	1 to 10	11 to 20	21 to 20	Over 30
Preparing for class (e.g. studying, reading, writing, doing homework or lab work, analysing data, rehearsing and other academic activities) but not class time	☐	☐	☐	☐	☐
Participating in extracurricular activities (e.g. organisations, campus publications, student associations, clubs and societies, sports, etc.)	☐	☐	☐	☐	☐
Spending time on campus **including** time spent in classes	☐	☐	☐	☐	☐

6 Please tick (√) the box which represents the degree of your agreement or disagreement with the statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The number of students in every class in accounting department is reasonable	☐	☐	☐	☐	☐
The number of students in every class makes students concentrate on their learning easily	☐	☐	☐	☐	☐
The number of student in every class enables students and lecturers to use active learning methods (e.g. group discussion)	☐	☐	☐	☐	☐

7 To what extent does your institution provide support each of the following?

	None	Little	Some-what	Much	A Great Deal
Library book collections for your teaching and research purposes	☐	☐	☐	☐	☐
The access to hard copy journals and e-journals (e.g. EBSCO and Pro Quest, Science Direct) for your teaching and research purposes	☐	☐	☐	☐	☐
Other collections (e.g. research reports, theses, final project report) for teaching, research purpose.	☐	☐	☐	☐	☐
Accounting practice books and manuals of accounting simulation (e.g. auditing, cost accounting)	☐	☐	☐	☐	☐
The accounting software (e.g. MYOB)	☐	☐	☐	☐	☐
Computers and internet access for teaching and research purposes	☐	☐	☐	☐	☐
Well-equipped lecture room (e.g. furniture, education technology)	☐	☐	☐	☐	☐

8 As a whole, to what extent does your program, faculty, or department encourage students to undertake the following?

	Little or None	Some	A Moderate Amount	Quite A Lot	A Great Deal
Spending significant amounts of time on academic work	☐	☐	☐	☐	☐
Providing students the support they need to help them succeed academically	☐	☐	☐	☐	☐
Encouraging contact among students from different economic, social and ethnic backgrounds	☐	☐	☐	☐	☐
Attending campus events and activities (e.g. special speakers, cultural performances, sporting events, etc.)	☐	☐	☐	☐	☐

9 **The following questions are related to your job satisfaction. Please answer all questions by ticking (√) the box which represents the level of your satisfaction.**

VD: **V**ery **D**issatisfied **D:** **D**issatisfied **N:** **N**either Satisfied nor Dissatisfied **S:** **S**atisfied **VS:** **V**ery **S**atisfied

	VD	**D**	**N**	**S**	**VS**
Availability of computer hardware/software to meet my research needs	☐	☐	☐	☐	☐
Availability of time to pursue scholarship (e.g. higher education, research)	☐	☐	☐	☐	☐
Institutional support for research	☐	☐	☐	☐	☐
Opportunities for collaboration with scholars outside of my department/university	☐	☐	☐	☐	☐

VD: Very Dissatisfied	**D: Dissatisfied**	**N: Neither Satisfied nor Dissatisfied**	**S: Satisfied**	**VS: Very Satisfied**

	VD	D	N	S	VS
Opportunities for collaboration within my department	☐	☐	☐	☐	☐
My department's reputation for excellence in scholarship	☐	☐	☐	☐	☐
Institutional assistance with seeking funding for my research	☐	☐	☐	☐	☐
General support from my department/division chair	☐	☐	☐	☐	☐
General support from my dean of faculty	☐	☐	☐	☐	☐
Institutional efforts in support of the career development of their faculty	☐	☐	☐	☐	☐
Institutional efforts in support of the career development of their faculty	☐	☐	☐	☐	☐
Salary and other income competitive with departments of Accounting in other universities	☐	☐	☐	☐	☐
Distribution of rewards (salary and honorarium) based on merit	☐	☐	☐	☐	☐
Procedure of lecturer certification	☐	☐	☐	☐	☐
Clear understanding of teaching requirements needed for promotion	☐	☐	☐	☐	☐
Procedures used to evaluate a faculty member's teaching effectiveness	☐	☐	☐	☐	☐
Clear understanding of research requirements needed for promotion	☐	☐	☐	☐	☐
Clear understanding of community service requirements needed for promotion	☐	☐	☐	☐	☐
Lecturer mentoring process	☐	☐	☐	☐	☐
Availability of assistant or senior for **teaching** purposes	☐	☐	☐	☐	☐
Availability of assistant or senior for **research** purposes	☐	☐	☐	☐	☐
Mutual respect for other's scholarly endeavours within my department	☐	☐	☐	☐	☐
Social interactions among faculty within my department outside of work	☐	☐	☐	☐	☐
Freedom to design courses as I see fit	☐	☐	☐	☐	☐
Quality of students admitted into our program	☐	☐	☐	☐	☐
My teaching workload	☐	☐	☐	☐	☐
Courses I am assigned to teach	☐	☐	☐	☐	☐

10 **What courses did you teach in the last two semesters?**

1		4	
2		5	
3		6	

11 The following questions are related to your demographic information. Please answer all the questions by filling or ticking the options.

1. Age in years ____ 2. Sex: ☐ Male ☐ Female
3. How long have you been working as a lecturer? _______ years
4. Your highest education attainment: ☐ S1/BA ☐ S2/Master's ☐ S3/PhD
5. What is your current level of appointment ☐ Assistant ☐ Lecturer ☐ Sen. Lecturer ☐ Professor
6. Have you earned lecturer certification? ☐ Yes ☐ No
7. How many research projects did you lead or were involved in as an active researcher during the last three years (2008-2010)? _________Research
8. How many articles/book chapters/books did you publish during the last three years (2008-2010)?
   _______articles _____book chapters ______books

Appendix A4: Questionnaire for Lecturer-Indonesian Version

QL

1 Seberapa banyak kompetensi mahasiswa pada bidang-bidang berikut ini telah dicakup oleh kuliah yang Bapak/Ibu sampaikan. Berilah tanda cek (√) pada kotak yang sesuai.

Kompetensi Fungsional	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Mengambil keputusan bisnis secara rasional (menggunakan teknik kuantitatif/ penghitungan, data, pengetahuan, maupun wawasan)	☐	☐	☐	☐	☐
Mengakses resiko audit maupun resiko bisnis (mengidentifikasi, mengevaluasi, mengendalikan, dan mengkomunikasikan resiko, serta menyarankan perbaikan)	☐	☐	☐	☐	☐
Melakukan pengukuran secara kuantitatif dan kualitatif (memilih metode yang tepat, menyajikan hasil, dan menjelaskan pengukuran yang menggunakan estimasi/perkiraan)	☐	☐	☐	☐	☐
Membuat laporan dengan obyektif, singkat, dan jelas (memaparkan lingkup pekerjaan, kesimpulan, dan saran dengan menggunakan media/sarana yang tepat)	☐	☐	☐	☐	☐
Melakukan riset (mengakses, mengevaluasi, dan menyelaraskan data/informasi, serta menganalogikan masalah yang tidak jelas)	☐	☐	☐	☐	☐
Menggunakan teknologi informasi untuk mengembangkan dan meningkatkan kompetensi fungsional (pengambilan keputusan, analisis resiko, pengukuran, pelaporan, dan riset)	☐	☐	☐	☐	☐

Kompetensi Personal	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Bertindak profesional (mematuhi etika profesi, berkomitmen terhadap kualitas dan efisiensi kerja, memperhatikan kritik profesional, serta berpenampilan sopan)	☐	☐	☐	☐	☐
Berpikir kritis dan kreatif dalam memecahkan masalah dan mengambil keputusan (identifikasi dan evaluasi masalah maupun solusi, mengantisipasi kemungkinan, dan mengikuti petunjuk)	☐	☐	☐	☐	☐
Bekerja produktif dan harmonis untuk mencapai tujuan dalam keragaman anggota tim	☐	☐	☐	☐	☐
Melaksanakan kepemimpinan yang efektif (memimpin, memotivasi, dan memfasilitasi sebuah tim, serta menghargai masukan dari anggota)	☐	☐	☐	☐	☐
Melakukan komunikasi dengan efektif baik secara lisan maupun tertulis untuk pertukaran informasi (menyampaikan dan menanggapi pesan dengan tepat, menggunakan media yang sesuai, dan memfasilitasi interaksi dengan efektif)	☐	☐	☐	☐	☐
Mengelola proyek (merencanakan, melaksanakan, mengevaluasi, dan melakukan perbaikan proyek bila dianggap perlu)	☐	☐	☐	☐	☐
Menggunakan teknologi untuk mengembangkan dan meningkatkan kompetensi personal dan profesional (pertukaran informasi, eksplorasi teknologi dan ketrampilan dengan memperhatikan privasi, hak cipta, dan keamanan)	☐	☐	☐	☐	☐

Kompetensi Perspektif Bisnis	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Memahami proses perencanan strategis (analisis SWOT, analisis dan penyiapan informasi strategis seperti pangsa pasar dan pesaing, serta menerapkan pengetahuan dari satu situasi ke dalam situasi lain)	☐	☐	☐	☐	☐
Memahami stuasi bisnis dari industri/sektor (memahami kesempatan dan resiko binsnis serta mengkomunikasikan kinerja organisasi)	☐	☐	☐	☐	☐
Memiliki wawasan bisnis global (misal ekspansi pasar global, analisis pelanggan dan pemasok global, analisis sumberdaya manusia dan keuangan global)	☐	☐	☐	☐	☐
Mengelola sumberdaya organisasi (identifikasi dan alokasi sumberdaya dan anailsis dampak kekuatan pasar maupun akses sumberdaya terhadap kinerja organisasi)	☐	☐	☐	☐	☐
Memahami faktor hukum, peraturan, politik, dan lingkungan dimana organisasi beroperasi dan menganalisis dampaknya terhadap standar akuntansi dan peraturan profesi	☐	☐	☐	☐	☐
Memahami bagaimana menjalin hubungan kerja yang baik dengan atasan dan pelanggan (dengan memahami peraturan, harapan, dan motivasi mereka)	☐	☐	☐	☐	☐
Menggunakan teknologi untuk mengembangkan dan meningkatkan kompetensi perspektif bisnis (mengidentifikasi kesempatan dan resiko bisnis, menggali data elektronik, mengembangkan informasi strategis, dan *e-commerce*)	☐	☐	☐	☐	☐

2 Berdasarkan pengalaman selama dua semester terakhir di jurusan Akuntansi, berapa sering Bapak/Ibu melakukan hal-hal berikut ini?

	Tidak Pernah	Jarang	Kadang-kadang	Sering	Selalu
Mendorong mahasiswa untuk bertanya atau memberikan kontribusi dalam diskusi kelas					
Memberikan nasihat kepada mahasiswa tentang kuliah atau karir					
Meminta mahasiswa untuk melakukan presentasi di kelas					
Mendorong mahasiswa untuk belajar dengan giat agar bisa menguasai materi sulit					
Memberi tugas yang memerlukan penggabungan ide-ide atau informasi dari berbagai sumber kepada mahasiswa					
Meminta mahasiwa untuk memasukan berbagai perspektif (misal suku, agama, gender, pandangan politik yang berbeda) dalam diskusi kelas atau dalam tugas tertulis					
Mendorong mahasiwa untuk datang ke kelas dengan sudah menyelesaikan tugas bacaan atau tugas lainnya					
Meminta mahasiswa untuk bekerja secara kelompok dalam menyelesaikan tugas di dalam kelas					
Mendorong mahasiswa untuk bekerja secara kelompok dalam menyelesaikan tugas di luar kelas					
Meminta mahasiswa untuk memasukkan ide dan konsep dari berbagai matakuliah ke dalam tugas maupun dalam diskusi kelas					
Mendorong mahasiswa untuk mengajari/memberi tutor kepada mahasiswa lain (dibayar atau sukarela)					
Meminta mahasiswa untuk berperanserta dalam kegiatan kemasyarakatan sebagai bagian dari kuliah					
Menggunakan email atu SMS untuk berkomunikasi dengan mahasiswa					
Berdiskusi dengan mahasiswa tentang nilai matakuliah atau tugas-tugas					
Berdiskusi dengan mahasiswa tentang bacaan atau matakuliah di luar jam kuliah					
Memberikan balikan tentang kinerja akademik, tugas, atau ujian mahasiswa tepat pada waktunya baik secara lisan atau tertulis					
Mendorong mahasiswa untuk belajar dengan giat agar bisa memenuhi standar atau harapan dosen					
Bekerjasama dengan mahasiswa dalam kegiatan di luar kuliah (misal panitia, orientasi, organisasi kemahasiswaan, dll)					
Mendorong mahasiswa untuk berdiskusi tentang ide-ide dari bacaan atau perkuliahan dengan orang lain (misal mahasiswa, anggota keluarga, teman kerja, dll)					
Mendorong mahasiswa untuk berbincang-bincang dengan mahasiswa lain yang berasal dari kelompok etnis/suku yang berbeda					
Mendorong mahasiswa untuk berbincang-bincang dengan mahasiswa lain yang mempunyai kepercayaan agama, pandangan politik, dan nilai pribadi yang berbeda					

3 Selama dua semester terakhir, seberapa banyak perkuliahan yang Bapak/Ibu ampu menekankan aktivitas intelektual berikut ini?

	Sangat Kurang	Kurang	Cukup	Banyak	`Sangat Banyak
Menganalisis unsur dasar dari sebuah ide, pengalaman atau teori, seperti mencermati kasus atau situasi tertentu secara mendalam dan memikirkan unsur-unsurnya					
Menggabungkan dan menata ide-ide, informasi atau pengalaman menjadi interpretasi dan hubungan yang baru dan lebih kompleks					
Membuat penilaian terhadap nilai informasi, argumen atau metode, seperti menilai bagaimana orang lain mengumpulkan dan menafsirkan data serta menilai kekuatan kesimpulan yang mereka buat					
Menerapkan teori atau konsep ke dalam masalah praktis atau situasi baru					

4 Selama dua semester terakhir, berapa tugas bacaan dan tugas tertulis yang diberikan kepada mahasiswa?

	Tidak Ada	1 s/d 4	5 s/d 10	11 s/d 20	Lebih dari 20
Jumlah buku teks yang ditugaskan untuk dibaca/dipelajari					
Jumlah tugas tertulis sampai dengan lima lembar (jarak baris 2)					
Jumlah tugas tertulis yang lebih dari lima lembar (jarak baris 2)					

5 Agar mahasiswa berhasil menempuh matakuliah yang Bapak/Ibu ampu, kira-kira berapa jam setiap minggunya mereka sebaiknya melakukan kegiatan-kegiatan berikut ini?

	Tidak Ada	1 s/d 10	11 s/d 20	20 s/d 30	Lebih dari 30
Menyiapkan kuliah (seperti belajar, membaca, menulis, mengerjakan PR, menganalisis data, berlatih presentasi, dan kegiatan akademik lainnya) di luar jam kuliah	☐	☐	☐	☐	☐
Berperanserta dalam kegiatan ekstrakurikuler (seperti organisasi kampus, publikasi kampus, perhimpunan mahasiswa, perkumpulan, club, olahraga, dll.)	☐	☐	☐	☐	☐
Menghabiskan waktu di kampus termasuk untuk mengikuti kuliah	☐	☐	☐	☐	☐

6 Berilah tanda cek (√) pada kotak yang menunjukkan tingkat kesetujuan dan ketidaksetujuan Bapak/Ibu dengan pernyataan berikut ini.

	Sangat Tidak Setuju	Tidak Setuju	Netral	Setuju	Sangat Setuju
Jumlah mahasiswa di setiap kelas di jurusan Akuntansi ideal (tidak terlalu banyak)	☐	☐	☐	☐	☐
Jumlah mahasiswa di setiap kelas memudahkan mahasiswa untuk kosentrasi belajar	☐	☐	☐	☐	☐
Jumlah mahasiswa di setiap kelas memungkinkan mahasiswa dan dosen untuk menggunakan metode pembelajaran aktif seperti diskusi kelompok	☐	☐	☐	☐	☐

7 Sejauhmana lembaga Bapak/Ibu menyediakan dukungan terhadap hal-hal berikut ini?

	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Koleksi buku perpustakaan untuk tujuan mengajar	☐	☐	☐	☐	☐
Akses terhadap jurnal cetak dan elektronik (seperti EBSCO, Pro Quest, Science Direct) untuk keperluan mengajar	☐	☐	☐	☐	☐
Koleksi lain (misal laporan penelitian, tesis, skripsi) untuk referensi mengajar	☐	☐	☐	☐	☐
Buku praktek akuntansi dan simulasi akuntansi secara manual (misal auditing dan akuntansi biaya)	☐	☐	☐	☐	☐
Software untuk simulasi akuntansi dengan komputer (seperti MYOB)	☐	☐	☐	☐	☐
Komputer dan akses internet untuk keperluan mengajar	☐	☐	☐	☐	☐
Ruang kelas dengan kelengkapan yang baik (meja, kursi, dan teknologi pendidikan)	☐	☐	☐	☐	☐

8 Secara keseluruhan, sejauh mana jurusan Akuntansi dan Fakultas Ekonomi ini telah mendorong mahasiswa untuk melakukan kegiatan-kegiatan berikut ini?

	Sangat Kurang	Kurang	Cukup	Banyak	Sangat Banyak
Memanfaatkan sebagian besar waktu mahasiswa untuk melakukan kegiatan akademis	☐	☐	☐	☐	☐
Menyediakan dukungan yang dibutuhkan mahasiswa agar sukses secara akademis	☐	☐	☐	☐	☐
Mendorong para mahasiswa untuk melakukan kontak dengan mahasiswa lain yang mempunyai latar belakang ekonomi, sosial, etnis, suku, agama yang berbeda	☐	☐	☐	☐	☐
Menghadiri *event* atau kegiatan kampus (seperti seminar atau diskusi, pertunjukan budaya, *event* olahraga, dll.)	☐	☐	☐	☐	☐

9 **Pertanyaan berikut ini berhubungan dengan kepuasan kerja. Dimohon menjawab semua pertanyaan dengan cara meletakan tanda cek (√) pada kotak yang menunjukan tingkat kepuasan/ketidakpuasan Bapak/Ibu.**

STP: **S**angat **T**idak **P**uas	**TP:** **T**idak **P**uas	**N:** **N**etral	**P:** **P**uas	**SP:** **S**angat **P**uas

	STP	TP	N	P	SP
Ketersediaan *hardware* dan *software* komputer untuk memenuhi kebutuhan penelitian saya	☐	☐	☐	☐	☐
Ketersediaan waktu untuk mengembangkan kemampuan akademis (seperti pendidikan yang lebih tinggi atau penelitian)	☐	☐	☐	☐	☐
Dukungan institusi terhadap penelitian	☐	☐	☐	☐	☐
Kesempatan kerjasama dengan akademisi yang berasal dari luar jurusan/universitas saya	☐	☐	☐	☐	☐

STP: Sangat Tidak Puas	**TP:** Tidak Puas	**N:** Netral	**P:** Puas	**SP:** Sangat Puas

	STP	TP	N	P	SP
Kesempatan kerjasama dengan akademisi yang ada di jurusan saya	☐	☐	☐	☐	☐
Keunggulan reputasi akademis jurusan saya	☐	☐	☐	☐	☐
Bantuan dari universitas untuk mencarikan dana penelitian	☐	☐	☐	☐	☐
Dukungan secara umum dari ketua jurusan/ketua prodi saya	☐	☐	☐	☐	☐
Dukungan secara umum dari Dekan Fakultas saya	☐	☐	☐	☐	☐
Upaya lembaga dalam mendukung pengembangan karir para dosen	☐	☐	☐	☐	☐
Gaji dan pendapatan yang kompetitif bila dibandingkan dengan gaji dan pendapatan di jurusan Akuntansi di universitas lain	☐	☐	☐	☐	☐
Distribusi imbalan (gaji dan honorarium) berdasarkan prestasi	☐	☐	☐	☐	☐
Prosedur sertifikasi dosen	☐	☐	☐	☐	☐
Pemahaman yang jelas mengenai persyaratan mengajar untuk kenaikan pangkat/jabatan	☐	☐	☐	☐	☐
Prosedur yang digunakan untuk mengevaluasi efektivitas pengajaran dosen	☐	☐	☐	☐	☐
Pemahaman yang jelas mengenai persyaratan penelitian untuk kenaikan pangkat/jabatan	☐	☐	☐	☐	☐
Pemahaman yang jelas mengenai persyaratan pengabdian masyarakat untuk kenaikan pangkat/jabatan	☐	☐	☐	☐	☐
Proses pembimbingan asisten dosen	☐	☐	☐	☐	☐
Keberadaan asisten atau dosen senior dalam kegiatan pengajaran	☐	☐	☐	☐	☐
Keberadaan asisten atau dosen senior dalam kegiatan penelitian	☐	☐	☐	☐	☐
Rasa saling menghormati terhadap kegiatan ilmiah yang dilakuan para dosen dalam jurusan saya	☐	☐	☐	☐	☐
Interaksi sosial antar dosen jurusan Akuntansi di luar pekerjaan	☐	☐	☐	☐	☐
Kebebasan untuk merancang perkuliahan yang saya anggap cocok	☐	☐	☐	☐	☐
Kualitas mahasiswa yang masuk di jurusan Akuntansi	☐	☐	☐	☐	☐
Beban mengajar saya	☐	☐	☐	☐	☐
Matakuliah yang ditugaskan ke saya	☐	☐	☐	☐	☐

10 **Mata kuliah apa saja yang Bapak/Ibu ajarkan pada dua semester terakhir?**

1		**4**	
2		**5**	
3		**6**	

11 **Dimohon untuk menjawab semua pertanyaan dengan cara mengisi titik-titik atau meletakan tanda cek (√) pada kotak yang sesuai.**

1. Umur _______ tahun 2. Jenis kelamin: ☐ Laki-laki ☐ Perempuan
3. Pengalaman mengajar di Universitas ______ tahun
4. Pendidikan Tertinggi ☐ S1 ☐ S2/Master's ☐ S3/PhD
5. Jabatan Akademik: ☐ Asisten ☐ Lektor ☐ Lektor Kepala ☐ Profesor
6. Apakah Bapak/Ibu sudah mendapatkan sertifikasi Dosen? ☐ Sudah ☐ Belum
7. Berapa proyek penelitian yang Bapak/Ibu ketuai dan yang Bapak/Ibu ikuti sebagai peneliti aktif selama tiga tahun terakhir (2008-2010)? _______ penelitian
8. Berapa artikel, bab dalam buku, dan buku yang Bapak Ibu publikasikan selama tiga tahun terakhir (2008-2010)?

___________artikel ___________Bab dalam buku _______buku

Appendix A5: Validity and Reliability and Tests for Trial Data

1. Functional Competency

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded[a]	0	.0
	Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.897	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Dec_mod	16.48	12.927	.476	.911
Risk_an	16.84	10.973	.733	.877
Measure	16.48	10.593	.746	.875
Report	16.36	11.157	.746	.875
Research	17.00	10.917	.814	.866
Func_tec	16.44	9.673	.831	.861

2. Personal Competency

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded[a]	0	.0
	Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.879	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Prof_dem	21.56	13.090	.618	.868
Pro_solve	21.60	12.583	.701	.857
Interaction	21.96	13.540	.647	.864
Leadership	21.76	14.773	.447	.886
Commu	21.60	11.917	.837	.838
Prj_mgt	21.96	13.207	.595	.871
Pers_tec	21.72	12.210	.802	.843

3. Broad-business Perspective Competency

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded[a]	0	.0
	Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.908	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Strat	19.2400	20.357	.608	.907
Industry	19.6000	19.083	.795	.886
Glob	19.8000	18.917	.800	.886
Res_mgt	19.4000	19.833	.757	.891
Legal	19.4400	20.507	.725	.895
Marketing	19.0800	19.910	.673	.900
Bus_tec	19.5200	18.343	.737	.894

4. Learning Facilities

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded[a]	0	.0
	Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.884	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Lib_book	20.64	17.657	.694	.864
Lib_ejour	20.32	17.060	.714	.863
Lib_ocoll	20.16	18.473	.637	.872
Lab_man	20.16	20.140	.631	.874
Lab_soft	20.20	19.583	.615	.874
Com_intr	19.68	18.060	.750	.857
Clss_tech	19.96	17.957	.702	.863

5. Comfort of Class Size

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded[a]	0	.0
	Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.847	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Clss_reas	6.48	4.343	.598	.890
Clss_cons	6.44	3.173	.835	.662
Clss_actv	6.12	3.860	.729	.774

Appendix A6: Validity and Reliability and Tests Using Sample Data

1. Functional Competency

Case Processing Summary

		N	%
Cases	Valid	411	100.0
	Excluded[a]	0	.0
	Total	411	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.737	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
f1	16.53	6.957	.489	.698
f2	16.72	6.617	.466	.703
f3	16.54	6.498	.501	.692
f4	16.29	6.878	.467	.703
f5	16.75	6.636	.459	.705
f6	16.31	6.404	.468	.703

2. Personal Competency

Case Processing Summary

		N	%
Cases	Valid	411	100.0
	Excluded[a]	0	.0
	Total	411	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.749	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
p1	20.79	9.535	.432	.726
p2	21.00	9.602	.456	.721
p3	20.90	9.334	.485	.715
p4	21.10	8.732	.548	.699
p5	20.93	9.078	.521	.707
p6	21.66	9.034	.428	.728
p7	21.22	9.040	.405	.735

3. Broad-business Perspective Competency

Case Processing Summary

		N	%
Cases	Valid	411	100.0
	Excluded[a]	0	.0
	Total	411	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.791	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
b1	19.47	11.196	.407	.784
b2	19.56	10.418	.579	.753
b3	19.83	10.057	.574	.753
b4	19.75	10.715	.499	.768
b5	19.85	10.325	.531	.762
b6	19.18	10.815	.492	.769
b7	19.51	10.177	.545	.759

4. Comfort of Class Size (CCS)

Case Processing Summary

		N	%
Cases	Valid	411	100.0
	Excluded[a]	0	.0
	Total	411	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.818	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
cls1	6.72	3.908	.655	.770
cls2	6.71	3.846	.747	.672
cls3	6.28	4.474	.620	.801

5. Learning Facilities (LF)

Case Processing Summary

		N	%
Cases	Valid	411	100.0
	Excluded[a]	0	.0
	Total	411	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.818	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
lf1	18.95	16.952	.551	.795
lf2	19.20	16.875	.555	.794
lf3	18.55	16.857	.590	.789
lf4	18.82	16.956	.600	.788
lf5	19.02	16.709	.558	.793
lf6	18.68	15.687	.539	.800
lf7	18.64	16.504	.535	.798

Appendix A7: FGD Guide-English Version

FGD

FGD GUIDE

Date and Location: ___________________________

1. Purpose of the FGD (8 minutes)

The purposes of the FGD are to understand alumni's perception about international competency of accounting graduates and their compatibility with work requirements.

2. Introduction of Participants and Facilitator (10 minutes)

Good afternoon Ladies and Gentlemen. Welcome to our focus group discussion on international competency of accounting graduates and their compatibility with work requirements. Thank you very much for taking your time to attend this valuable discussion.

My name is Heri Yanto and I am a PhD student at University of Southern Queensland, Australia majoring in Accounting. We would like to understand that international competency of accounting graduates is very important for working internationally and domestically. This discussion is very important to understand your perception about international competencies you earned during university education and the competencies needed for working. Your information will be very precious for universities to develop education that can meet or exceed international and national working competency requirements.

There is no right or wrong answer in this discussion, because your answer will be mainly about your points of view on specific issues. Therefore, could you please share your positive and negative points of view with us!

Our discussion will take an hour and a half to two hours. Before we start our discussion, I would like you to introduce yourself by telling us your name, what type company you are working with, how long have you been working in this company, and what year did you graduated.

3. Discussion Themes

Theme 1: Functional competencies (30 minutes)

Guide Questions:

1.1. Functional competency relates to the technical competencies, which are most closely aligned with the value contributed by accounting professionals. What are the key functional competencies you need to finish your job in your company?
1.2. Please tell me more about the contribution of each competency you have already identified to perform your work?
1.3. How did you get those competencies?
1.4. What are major problems in improving your functional competencies?
1.5. Please provide me information about the extent of your functional competencies right after your graduation from university?
1.6. Please tell me if there are any connections between functional competencies you earned at university education with functional competencies you use at your work.

1.7. What are your suggestions to your university to ensure your university's graduates will have sufficient functional competencies?

1.8. I have already made a list of key functional competencies that you need to finish your job in your company. Please make rank of these competencies based on their importance.

Theme 2: Personal Competencies (30 minutes)

Guide Questions:

2.1. Thank you very much for providing me very important information about functional competency. Let's move to other type of competency, personal competency. Personal competency relates to the attitudes and behaviours of individuals preparing to enter the accounting profession. What are the personal characteristics you need to perform your work at your company?

2.2. Please tell me more about each competency you have already identified?

2.3. How did you get those competencies?

2.4. What are major problems in improving your personal competencies?

2.5. Please provide me information about the extent of your personal competencies right after your graduation from university?

2.6. Please tell me if there are any connections between personal competencies you earned at university education with personal competencies you use at your work.

2.7. What are your suggestions to your university to ensure your university's graduates will have sufficient personal competencies?

2.8. I have already made a list of key personal competencies that you need to finish your job in your company. Please make rank of these competencies based on their importance.

Theme 3: Broad Business Perspective Competencies (30 minutes)

Guide Questions:

3.1. The last competency we are going to discuss is broad business perspective. This competency relates to the context in which accounting professionals perform their service. An accountant must conversant with the overall realities of the business environment. Based on your experience. What are the characteristics of broad business perspective competency you need to perform your work at your company?

3.2. Please tell me more about each competency you have already identified?

3.3. How did you get those competencies?

3.4. What are major problems in improving your broad-business competency?

3.5. Please provide me information about the extent of your broad-business competency right after your graduation from university?

3.6. Please tell me if there are any connections between broad-business competencies you earned at university education with broad-business competency you use at your work.

3.7. What are your suggestions to your university to ensure your university's graduates will have sufficient broad business competencies?

3.8. I have already made a list of key broad-business perspective competencies that you need to finish your job in your company. Please make rank of these competencies based on their importance.

Appendix A8: FGD Guide-Indonesian Version

FGD

PANDUAN FGD

Tanggal dan Lokasi: ___________________________

1. Tujuan FGD (8 menit)

Tujuan dari FGD adalah untuk mengetahui persepsi alumni tentang kompetensi internasional akuntansi para lulusan jurusan Akuntansi, Fakultas Ekonomi dan kesesuaiannya dengan kompetensi yang dibutuhkan untuk persyaratan kerja.

2. Perkenalan peserta FGD dan fasilitator (10 menit)

Selamat siang Bapak-bapak dan ibu-ibu. Selamat datang di forum FGD untuk mendiskusikan tentang kompetensi internasional para lulusan jurusan akuntansi dan kecocokannya dengan kompetensi yang disyaratkan untuk bekerja. Terima kasih atas waktu yang Bapak/Ibu sisihkan untuk menghadiri diskusi yang sangat berharga ini.

Perkenalkan nama saya Heri Yanto, saya adalah mahasiswa S3 di *University of Southern Queensland, Australia* dengan jurusan Akuntansi. Perlu saya sampaikan bahwa kompetensi internasional bidang akuntansi para lulusan universitas adalah sangat penting agar bisa bekerja secara profesional baik di tataran lokal maupun internasional.

Diskusi ini sangat penting untuk memahami persepsi Bapak/Ibu tentang kompetensi internasional yang diperoleh selama pendidikan di universitas dan kommpetensi yang diperlukan untuk bekerja. Informasi Bapak/Ibu sangat bermanfaat bagi universitas untuk mengembangkan pendidikan yang bisa memenuhi atau bahkan bisa melebihi kompetensi yang dipersyaratkan secara nasional maupun internasional.

Dalam diskusi ini tidak ada jawaban salah atau benar, karena jawaban akan terfokus pada pandangan Bapak/Ibu tentang isu-isu tentang kompetensi. Oleh karena itu, saya mohon Bapak/Ibu untuk bisa berbagi pandangan positif maupun pandangan negatif dengan kami semua.

Diskusi ini akan berlangsung selama satu setengah jam sampai dua jam. Sebelum kita mulai diskusi ini, saya mohon Bapak/Ibu untuk saling memperkenalkan diri dengan menyebutkan nama, jenis perusahaan dimana Bapak/Ibu bekerja, sudah berapa lama Bapak/Ibu bekerja di perusahaan ini, dan kapan Bapak/Ibu lulus dari universitas.

3. Teme Diskusi

Tema 1: Kompetensi Fungsional (30 menit)

Pertanyaan pemandu:

1.1. Kompetensi fungsional berhubungan dengan kompetensi teknis, yang paling berkaitan erat dengan pekerjaan-pekerjaan yang dilakukan oleh para profesional di bidang akuntansi. Kompetensi fungsional apa saja yang Bapak/Ibu harus kuasai agar bisa menyelesaikan pekerjaan Bapak/Ibu di perusahaan?

1.2. Tolong beritahu saya lebih lanjut tentang kontribusi masing-masing kompetensi yang telah diidentifikasi untuk melakukan pekerjaan Anda?

1.3. Darimana bapak/Ibu mendapatkan kompetensi tersebut?

1.4. Masalah utama apa saja yang dihadapi bapak/Ibu dalam meningkatkan kompetensi fungsional?

1.5. Tolong saya diberi informasi tentang tingkat kompetensi fungsional Bapak/Ibu pada waktu baru saja lulus dari universitas?

1.6. Tolong beritahu saya jika ada hubungan antara kompetensi fungsional yang Bapak/Ibu terima di bangku kuliah dengan kompetensi fungsional yang Bapak/Ibu gunakan di tempat kerja.

1.7. Apa saran bapak/Ibu yang perlu disampaikan kepada universitas agar para lulusannya memiliki kompetensi fungsional yang cukup?

1.8. Saya sudah membuat daftar pokok-pokok kompetensi fungsional yang mungkin Bapak/Ibu butuhkan untuk menyelesaikan pekerjaan di perusahaan. Silakan membuat peringkat kompetensi-kompetensi ini berdasarkan tingkat kepentingannya.

Tema 2: Kompetensi Pribadi/pesonal (30 minutes)

Pertanyaan pemandu:

2.1. Terima kasih banyak Bapak/Ibu telah memberikan informasi yang sangat penting tentang kompetensi fungsional. Mari kita diskusikan jenis kompetensi lainnya yaitu kompetensi pribadi. Kompetensi pribadi berkaitan dengan sikap dan perilaku individu untuk mempersiapkan diri dalam memasuki profesi akuntansi. Karakteristik pribadi apa saja yang Bapak/Ibu butuhkan untuk melakukan pekerjaan di perusahaan?

2.2. Tolong beritahu saya lebih lanjut tentang masing-masing kompetensi yang sudah Bapk/Ibu identifikasi?

2.3. Bagaimana Bapak/Ibu memperoleh kompetensi tersebut?

2.4. Masalah utama apa saja yang Bapak/Ibu hadapi dalam meningkatkan kompetensi pribadi tersebut?

2.5. Tolong saya diberi informasi tentang tingkat kompetensi personal/pribadi Bapak/Ibu pada waktu baru saja lulus dari universitas?

2.6. Tolong beritahu saya jika ada hubungan antara kompetensi pribadi yang Bapak/Ibu peroleh di bangku kuliah dengan kompetensi pribadi yang digunakan di tempat kerja.

2.7. Apa saran bapak/Ibu yang perlu disampaikan kepada universitas agar para lulusannya memiliki kompetensi pribadi/personal yang cukup?

2.8. Saya sudah membuat daftar pokok-pokok kompetensi pribadi yang mungkin Bapak/Ibu butuhkan dalam menyelesaikan pekerjaan dalam perusahaan. Silakan membuat peringkat kompetensi berdasarkan tingkat kepentingannya.

Tema 3: Kompetensi Perspectif Bisnis (30 menit)

Pertanyaan pemandu:

3.1. Kompetensi terakhir yang akan kita diskusikan adalah kompetensi perspektif bisnis. kompetensi ini berkaitan dengan konteks di mana para profesional di bidang akuntansi memberikan layanannya. Seorang akuntan harus fasih dengan realitas keseluruhan dari lingkungan bisnis. Berdasarkan pengalaman bapak/Ibu. Apa saja kompetensi perspektif bisnis yang dibutuhkan untuk melakukan pekerjaan di perusahaan?

3.2. Tolong beritahu saya lebih lanjut tentang masing-masing kompetensi yang sudah Bapk/Ibu identifikasi?

3.3. Bagaimana Bapak/Ibu mendapatkan kompetensi ini?

3.4. Masalah utama apa saja yang Bapak/Ibu hadapi dalam meningkatkan kompetensi perspektif bisnis tersebut?

3.5. Tolong saya diberi informasi tentang tingkat kompetensi perspektif bisnis Bapak/Ibu pada waktu baru saja lulus dari universitas?

3.6. Tolong beritahu saya jika ada hubungan antara kompetensi perpektif bisnis yang Bapak/Ibu peroleh di bangku kuliah dengan kompetensi perspektif bisnis yang digunakan di tempat kerja.

3.7. Apa saran bapak/Ibu yang perlu disampaikan kepada universitas agar para lulusannya memiliki kompetensi perspektif bisnis yang cukup?

3.8. Saya sudah membuat daftar pokok-pokok kompetensi pribadi yang Bapak/Ibu butuhkan dalam menyelesaikan pekerjaan dalam perusahaan. Silakan membuat peringkat kompetensi berdasarkan tingkat kepentingannya.

Appendix B1: ICAG by University, Accreditation Level, and Location

1. ICAG by University

Descriptives

ICAG

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	81	66.98	8.640	.960	65.06	68.89	53	90
2	20	64.70	5.545	1.240	62.10	67.30	52	77
3	93	67.27	8.441	.875	65.53	69.01	50	95
4	25	66.68	10.527	2.105	62.33	71.03	38	91
5	26	64.38	8.090	1.587	61.12	67.65	49	78
6	65	70.54	8.035	.997	68.55	72.53	46	89
7	60	66.28	9.521	1.229	63.82	68.74	43	88
8	41	67.73	7.922	1.237	65.23	70.23	47	84
Total	411	67.29	8.628	.426	66.45	68.12	38	95

ANOVA

ICAG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1125.712	7	160.816	2.205	.033
Within Groups	29396.410	403	72.944		
Total	30522.122	410			

2. ICAG by Accreditation

ANOVA

ICAG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	369.911	2	184.955	2.503	.083
Within Groups	30152.211	408	73.902		
Total	30522.122	410			

3. ICAG by Location

ANOVA

ICAG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	137.849	1	137.849	1.856	.174
Within Groups	30384.273	409	74.289		
Total	30522.122	410			

Appendix B2: GPA by University, Accreditation Level and Location

1. GPA By University

Descriptives

GPA

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	81	3.36111	.251838	.027982	3.30543	3.41680	2.590	3.840
2	20	3.29250	.196358	.043907	3.20060	3.38440	2.950	3.700
3	93	3.22441	.257511	.026703	3.17137	3.27744	2.630	3.780
4	25	3.09200	.191594	.038319	3.01291	3.17109	2.800	3.420
5	26	3.06115	.263929	.051761	2.95455	3.16776	2.630	3.540
6	65	3.15138	.279312	.034644	3.08217	3.22059	2.600	3.880
7	60	3.18833	.322365	.041617	3.10506	3.27161	2.200	3.780
8	41	3.28976	.167504	.026160	3.23689	3.34263	3.000	3.860
Total	411	3.22599	.271007	.013368	3.19971	3.25226	2.200	3.880

ANOVA

GPA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.336	7	.477	7.174	.000
Within Groups	26.776	403	.066		
Total	30.112	410			

2. GPA by Accreditation

ANOVA

GPA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.395	2	.198	2.712	.068
Within Groups	29.717	408	.073		
Total	30.112	410			

3. GPA by Location

Descriptives

GPA

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	202	3.28851	.264757	.018628	3.25178	3.32525	2.200	3.860
2	209	3.16555	.263756	.018244	3.12958	3.20152	2.600	3.880
Total	411	3.22599	.271007	.013368	3.19971	3.25226	2.200	3.880

ANOVA

GPA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.553	1	1.553	22.243	.000
Within Groups	28.559	409	.070		
Total	30.112	410			

Appendix B3: Student Engagement by University, Accreditation Level and Location

1. Student Engagement (SE) by University

ANOVA

SE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1218.458	7	174.065	1.056	.392
Within Groups	66442.685	403	164.870		
Total	67661.144	410			

2. Student Engagement by Accreditation

ANOVA

SE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	889.854	2	444.927	2.719	.067
Within Groups	66771.290	408	163.655		
Total	67661.144	410			

3. Student Engagement by Location

ANOVA

SE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.822	1	28.822	.174	.677
Within Groups	67632.322	409	165.360		
Total	67661.144	410			

Appendix B4: Student Motivation by University, Accreditation Level and Location

1. Student Motivation (SM) by University

Descriptives

Motivation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	81	4.1409	.15009	.01668	4.1077	4.1741	3.75	4.42
2	20	4.0347	.14625	.03270	3.9663	4.1031	3.72	4.27
3	93	4.1933	.15530	.01610	4.1613	4.2252	3.63	4.42
4	25	4.1405	.15525	.03105	4.0764	4.2046	3.85	4.42
5	26	4.1506	.12757	.02502	4.0990	4.2021	3.86	4.34
6	65	4.1373	.11659	.01446	4.1084	4.1662	3.87	4.42
7	60	4.1346	.14145	.01826	4.0981	4.1712	3.71	4.39
8	41	4.1333	.16098	.02514	4.0825	4.1841	3.71	4.39
Total	411	4.1459	.14798	.00730	4.1316	4.1603	3.63	4.42

ANOVA

Motivation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.478	7	.068	3.239	.002
Within Groups	8.500	403	.021		
Total	8.978	410			

2. Student Motivation by Accreditation

ANOVA

Motivation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.018	2	.009	.412	.662
Within Groups	8.960	408	.022		
Total	8.978	410			

3. Student Motivation by Location

Descriptives

Motivation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	202	4.1270	.15156	.01066	4.1060	4.1480	3.71	4.42
2	209	4.1642	.14241	.00985	4.1448	4.1837	3.63	4.42
Total	411	4.1459	.14798	.00730	4.1316	4.1603	3.63	4.42

ANOVA

Motivation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.143	1	.143	6.603	.011
Within Groups	8.835	409	.022		
Total	8.978	410			

Appendix B5: Previous Achievements by University, Accreditation Level and Location

1. Previous Achievements by University

Descriptives

Prev_Ach

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	81	8.2606	.48887	.05432	8.1525	8.3687	7.00	9.60
2	20	7.9130	.62489	.13973	7.6205	8.2055	7.00	9.10
3	93	8.0537	.57493	.05962	7.9353	8.1721	6.75	9.60
4	25	8.1512	.61140	.12228	7.8988	8.4036	7.00	9.50
5	26	7.2227	.65152	.12777	6.9595	7.4858	6.00	8.25
6	65	7.8777	.33185	.04116	7.7955	7.9599	7.00	9.00
7	60	7.7467	.51506	.06649	7.6136	7.8797	6.00	9.00
8	41	7.9590	.49300	.07699	7.8034	8.1146	7.00	8.67
Total	411	7.9589	.57457	.02834	7.9032	8.0146	6.00	9.60

ANOVA

Prev_Ach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26.399	7	3.771	13.949	.000
Within Groups	108.954	403	.270		
Total	135.353	410			

2. Previous Achievements by Accreditation

Descriptives

Prev_Ach

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	67	7.6733	.66241	.08093	7.5117	7.8349	6.00	8.67
2	198	7.9587	.58299	.04143	7.8770	8.0404	6.00	9.60
3	146	8.0901	.46576	.03855	8.0140	8.1663	7.00	9.60
Total	411	7.9589	.57457	.02834	7.9032	8.0146	6.00	9.60

ANOVA

Prev_Ach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.980	2	3.990	12.781	.000
Within Groups	127.373	408	.312		
Total	135.353	410			

3. Previous Achievements by Location

Descriptives

Prev_Ach

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	202	8.0123	.55294	.03890	7.9356	8.0890	6.00	9.60
2	209	7.9072	.59146	.04091	7.8266	7.9879	6.00	9.60
Total	411	7.9589	.57457	.02834	7.9032	8.0146	6.00	9.60

ANOVA

Prev_Ach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.135	1	1.135	3.458	.064
Within Groups	134.218	409	.328		
Total	135.353	410			

Appendix B6: Student Age by University, Accreditation Level, and Location

1. Student Age by University

Descriptives

Age

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	81	21.37	.798	.089	21.19	21.55	20	24
2	20	21.10	.553	.124	20.84	21.36	20	22
3	93	20.73	1.547	.160	20.41	21.05	18	25
4	25	21.20	.764	.153	20.88	21.52	20	23
5	26	21.12	1.211	.237	20.63	21.60	19	25
6	65	20.35	.856	.106	20.14	20.57	19	23
7	60	21.60	.942	.122	21.36	21.84	20	24
8	41	21.15	.573	.089	20.97	21.33	20	22
Total	411	21.04	1.114	.055	20.93	21.14	18	25

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	68.447	7	9.778	8.956	.000
Within Groups	440.006	403	1.092		
Total	508.453	410			

2. Student Age by Accreditation

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.284	2	1.642	1.326	.267
Within Groups	505.168	408	1.238		
Total	508.453	410			

3. Student Age by Location

Descriptives

Age

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	202	21.37	.801	.056	21.26	21.48	20	24
2	209	20.72	1.272	.088	20.54	20.89	18	25
Total	411	21.04	1.114	.055	20.93	21.14	18	25

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	43.217	1	43.217	37.993	.000
Within Groups	465.236	409	1.137		
Total	508.453	410			

Appendix B7: Comfort of Class Size by University, Accreditation Level, and Location

1. Comfort of Class Size (CCS) by University

Descriptives

CCS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	81	9.06	2.694	.299	8.47	9.66	3	15
2	20	8.85	2.207	.494	7.82	9.88	6	12
3	93	10.65	2.973	.308	10.03	11.26	3	15
4	25	12.24	2.260	.452	11.31	13.17	8	15
5	26	10.96	1.612	.316	10.31	11.61	8	14
6	65	10.12	2.764	.343	9.44	10.81	3	15
7	60	8.67	3.160	.408	7.85	9.48	3	15
8	41	9.27	2.684	.419	8.42	10.12	4	15
Total	411	9.85	2.900	.143	9.57	10.14	3	15

ANOVA

CCS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	406.790	7	58.113	7.703	.000
Within Groups	3040.451	403	7.545		
Total	3447.241	410			

2. Comfort of Class Size by Accreditation

ANOVA

CCS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.139	2	12.069	1.439	.238
Within Groups	3423.102	408	8.390		
Total	3447.241	410			

3. Comfort of Class Size by Location

Descriptives

CCS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	202	8.97	2.787	.196	8.58	9.35	3	15
2	209	10.71	2.750	.190	10.34	11.09	3	15
Total	411	9.85	2.900	.143	9.57	10.14	3	15

ANOVA

CCS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	313.708	1	313.708	40.946	.000
Within Groups	3133.533	409	7.661		
Total	3447.241	410			

Appendix B8: Learning Facilities by University, Accreditation Level and Location

1. Learning Facilities (LF) by University

Descriptives

LF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	81	24.12	4.737	.526	23.08	25.17	14	35
2	20	18.95	3.120	.698	17.49	20.41	13	25
3	93	20.46	4.738	.491	19.49	21.44	9	30
4	25	20.88	5.411	1.082	18.65	23.11	11	30
5	26	20.00	4.915	.964	18.01	21.99	7	31
6	65	22.95	4.353	.540	21.88	24.03	14	34
7	60	22.37	4.353	.562	21.24	23.49	13	34
8	41	22.46	2.967	.463	21.53	23.40	16	28
Total	411	21.98	4.690	.231	21.52	22.43	7	35

ANOVA

LF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	982.339	7	140.334	7.039	.000
Within Groups	8034.464	403	19.937		
Total	9016.803	410			

2. Learning Facilities by Accreditation

Descriptives

LF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	67	21.51	3.994	.488	20.53	22.48	7	31
2	198	20.94	4.668	.332	20.29	21.59	9	34
3	146	23.60	4.592	.380	22.85	24.35	14	35
Total	411	21.98	4.690	.231	21.52	22.43	7	35

ANOVA

LF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	613.825	2	306.913	14.902	.000
Within Groups	8402.978	408	20.596		
Total	9016.803	410			

3. Learning Facilities by Location

Descriptives

LF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	202	22.75	4.407	.310	22.14	23.36	13	35
2	209	21.23	4.841	.335	20.57	21.89	7	34
Total	411	21.98	4.690	.231	21.52	22.43	7	35

ANOVA

LF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	238.203	1	238.203	11.098	.001
Within Groups	8778.600	409	21.464		
Total	9016.803	410			

Appendix B9: The Impact of Student Engagement Dimensions on Functional Competency

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.368[a]	.136	.125	2.825	1.699

a. Predictors: (Constant), SLE, EEE, AC, SSI, AL

b. Dependent Variable: FC

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	506.838	5	101.368	12.703	.000[a]
	Residual	3231.897	405	7.980		
	Total	3738.735	410			

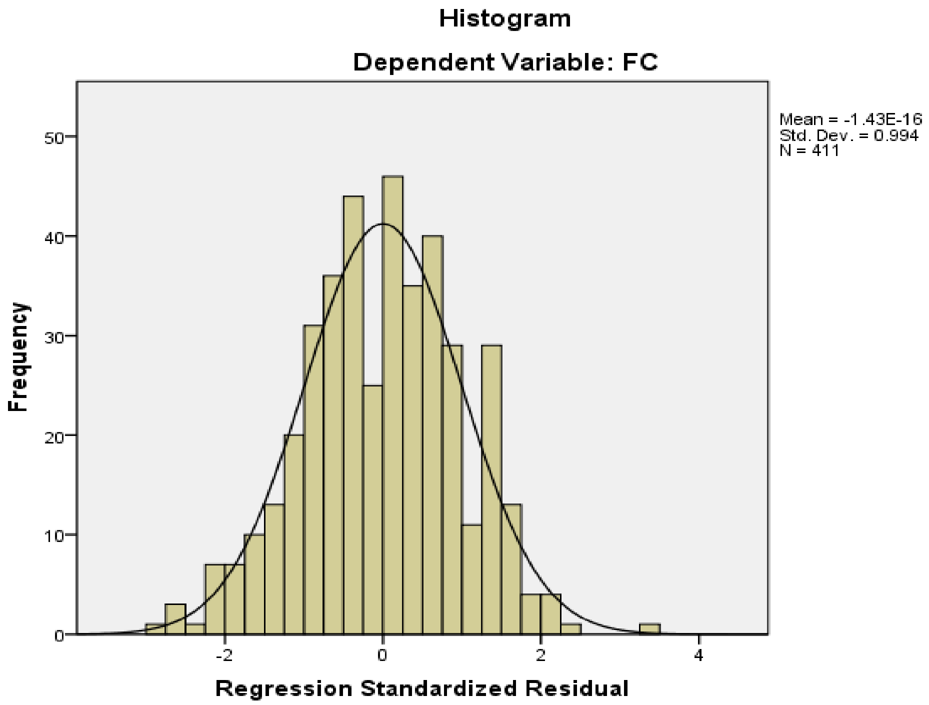
a. Predictors: (Constant), SLE, EEE, AC, SSI, AL

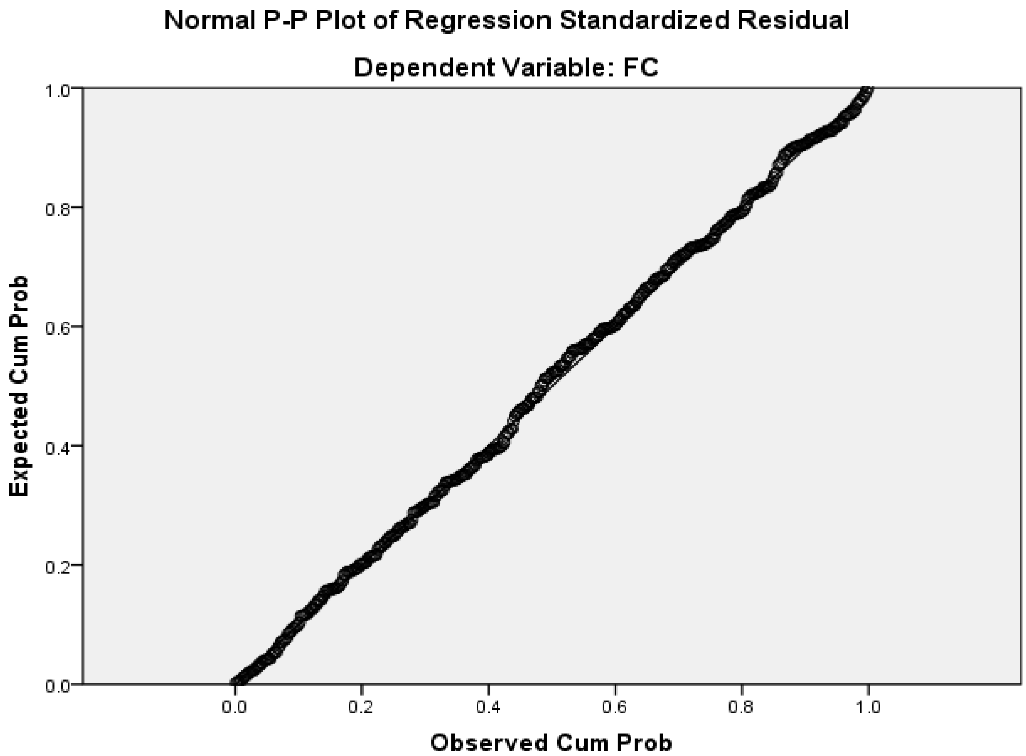
b. Dependent Variable: FC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.798	1.363		7.923	.000		
	AC	.135	.031	.241	4.289	.000	.675	1.481
	AL	.008	.055	.009	.148	.882	.596	1.678
	SSI	-.014	.045	-.018	-.317	.751	.652	1.533
	EEE	.035	.058	.032	.615	.539	.770	1.298
	SLE	.247	.066	.193	3.745	.000	.801	1.249

a. Dependent Variable: FC


Histogram
Dependent Variable: FC
Mean = -1.43E-16
Std. Dev. = 0.994
N = 411
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: FC
Expected Cum Prob
Observed Cum Prob

APPENDIX

Appendix B10: The Impact of Student Engagement Dimensions on Personal Competency

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.423[a]	.179	.169	3.160	1.836

a. Predictors: (Constant), SLE, EEE, AC, SSI, AL

b. Dependent Variable: PC

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	880.321	5	176.064	17.631	.000[a]
	Residual	4044.239	405	9.986		
	Total	4924.560	410			

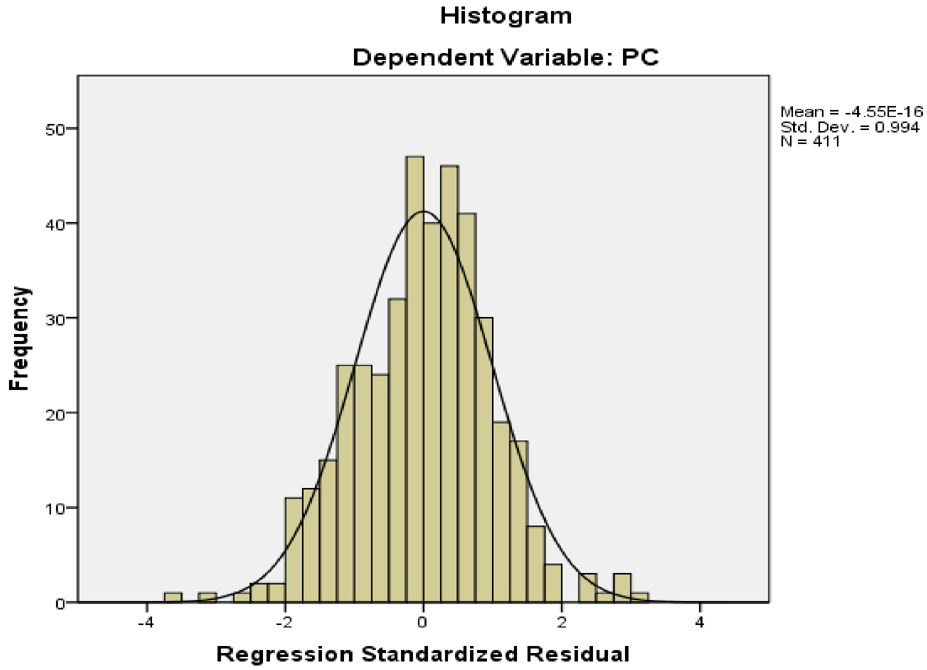
a. Predictors: (Constant), SLE, EEE, AC, SSI, AL

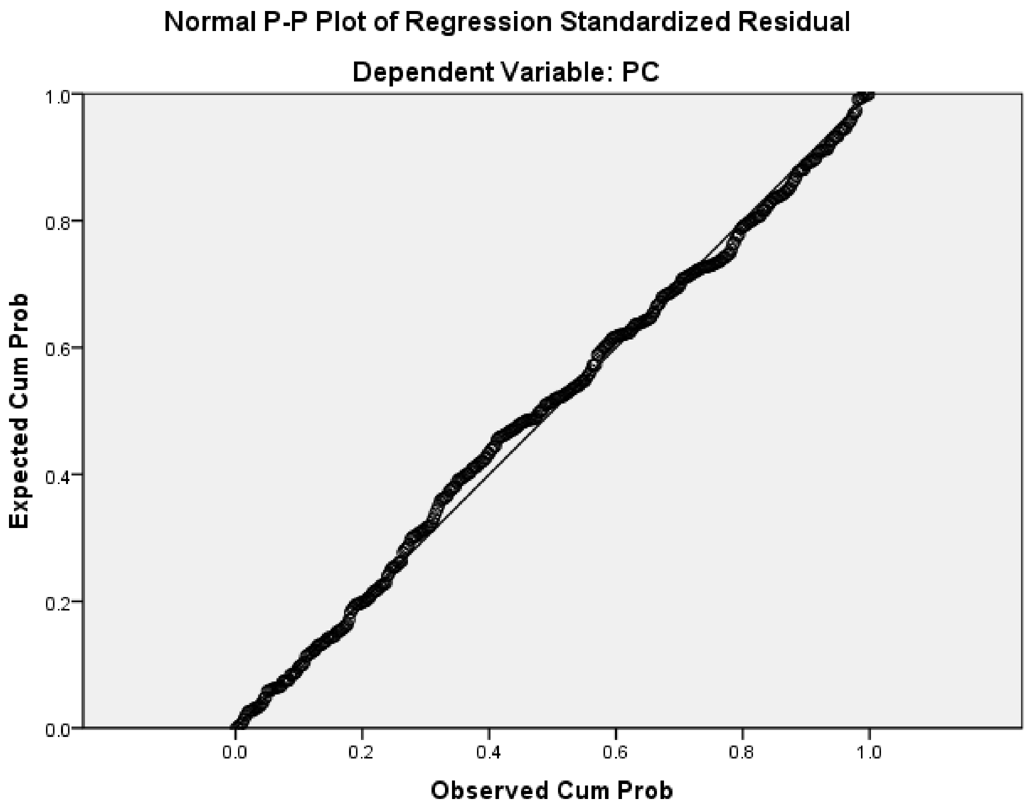
b. Dependent Variable: PC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	11.119	1.525		7.293	.000		
	AC	.153	.035	.238	4.346	.000	.675	1.481
	AL	.140	.062	.131	2.254	.025	.596	1.678
	SSI	-.046	.050	-.051	-.923	.357	.652	1.533
	EEE	.083	.064	.066	1.290	.198	.770	1.298
	SLE	.236	.074	.161	3.202	.001	.801	1.249

a. Dependent Variable: PC





Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PC
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

Appendix B11: The Impact of Student Engagement Dimensions on Broad-business Perspective Competency

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.456[a]	.208	.198	3.332	1.901

a. Predictors: (Constant), SLE, EEE, AC, SSI, AL

b. Dependent Variable: BPC

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1180.680	5	236.136	21.266	.000[a]
	Residual	4497.135	405	11.104		
	Total	5677.815	410			

a. Predictors: (Constant), SLE, EEE, AC, SSI, AL

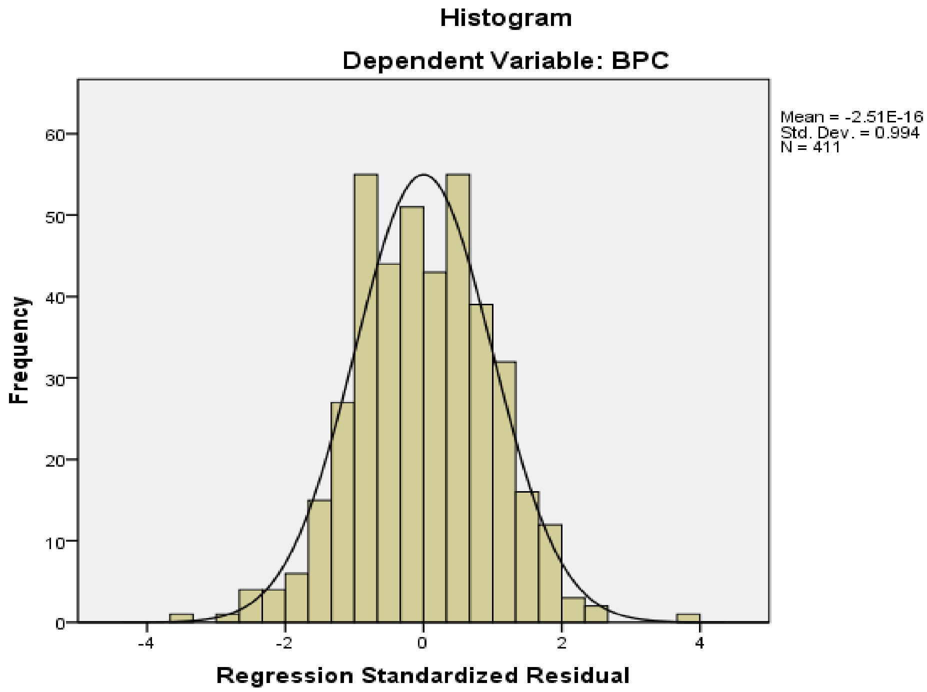
b. Dependent Variable: BPC

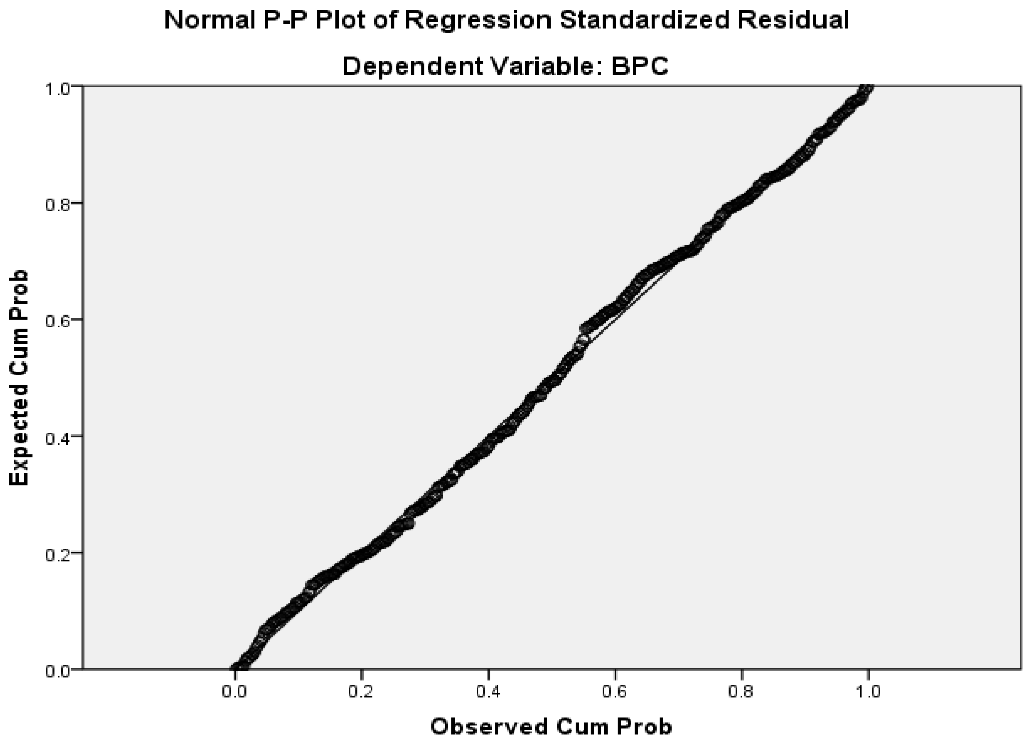
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	9.512	1.608		5.917	.000		
	AC	.165	.037	.239	4.438	.000	.675	1.481
	AL	-.023	.065	-.020	-.350	.726	.596	1.678
	SSI	.132	.053	.137	2.502	.013	.652	1.533
	EEE	.083	.068	.062	1.223	.222	.770	1.298
	SLE	.307	.078	.195	3.954	.000	.801	1.249

a. Dependent Variable: BPC

AC : Academic Challenge
AL : Active Learning
SSI : Student-Staff Interaction
EEE : Enriching Educational Experience
SLE : Supportive Learning Environment
BPC : Broad-business Perspective Competency


Histogram
Dependent Variable: BPC
Mean = -2.51E-16
Std. Dev. = 0.994
N = 411
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: BPC
Expected Cum Prob
Observed Cum Prob

Appendix B12: Student Motivation, Student Engagement, and ICAG Relationships, and Mediation Test

1. The Impact of Student Motivation on Student Engagement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.322[a]	.104	.102	12.175

a. Predictors: (Constant), Motivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7031.391	1	7031.391	47.433	.000[a]
	Residual	60629.752	409	148.239		
	Total	67661.144	410			

a. Predictors: (Constant), Motivation

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.285	16.857		-.195	.846
	Motivation	27.985	4.063	.322	6.887	.000

a. Dependent Variable: SE

2. The Impact of Student Motivation on ICAG

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.215[a]	.046	.044	8.436

a. Predictors: (Constant), Motivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1413.130	1	1413.130	19.855	.000[a]
	Residual	29108.992	409	71.171		
	Total	30522.122	410			

a. Predictors: (Constant), Motivation

b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.273	11.680		1.308	.192
	Motivation	12.546	2.816	.215	4.456	.000

a. Dependent Variable: ICAG

3. The Impact of Student Engagement on ICAG

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.206	7.688

a. Predictors: (Constant), SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6348.016	1	6348.016	107.402	.000[a]
	Residual	24174.106	409	59.105		
	Total	30522.122	410			

a. Predictors: (Constant), SE

b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.755	3.354		9.767	.000
	SE	.306	.030	.456	10.363	.000

a. Dependent Variable: ICAG

4. The Impact of Student Motivation and Student Engagement on ICAG

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.462[a]	.213	.209	7.672

a. Predictors: (Constant), Motivation, SE

b. Dependent Variable: ICAG

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6506.240	2	3253.120	55.266	.000[a]
	Residual	24015.882	408	58.862		
	Total	30522.122	410			

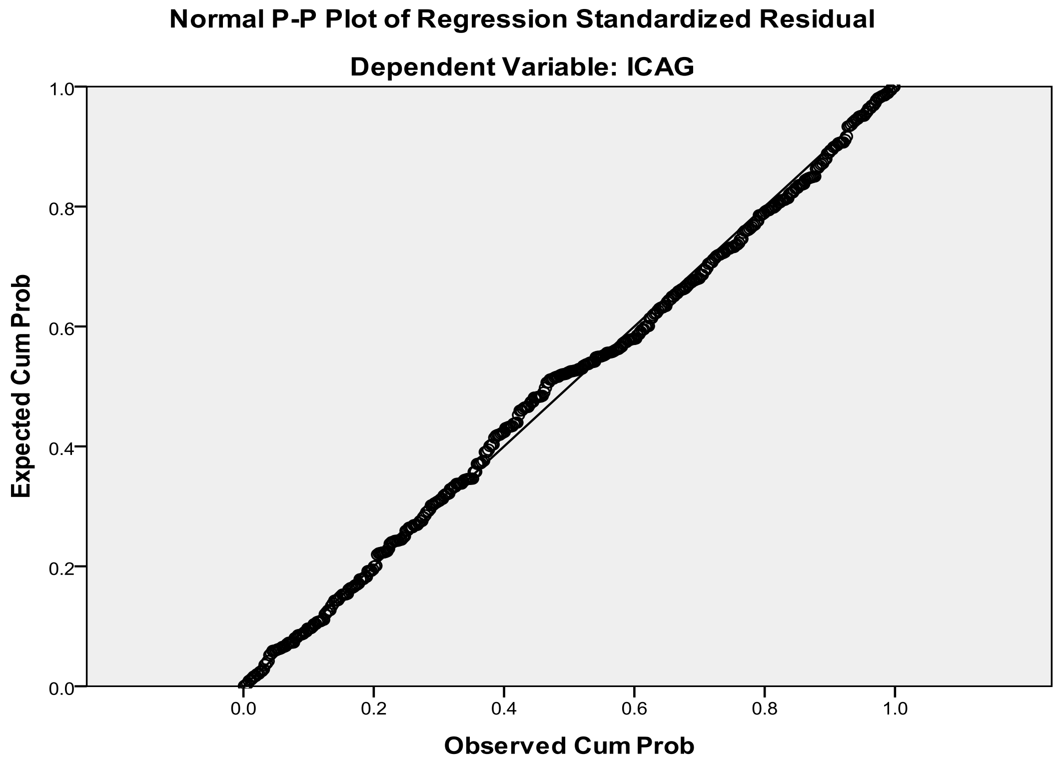
a. Predictors: (Constant), Motivation, SE

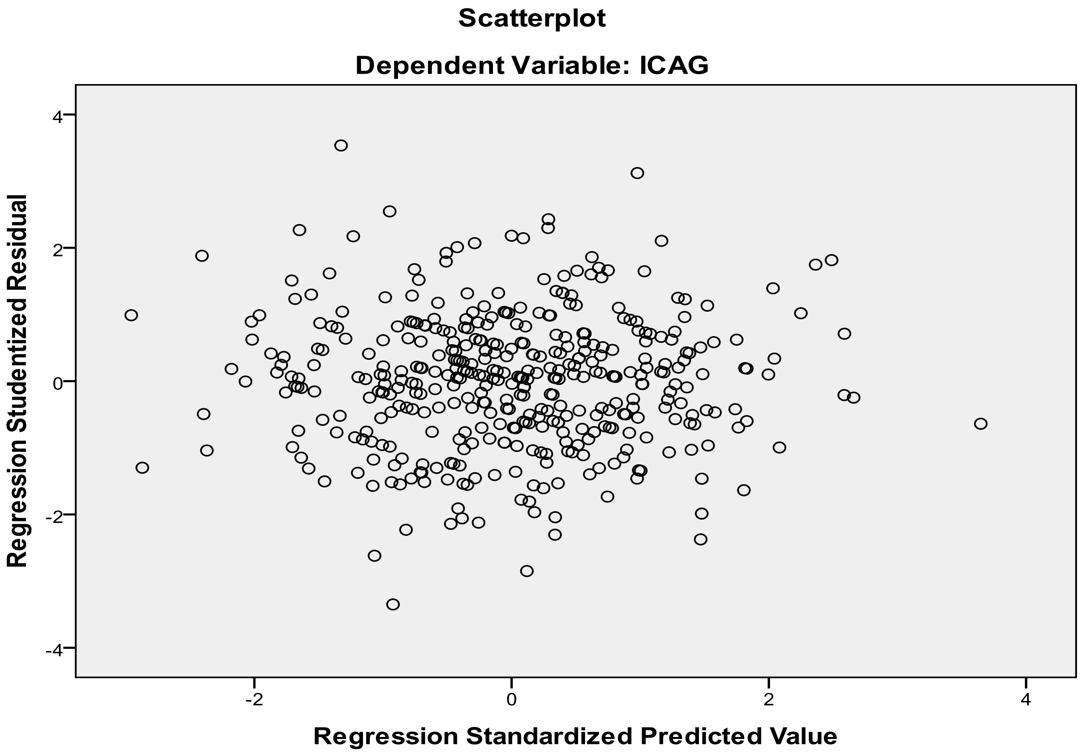
b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	16.225	10.623		1.527	.127		
	SE	.290	.031	.432	9.302	.000	.896	1.116
	Motivation	4.435	2.705	.076	1.640	.102	.896	1.116

a. Dependent Variable: ICAG




Scatterplot
Dependent Variable: ICAG
Regression Studentized Residual
4
2
0
-2
-4
-2
0
2
4
Regression Standardized Predicted Value

Appendix B13: Student Motivation, Student Engagement, and GPA Relationships and Mediation Test

1. The Impact of Student Motivation on Student Engagement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.322[a]	.104	.102	12.175

a. Predictors: (Constant), Motivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7031.391	1	7031.391	47.433	.000[a]
	Residual	60629.752	409	148.239		
	Total	67661.144	410			

a. Predictors: (Constant), Motivation

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.285	16.857		-.195	.846
	Motivation	27.985	4.063	.322	6.887	.000

a. Dependent Variable: SE

2. The Impact of Student Motivation on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.189[a]	.036	.034	.266426

a. Predictors: (Constant), Motivation

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.081	1	1.081	15.224	.000[a]
	Residual	29.032	409	.071		
	Total	30.112	410			

a. Predictors: (Constant), Motivation

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.788	.369		4.846	.000		
	Motivation	.347	.089	.189	3.902	.000	1.000	1.000

a. Dependent Variable: GPA

3. The Impact of Student Engagement on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.223[a]	.050	.048	.264493

a. Predictors: (Constant), SE

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.500	1	1.500	21.446	.000[a]
	Residual	28.612	409	.070		
	Total	30.112	410			

a. Predictors: (Constant), SE

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.695	.115		23.359	.000
	SE	.005	.001	.223	4.631	.000

a. Dependent Variable: GPA

4. The Impact of Student Motivation and Student Engagement on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.255[a]	.065	.061	.262662

a. Predictors: (Constant), Motivation, SE

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.964	2	.982	14.234	.000[a]
	Residual	28.148	408	.069		
	Total	30.112	410			

a. Predictors: (Constant), Motivation, SE

b. Dependent Variable: GPA

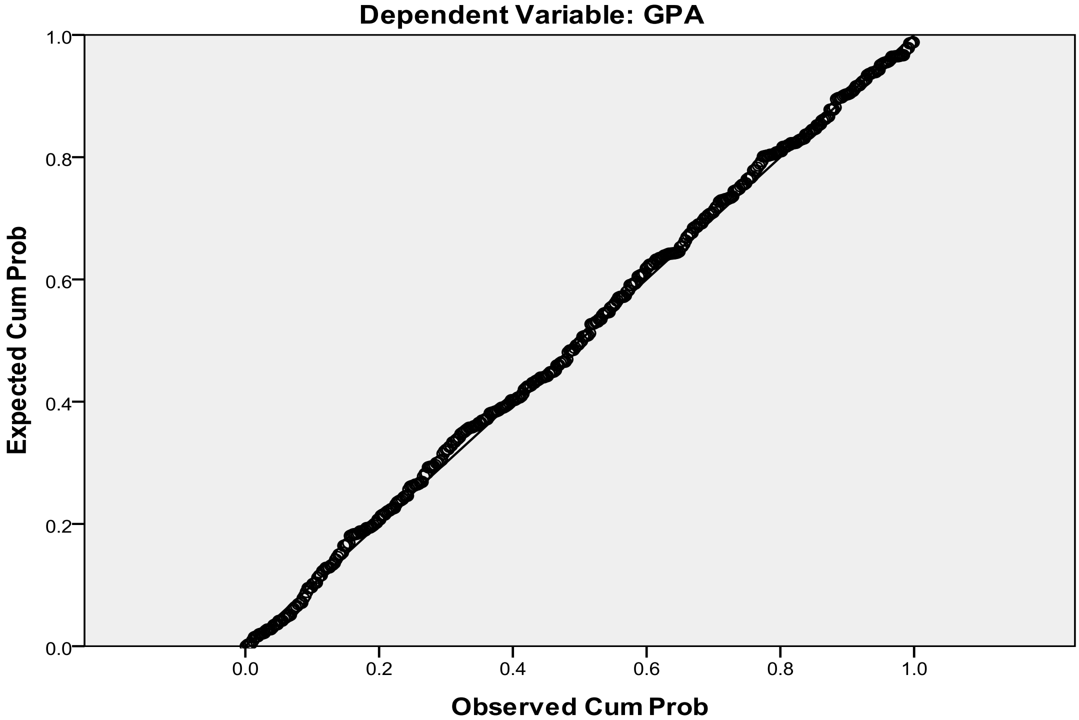
Coefficients[a]

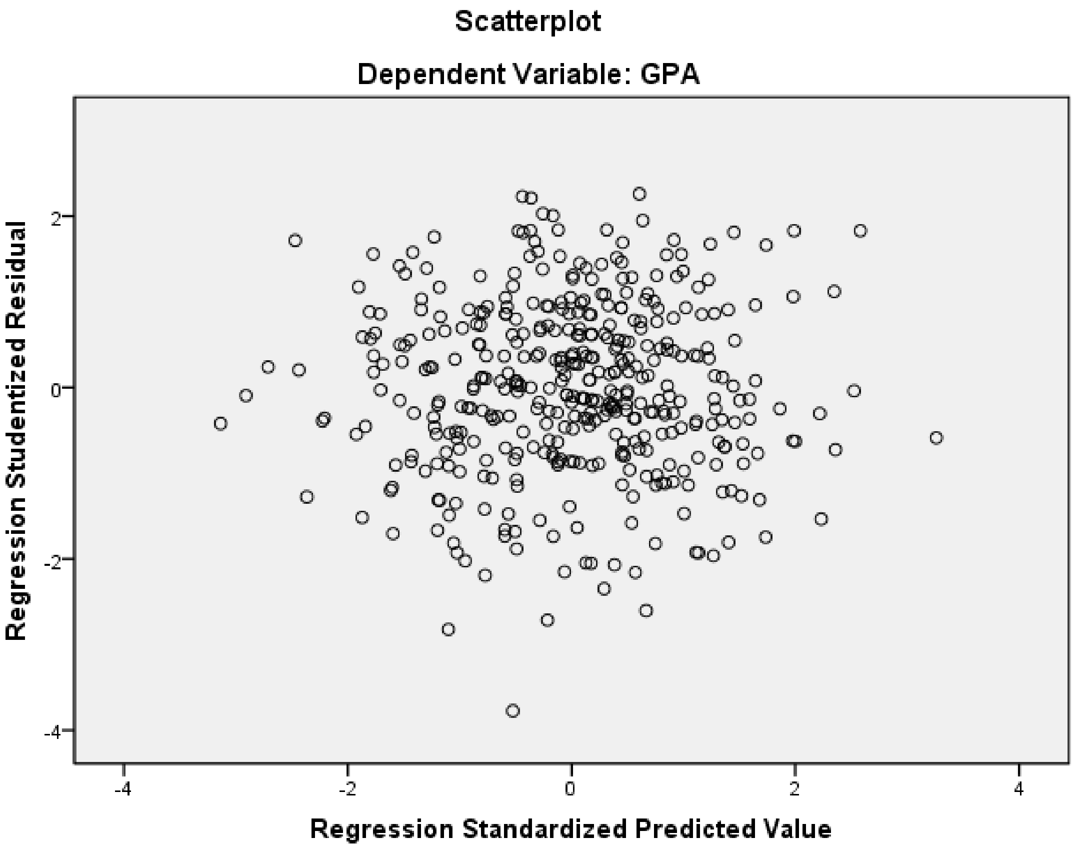
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.800	.364		4.950	.000		
	SE	.004	.001	.181	3.579	.000	.896	1.116
	Motivation	.240	.093	.131	2.593	.010	.896	1.116

a. Dependent Variable: GPA

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: GPA




Scatterplot
Dependent Variable: GPA
Regression Studentized Residual
2
0
-2
-4
-4
-2
0
2
4
Regression Standardized Predicted Value

Appendix B14: Previous Achievements, Student Motivation, Student Engagement, and ICAG Relationships and Mediation Test

1. The Impact of Previous Achievements on Student Engagement

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.235[a]	.055	.053	12.501

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3743.875	1	3743.875	23.957	.000[a]
	Residual	63917.269	409	156.277		
	Total	67661.144	410			

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	70.882	8.574		8.267	.000
	Prev_Ach	5.259	1.075	.235	4.895	.000

a. Dependent Variable: SE

2. The Impact of Student Engagement on ICAG

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.206	7.688

a. Predictors: (Constant), SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6348.016	1	6348.016	107.402	.000[a]
	Residual	24174.106	409	59.105		
	Total	30522.122	410			

a. Predictors: (Constant), SE

b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.755	3.354		9.767	.000
	SE	.306	.030	.456	10.363	.000

a. Dependent Variable: ICAG

3. The Impact of Previous Achievements on ICAG

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.138[a]	.019	.017	8.556

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: ICAG

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	582.342	1	582.342	7.955	.005[a]
	Residual	29939.780	409	73.202		
	Total	30522.122	410			

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	50.779	5.868		8.653	.000
	Prev_Ach	2.074	.735	.138	2.821	.005

a. Dependent Variable: ICAG

4. The Impact of Previous Achievements and Student Engagement on ICAG

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.457[a]	.209	.205	7.693	1.738

a. Predictors: (Constant), SE, Prev_Ach

b. Dependent Variable: ICAG

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6378.770	2	3189.385	53.898	.000[a]
	Residual	24143.352	408	59.175		
	Total	30522.122	410			

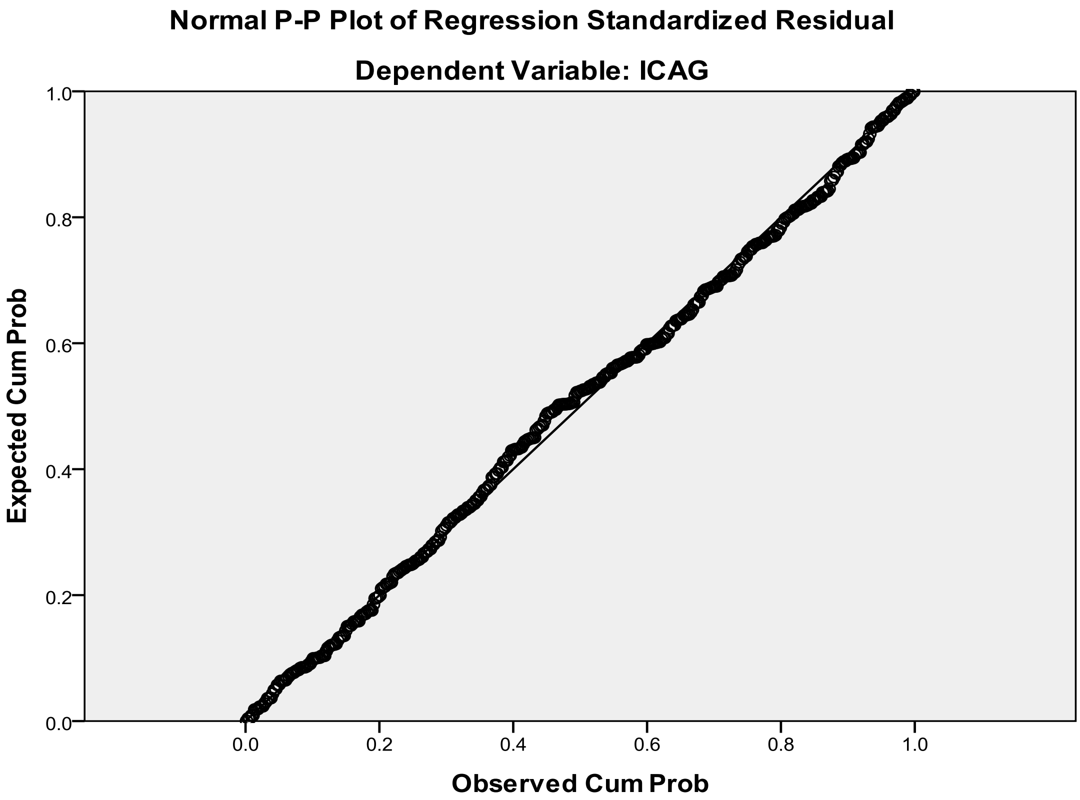
a. Predictors: (Constant), SE, Prev_Ach

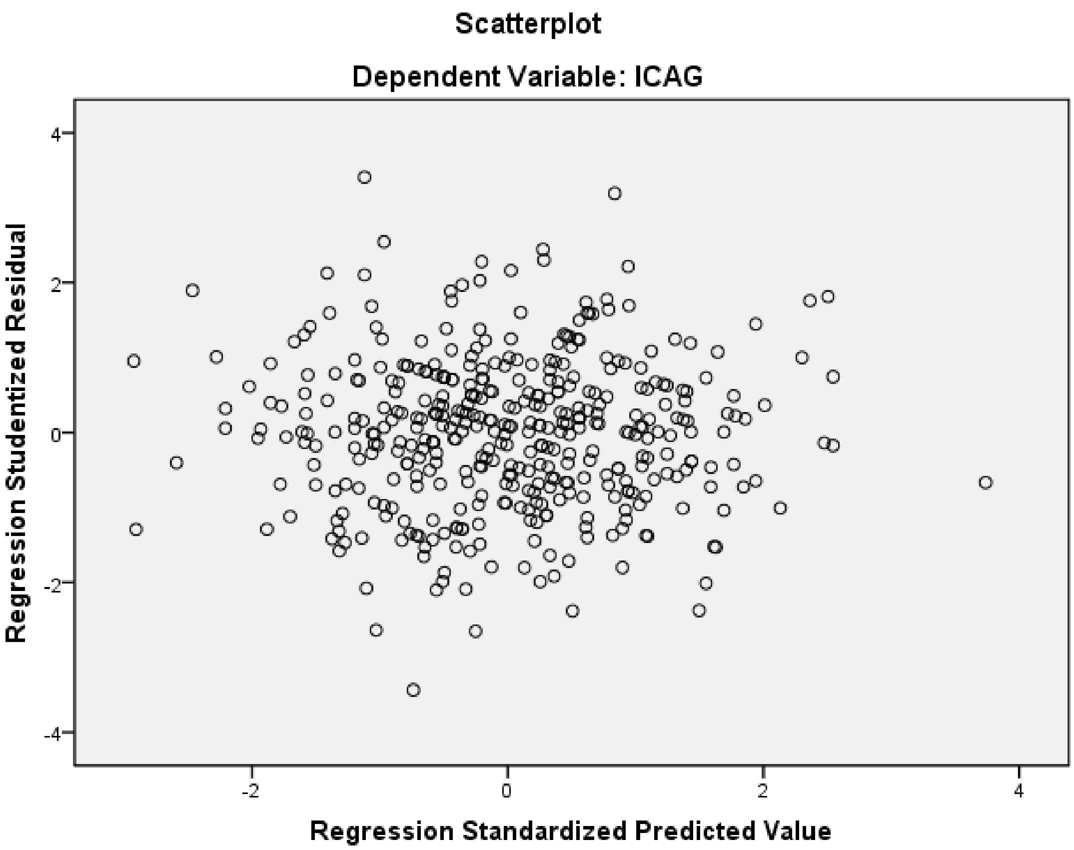
b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	29.433	5.700		5.164	.000		
	Prev_Ach	.490	.680	.033	.721	.471	.945	1.059
	SE	.301	.030	.448	9.897	.000	.945	1.059

a. Dependent Variable: ICAG


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: ICAG
Expected Cum Prob
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Observed Cum Prob


Scatterplot
Dependent Variable: ICAG
Regression Studentized Residual
4
2
0
-2
-4
-2
0
2
4
Regression Standardized Predicted Value

Appendix B15: Previous Achievements, Student Engagement, and GPA Relationships and Mediation Test

1. The Impact of Previous Achievements on Student Engagement

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.235[a]	.055	.053	12.501

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3743.875	1	3743.875	23.957	.000[a]
	Residual	63917.269	409	156.277		
	Total	67661.144	410			

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	70.882	8.574		8.267	.000
	Prev_Ach	5.259	1.075	.235	4.895	.000

a. Dependent Variable: SE

2. The Impact of Student Engagement on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.223[a]	.050	.048	.264493

a. Predictors: (Constant), SE

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.500	1	1.500	21.446	.000[a]
	Residual	28.612	409	.070		
	Total	30.112	410			

a. Predictors: (Constant), SE

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.695	.115		23.359	.000
	SE	.005	.001	.223	4.631	.000

a. Dependent Variable: GPA

3. The Impact of Previous Achievements on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.355[a]	.126	.124	.253658	1.545

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.796	1	3.796	59.004	.000[a]
	Residual	26.316	409	.064		
	Total	30.112	410			

a. Predictors: (Constant), Prev_Ach

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.893	.174		10.881	.000		
	Prev_Ach	.167	.022	.355	7.681	.000	1.000	1.000

a. Dependent Variable: GPA

4. The Impact of Student Engagement and Previous Achievements on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.383[a]	.147	.143	.250949	1.522

a. Predictors: (Constant), SE, Prev_Ach

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.418	2	2.209	35.081	.000[a]
	Residual	25.694	408	.063		
	Total	30.112	410			

a. Predictors: (Constant), SE, Prev_Ach

b. Dependent Variable: GPA

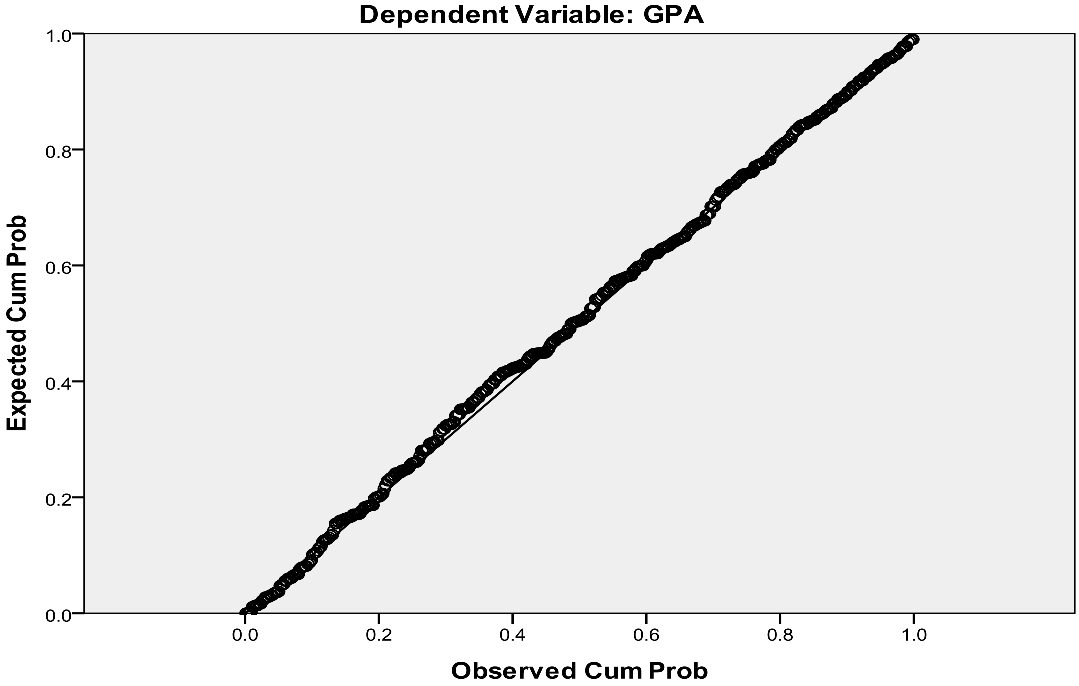
Coefficients[a]

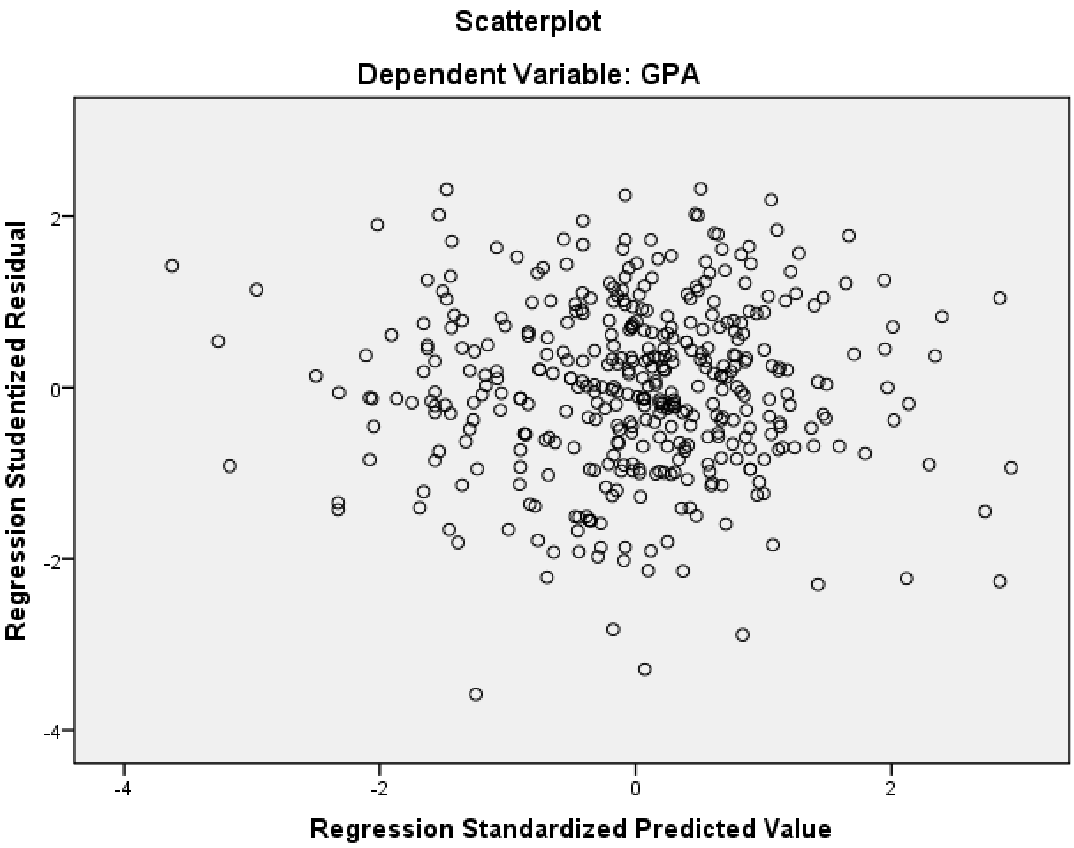
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.672	.186		8.992	.000		
	Prev_Ach	.151	.022	.320	6.807	.000	.945	1.059
	SE	.003	.001	.148	3.143	.002	.945	1.059

a. Dependent Variable: GPA

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: GPA




Scatterplot
Dependent Variable: GPA
Regression Studentized Residual
Regression Standardized Predicted Value
2
0
-2
-4
-4
-2
0
2

Appendix B16: NEM, Student Engagement, and GPA Relationships, and Mediation Test

1. **The Impact of NEM on Student Engagement**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.104[a]	.011	.008	12.792

a. Predictors: (Constant), Prev_nem

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	738.004	1	738.004	4.510	.034[a]
	Residual	66923.139	409	163.626		
	Total	67661.144	410			

a. Predictors: (Constant), Prev_nem

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	100.311	5.886		17.042	.000
	Prev_nem	1.567	.738	.104	2.124	.034

a. Dependent Variable: SE

2. **The Impact of Student Engagement on GPA**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.223[a]	.050	.048	.264493

a. Predictors: (Constant), SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.500	1	1.500	21.446	.000[a]
	Residual	28.612	409	.070		
	Total	30.112	410			

a. Predictors: (Constant), SE

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.695	.115		23.359	.000
	SE	.005	.001	.223	4.631	.000

a. Dependent Variable: GPA

3. The Impact of NEM on GPA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.419[a]	.175	.173	.246417

a. Predictors: (Constant), Prev_nem

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.278	1	5.278	86.914	.000[a]
	Residual	24.835	409	.061		
	Total	30.112	410			

a. Predictors: (Constant), Prev_nem

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.175	.113		19.182	.000
	Prev_nem	.133	.014	.419	9.323	.000

a. Dependent Variable: GPA

4. The Impact of NEM and Student Engagement on GPA

Model Summary

Mode l	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.204	.241797

a. Predictors: (Constant), SE, Prev_nem

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.258	2	3.129	53.521	.000[a]
	Residual	23.854	408	.058		
	Total	30.112	410			

a. Predictors: (Constant), SE, Prev_nem

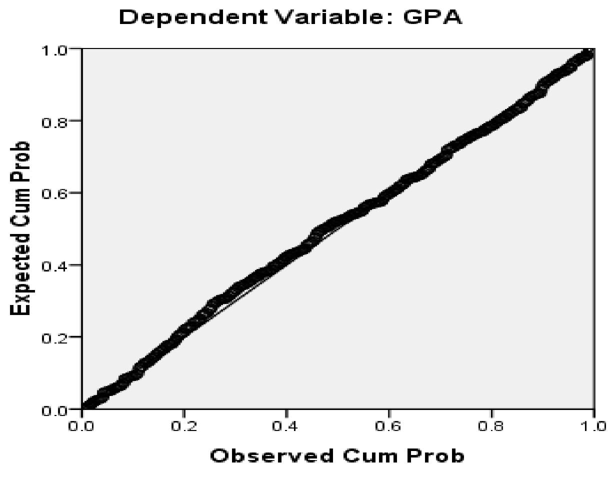
b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.791	.145		12.309	.000		
	Prev_nem	.127	.014	.400	9.021	.000	.989	1.011
	SE	.004	.001	.181	4.096	.000	.989	1.011

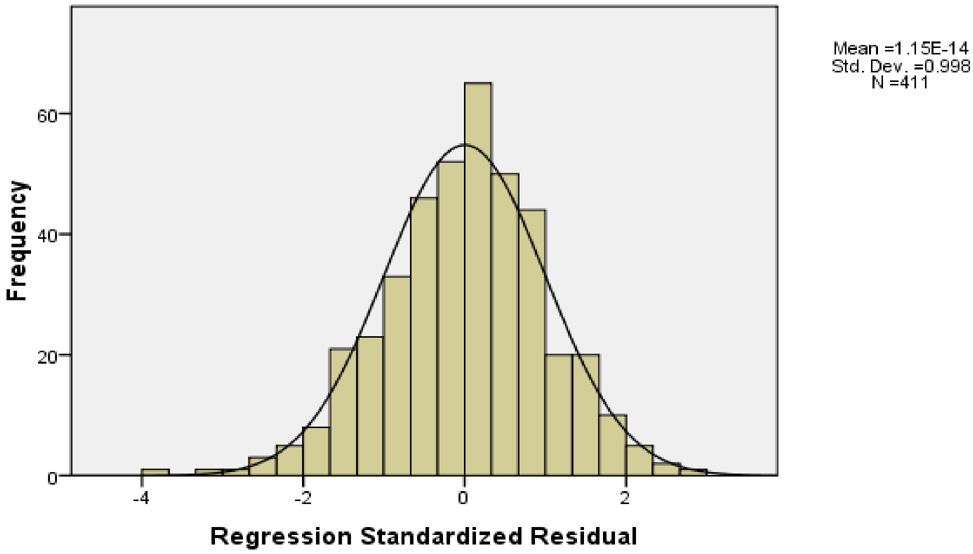
a. Dependent Variable: GPA

Normal P-P Plot of Regression Standardized Residual



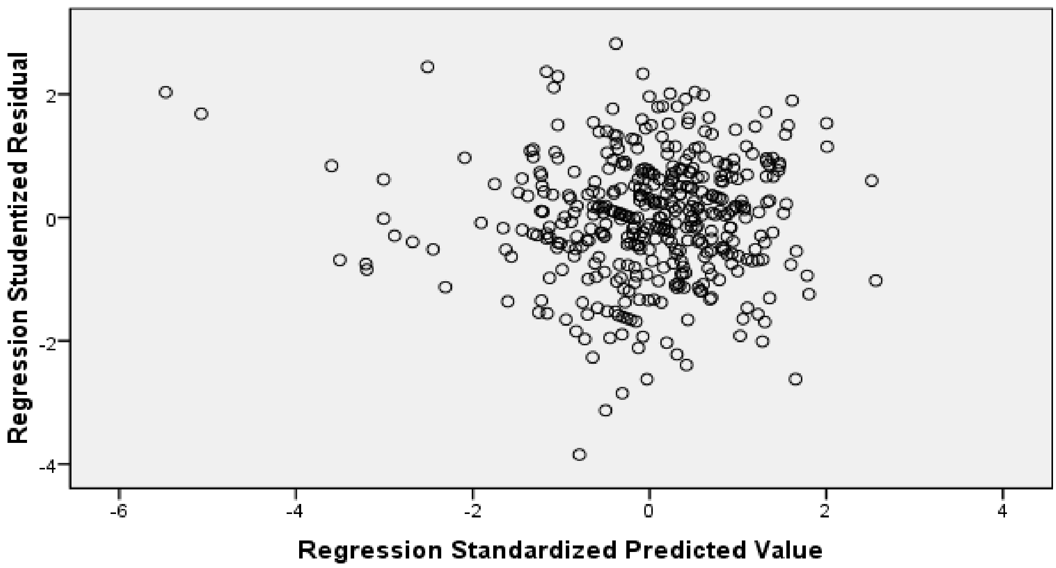
Histogram

Dependent Variable: GPA



Scatterplot

Dependent Variable: GPA



Appendix B17: Comfort of Class Size, Student Engagement, and ICAG Relationships and Mediation Test

1. **The Influence of Comfort of Class Size on Student Engagement**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.213[a]	.046	.043	12.565

a. Predictors: (Constant), CCS

b. Dependent Variable: SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3083.647	1	3083.647	19.530	.000[a]
	Residual	64577.496	409	157.891		
	Total	67661.144	410			

a. Predictors: (Constant), CCS

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	103.420	2.198		47.050	.000
	CCS	.946	.214	.213	4.419	.000

a. Dependent Variable: SE

2. **The Influence of Student Engagement on ICAG**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.206	7.688

a. Predictors: (Constant), SE

b. Dependent Variable: ICAG

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6348.016	1	6348.016	107.402	.000[a]
	Residual	24174.106	409	59.105		
	Total	30522.122	410			

a. Predictors: (Constant), SE

b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	32.755	3.354		9.767	.000
	SE	.306	.030	.456	10.363	.000

a. Dependent Variable: ICAG

3. The Influence of Comfort of Class Size on ICAG

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.113[a]	.013	.010	8.583

a. Predictors: (Constant), CCS

b. Dependent Variable: ICAG

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	393.191	1	393.191	5.338	.021[a]
	Residual	30128.931	409	73.665		
	Total	30522.122	410			

a. Predictors: (Constant), CCS

b. Dependent Variable: ICAG

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	63.959	1.501		42.600	.000
	CCS	.338	.146	.113	2.310	.021

a. Dependent Variable: ICAG

4. The Influence of Comfort of Class Size and Student Engagement on ICAG

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.204	7.696

a. Predictors: (Constant), SE, CCS

b. Dependent Variable: ICAG

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6356.348	2	3178.174	53.658	.000[a]
	Residual	24165.774	408	59.230		
	Total	30522.122	410			

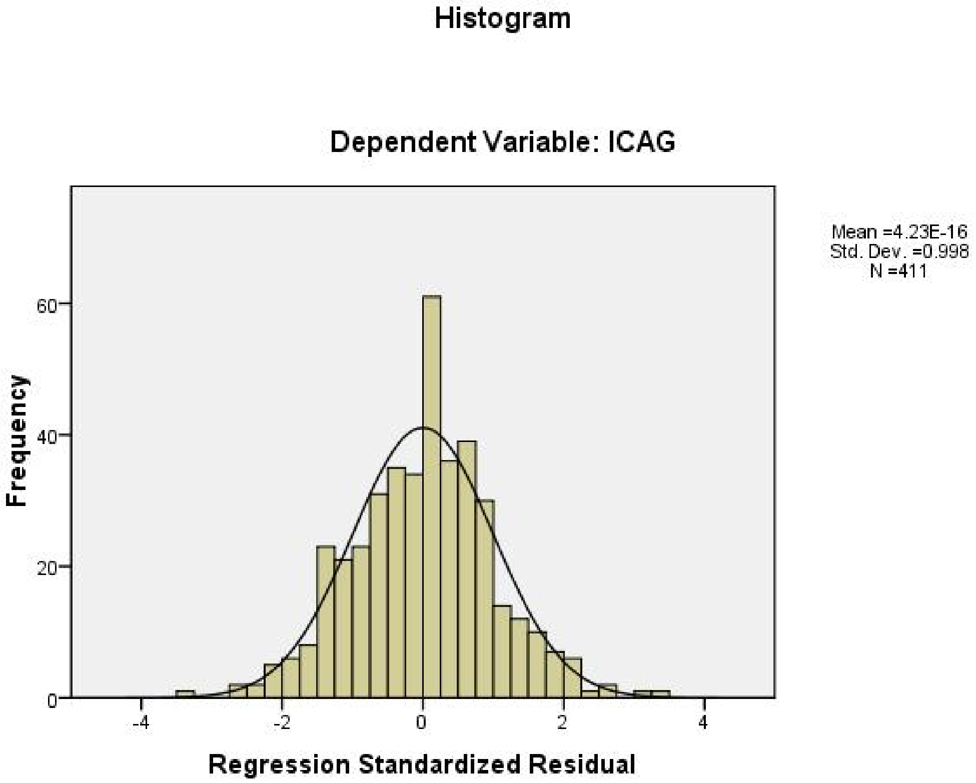
a. Predictors: (Constant), SE, CCS

b. Dependent Variable: ICAG

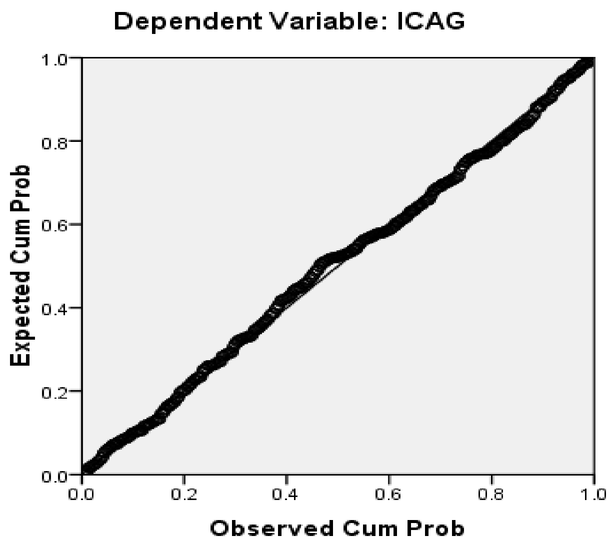
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	32.532	3.409		9.543	.000		
	CCS	.050	.134	.017	.375	.708	.954	1.048
	SE	.304	.030	.452	10.034	.000	.954	1.048

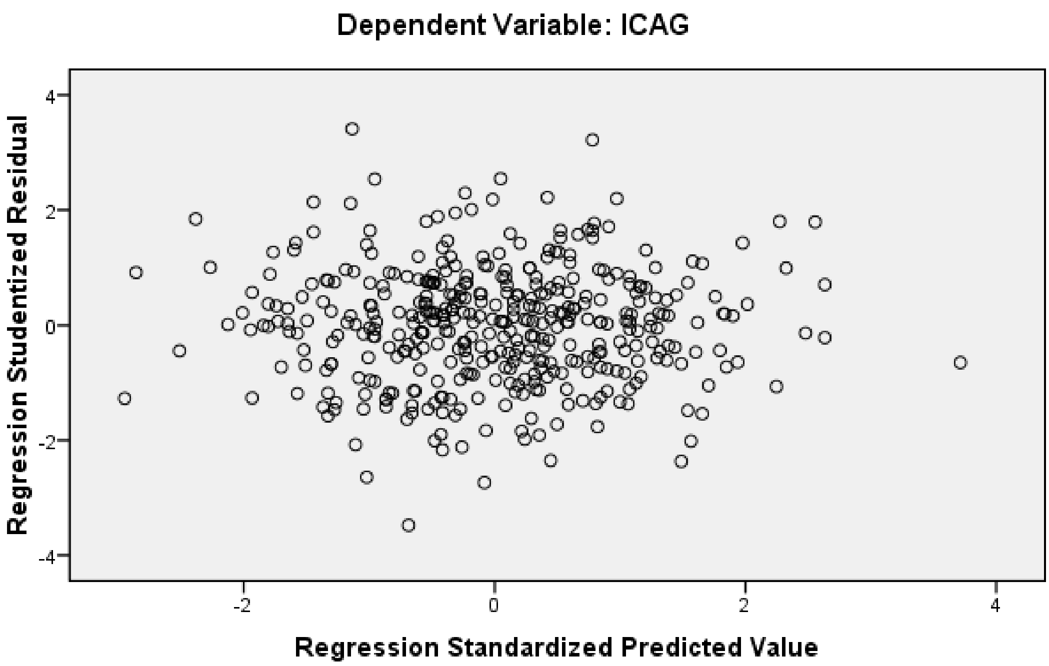
a. Dependent Variable: ICAG



Normal P-P Plot of Regression Standardized Residual



Scatterplot



Appendix B18: Learning Facilities, Student Engagement, and ICAG Relationships and Mediation Test

1. **The Influence of Learning Facilities on Student Engagement**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457[a]	.209	.207	11.443

a. Predictors: (Constant), LF

b. Dependent Variable: SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14107.894	1	14107.894	107.746	.000[a]
	Residual	53553.249	409	130.937		
	Total	67661.144	410			

a. Predictors: (Constant), LF

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	85.248	2.708		31.481	.000		
	LF	1.251	.121	.457	10.380	.000	1.000	1.000

a. Dependent Variable: SE

2. **The Influence of Learning Facilities on ICAG**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.335[a]	.112	.110	8.139

a. Predictors: (Constant), LF

b. Dependent Variable: ICAG

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3425.465	1	3425.465	51.704	.000^a
	Residual	27096.657	409	66.251		
	Total	30522.122	410			

a. Predictors: (Constant), LF

b. Dependent Variable: ICAG

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	53.741	1.926		27.900	.000		
	LF	.616	.086	.335	7.191	.000	1.000	1.000

a. Dependent Variable: ICAG

3. The Influence of Learning Facilities and Student Engagement on ICAG

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.478^a	.228	.224	7.598

a. Predictors: (Constant), SE, LF

b. Dependent Variable: ICAG

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6967.662	2	3483.831	60.345	.000^a
	Residual	23554.460	408	57.732		
	Total	30522.122	410			

a. Predictors: (Constant), SE, LF

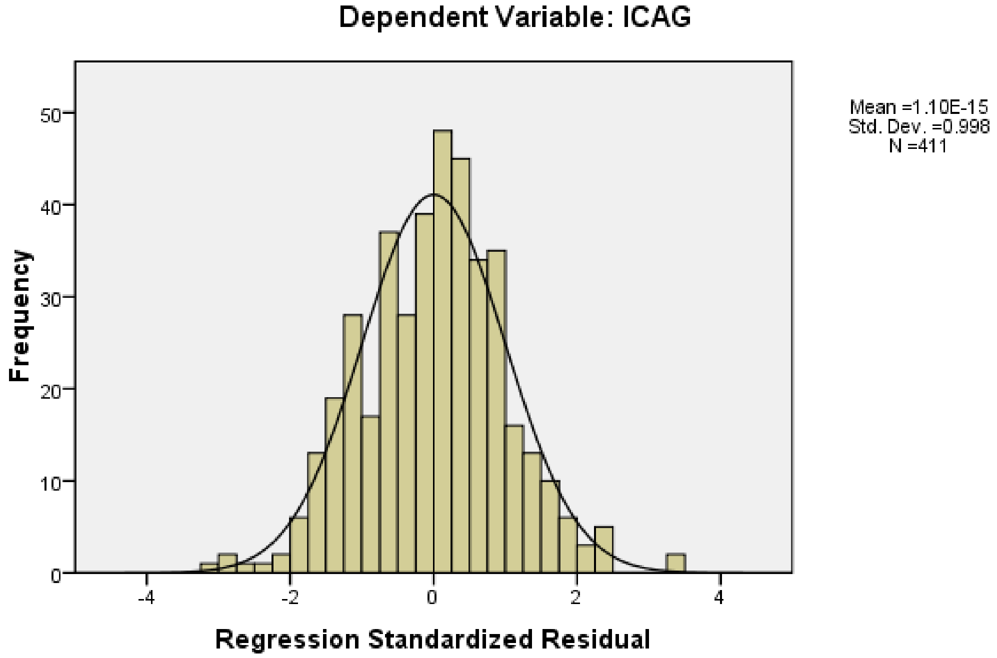
b. Dependent Variable: ICAG

Coefficients^a

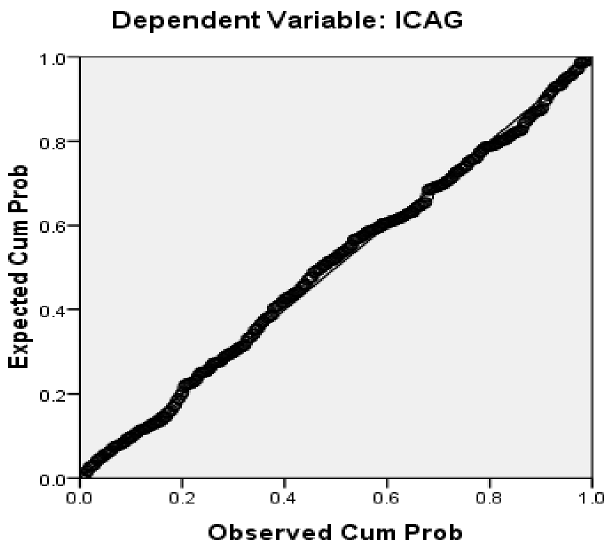
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	31.816	3.327		9.564	.000		
	LF	.295	.090	.160	3.276	.001	.791	1.263
	SE	.257	.033	.383	7.833	.000	.791	1.263

a. Dependent Variable: ICAG

Histogram



Normal P-P Plot of Regression Standardized Residual



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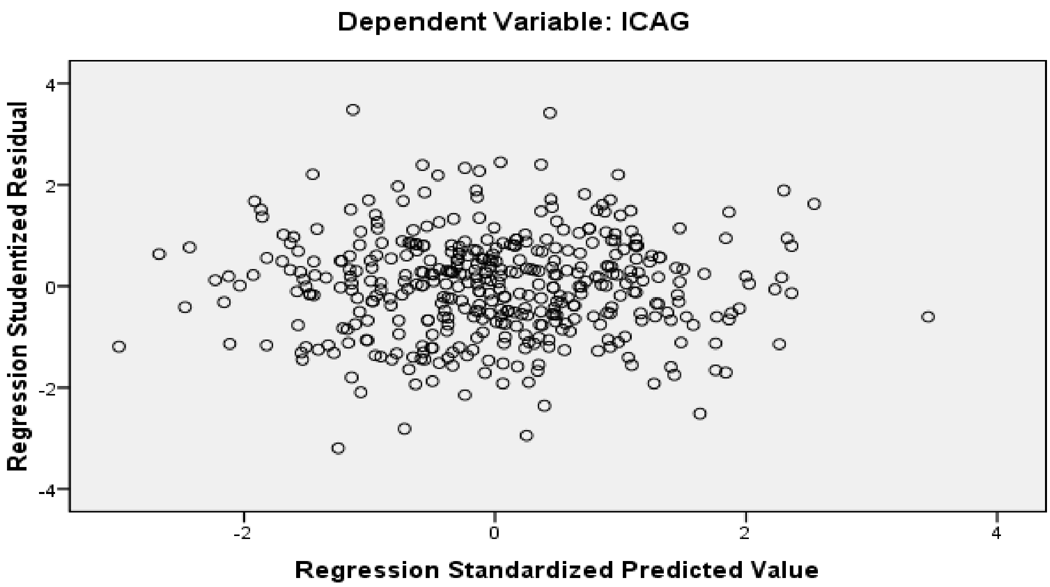


Appendix B19: Learning Facilities, Student Engagement, and GPA Relationships and Mediation Test

1. The Effect of Learning Facilities on Student Engagement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457[a]	.209	.207	11.443

a. Predictors: (Constant), LF

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14107.894	1	14107.894	107.746	.000[a]
	Residual	53553.249	409	130.937		
	Total	67661.144	410			

a. Predictors: (Constant), LF

b. Dependent Variable: SE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	85.248	2.708		31.481	.000		
	LF	1.251	.121	.457	10.380	.000	1.000	1.000

a. Dependent Variable: SE

2. The Effect of Learning Facilities on GPA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.104[a]	.011	.008	.269860

a. Predictors: (Constant), LF

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.327	1	.327	4.494	.035[a]
	Residual	29.785	409	.073		
	Total	30.112	410			

a. Predictors: (Constant), LF

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.094	.064		48.441	.000		
	LF	.006	.003	.104	2.120	.035	1.000	1.000

a. Dependent Variable: GPA

3. The Effect of Student Engagement on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.223[a]	.050	.048	.264493

a. Predictors: (Constant), SE

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.500	1	1.500	21.446	.000[a]
	Residual	28.612	409	.070		
	Total	30.112	410			

a. Predictors: (Constant), SE

b. Dependent Variable: GPA

4. The Effect of Learning Facilities and Student Engagement on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.223[a]	.050	.045	.264816

a. Predictors: (Constant), SE, LF

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.501	2	.750	10.699	.000[a]
	Residual	28.612	408	.070		
	Total	30.112	410			

a. Predictors: (Constant), SE, LF

b. Dependent Variable: GPA

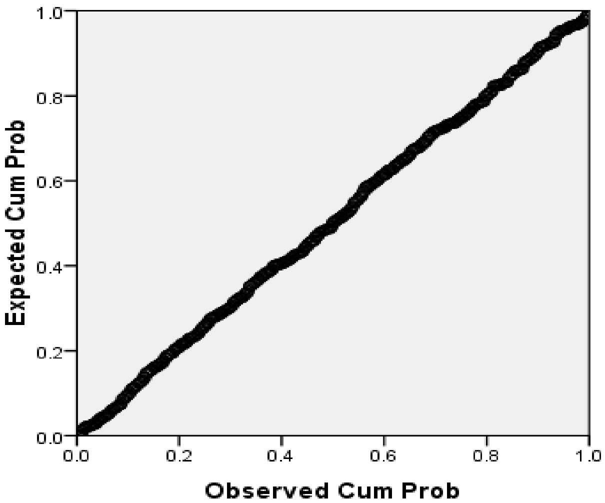
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.695	.116		23.240	.000		
	LF	.000	.003	.003	.054	.957	.791	1.263
	SE	.005	.001	.222	4.090	.000	.791	1.263

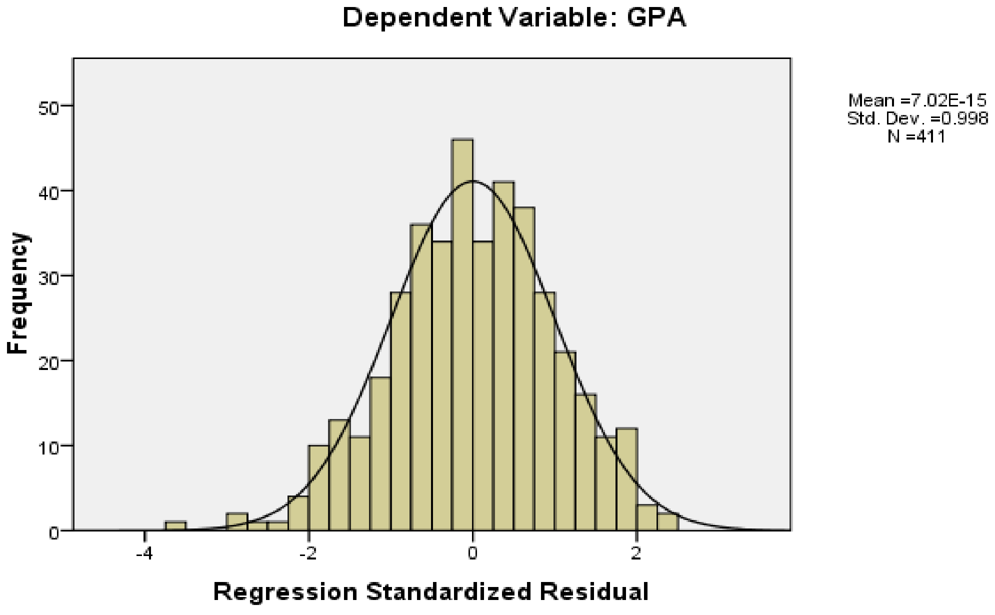
a. Dependent Variable: GPA

Normal P-P Plot of Regression Standardized Residual

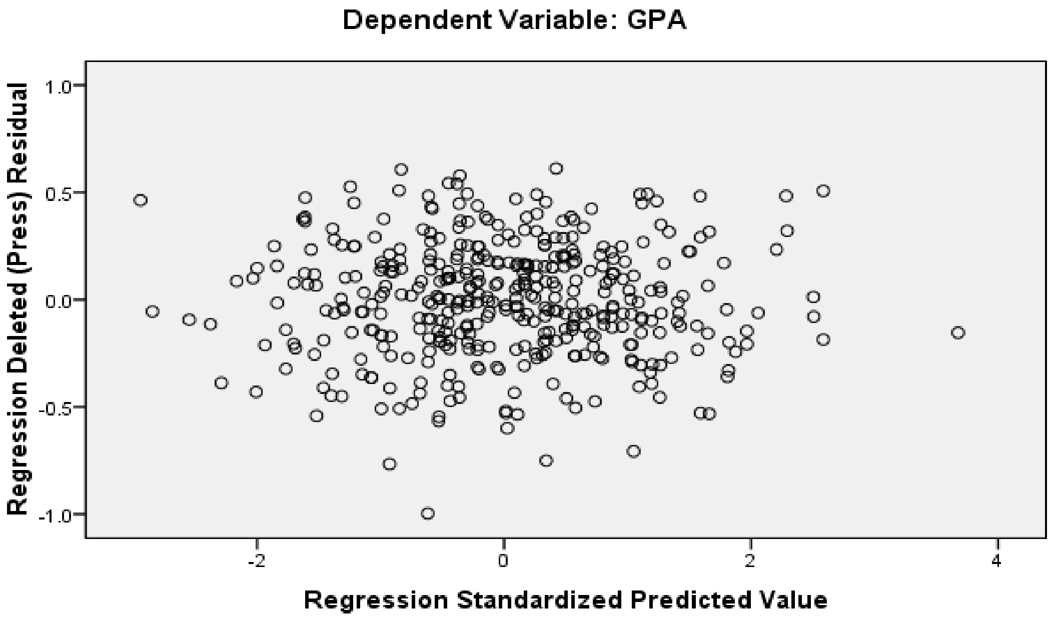
Dependent Variable: GPA



Histogram



Scatterplot



Appendix B20: Factor Loading, Measurement Error, and Factor Score Weight (Student Perception)

ICAG Questionnaire

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
f2	<---	ICAG	.530
f1	<---	ICAG	.540
f3	<---	ICAG	.443
f4	<---	ICAG	.462
f5	<---	ICAG	.497
f6	<---	ICAG	.530
p1	<---	ICAG	.434
p2	<---	ICAG	.490
p3	<---	ICAG	.443
p4	<---	ICAG	.509
p5	<---	ICAG	.509
p6	<---	ICAG	.499
p7	<---	ICAG	.558
b1	<---	ICAG	.485
b2	<---	ICAG	.624
b3	<---	ICAG	.582
b4	<---	ICAG	.529
b5	<---	ICAG	.518
b6	<---	ICAG	.530
b7	<---	ICAG	.616

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
ICAG	.173	.032	5.465	***	
e2	.443	.033	13.574	***	
e1	.313	.023	13.534	***	
e3	.494	.036	13.853	***	
e4	.395	.029	13.802	***	
e5	.466	.034	13.692	***	
e6	.512	.038	13.573	***	
e7	.430	.031	13.876	***	
e8	.356	.026	13.716	***	
e9	.423	.031	13.852	***	

	Estimate	S.E.	C.R.	P	Label
e10	.485	.035	13.653	***	
e11	.420	.031	13.653	***	
e12	.562	.041	13.686	***	
e13	.548	.041	13.456	***	
e14	.442	.032	13.731	***	
e15	.354	.027	13.100	***	
e16	.471	.035	13.342	***	
e17	.431	.032	13.577	***	
e18	.503	.037	13.618	***	
e19	.414	.030	13.575	***	
e20	.447	.034	13.154	***	

Factor Score Weights (Group number 1 - Default model)

f6	f5	f4	f3	f1	f2
0.043	0.041	0.04	0.034	0.056	0.046

p7	p6	p5	p4	p3	p2	p1
0.044	0.037	0.044	0.041	0.037	0.046	0.036

	b7	b6	b5	b4	b3	b2	b1
ICAG	0.057	0.047	0.042	0.046	0.051	0.066	0.041

Student Engagement Questionnaire

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
ac2	<---	SE	.457
ac1	<---	SE	.465
ac3	<---	SE	.535
ac4	<---	SE	.519
ac5	<---	SE	.506
ac6	<---	SE	.490
ac10	<---	SE	.370
al1	<---	SE	.468
al3	<---	SE	.359
al6	<---	SE	.415
al7	<---	SE	.435

			Estimate
al8	<---	SE	.483
ss1	<---	SE	.534
ss2	<---	SE	.539
ss3	<---	SE	.494
ss4	<---	SE	.562
ss5	<---	SE	.435
ss6	<---	SE	.422
ee5	<---	SE	.402
sl1	<---	SE	.435
sl2	<---	SE	.429
sl3	<---	SE	.408
sl4	<---	SE	.402

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
SE	.125	.027	4.563	***	
e2	.474	.035	13.726	***	
e1	.476	.035	13.697	***	
e3	.352	.026	13.415	***	
e4	.380	.028	13.490	***	
e5	.408	.030	13.547	***	
e6	.483	.035	13.608	***	
e10	.487	.035	13.962	***	
e13	.469	.034	13.689	***	
e15	.558	.040	13.986	***	
e18	.873	.063	13.851	***	
e19	.652	.047	13.794	***	
e20	.493	.036	13.634	***	
e21	.624	.046	13.424	***	
e22	.705	.053	13.401	***	
e23	.704	.052	13.593	***	
e24	.607	.046	13.284	***	
e25	.562	.041	13.793	***	
e26	1.065	.077	13.833	***	
e31	.837	.060	13.887	***	
e32	.463	.034	13.793	***	
e33	.497	.036	13.813	***	
e34	.722	.052	13.869	***	
e35	.534	.038	13.886	***	

Factor Score Weights (Group number 1 - Default

model)

	sl4	sl3	sl2	sl1	ee5
SE	0.029	0.025	0.032	0.034	0.023

ss6	ss5	ss4	ss3	ss2	ss1
0.022	0.031	0.042	0.032	0.036	0.038

al8	al7	al6	al3	al1
0.038	0.029	0.023	0.025	0.037

ac10	ac6	ac5	ac4	ac3	ac1	ac2
0.027	0.039	0.044	0.047	0.051	0.037	0.036

Learning Facilities Questionnaire

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
lf1	<---	LF	.651
lf2	<---	LF	.631
lf3	<---	LF	.694
lf4	<---	LF	.691
lf5	<---	LF	.614
lf6	<---	LF	.567
lf7	<---	LF	.556

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
LF	.361	.053	6.777	***	
e1	.490	.041	12.071	***	
e2	.522	.042	12.308	***	
e3	.414	.036	11.471	***	
e4	.392	.034	11.531	***	
e5	.569	.046	12.481	***	
e6	.912	.071	12.883	***	
e7	.719	.055	12.959	***	

Factor Score Weights (Group number 1 - Default model)

	lf7	lf6	lf5	lf4	lf3	lf2	lf1
LF	.082	.075	.107	.159	.156	.117	.128

Comfort of Class Size (CCS)

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
cl1	<---	CL_Size	.737
cl2	<---	CL_Size	.907
cl3	<---	CL_Size	.691

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
cl1	<---	CL_Size	.737
cl2	<---	CL_Size	.907
cl3	<---	CL_Size	.691

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
cl1	<---	CL_Size	.737
cl2	<---	CL_Size	.907
cl3	<---	CL_Size	.691

Appendix B21: Calculation of ICAG Composite Indicator

VARIABLE	f1	f2	f3	f4	f5	f6	p1	p2	p3	p4	p5	p6	p7	b1	b2	b3	b4	b5	b6	b7	ICAGC
LF	0.53	0.54	0.443	0.462	0.497	0.53	0.434	0.49	0.443	0.509	0.509	0.499	0.558	0.485	0.624	0.582	0.29	0.518	0.53	0.616	
FSW	0.056	0.046	0.034	0.04	0.041	0.043	0.036	0.046	0.037	0.041	0.044	0.037	0.044	0.041	0.066	0.051	0.046	0.042	0.047	0.057	
IME	0.313	0.443	0.494	0.395	0.466	0.514	0.43	0.356	0.423	0.485	0.42	0.562	0.548	0.442	0.354	0.471	0.431	0.503	0.414	0.447	
1	2	2	1	3	3	3	3	3	3	2	3	3	3	4	3	3	2	3	3	2	2.412
2	3	3	2	3	3	3	4	3	3	2	3	2	3	3	3	2	3	2	3	3	2.516
3	3	3	3	3	4	5	4	4	4	3	4	3	5	4	4	4	3	3	4	5	3.382
4	3	3	3	4	3	4	4	4	3	4	4	3	4	4	4	3	3	2	3	3	3.044
5	5	4	4	4	3	3	4	4	3	4	4	3	4	5	4	3	4	3	5	4	3.473
6	4	3	4	5	4	5	5	3	4	3	5	4	5	5	4	5	4	3	3	4	3.657
7	3	4	4	4	3	3	5	5	5	3	4	4	3	3	3	3	3	3	3	3	3.124
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9	4	5	4	4	4	5	4	4	3	4	4	4	5	4	4	4	4	4	5	5	3.78
10	4	4	4	5	4	5	4	4	4	5	5	5	5	5	4	5	5	4	4	5	4.024
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14	3	2	3	3	4	3	5	4	3	4	4	4	3	4	4	3	4	3	5	3	3.167
15	4	3	3	4	3	3	4	4	3	3	3	2	3	4	4	3	3	3	4	3	2.98
16	3	3	3	3	2	3	4	3	4	3	3	2	3	4	3	3	2	3	3	3	2.675
17	3	3	3	3	3	3	4	4	4	3	4	4	3	4	4	3	3	3	4	3	3.039
18	2	2	4	4	4	4	4	4	2	2	2	1	4	2	2	1	4	2	2	2	2.362
19	3	2	3	3	2	4	4	3	4	4	4	4	3	3	2	2	4	3	4	3	2.812
20	2	2	2	3	3	3	3	2	3	3	3	3	3	2	3	3	3	2	3	3	2.42

21	3	4	3	3	2	2	3	4	4	4	4	4	3	4	4	3	4	2	3	3	2.963
22	4	4	4	5	3	5	5	4	4	3	5	4	5	4	3	3	3	3	4	3	3.443
23	3	4	5	4	4	5	5	3	3	4	5	3	5	4	4	3	3	3	4	5	3.523
24	3	3	2	2	2	1	5	4	4	4	4	4	3	2	2	2	2	1	4	2	2.463
25	3	3	3	3	2	3	2	2	3	2	2	2	4	3	2	2	4	2	3	3	2.371
26	4	3	4	4	4	4	4	4	4	4	4	3	3	4	4	4	4	4	4	3	3.396
27	3	2	3	4	3	5	5	4	3	4	4	3	4	5	3	3	3	4	4	4	3.24
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370	4	5	4	4	4	5	4	4	4	4	4	3	3	3	4	4	4	4	4	4	3.547
371	2	2	3	3	2	3	4	4	3	2	3	2	3	3	2	2	2	2	3	3	2.341
372	2	3	3	3	4	3	2	3	4	3	3	3	3	3	4	3	4	2	4	3	2.788
373	3	2	5	4	3	2	4	5	5	4	5	1	4	3	2	3	2	2	2	2	2.747
374	3	2	2	3	3	2	4	3	3	3	3	2	2	3	2	3	3	3	4	3	2.498
375	3	3	2	3	4	4	4	4	3	3	3	4	4	3	4	4	3	3	3	3	3.015
376	3	3	4	4	5	3	3	3	3	3	3	4	4	4	3	3	3	4	4	4	3.109
377	3	3	2	4	2	3	4	3	4	3	3	2	3	3	3	2	2	3	4	3	2.636
378	3	4	3	4	2	3	4	4	3	4	5	2	3	3	2	3	3	4	1	3	2.786
379	4	3	3	4	3	4	4	3	4	4	4	3	4	3	3	3	4	3	4	3	3.119
380	4	4	4	3	2	4	3	4	4	4	3	2	4	3	3	2	2	3	4	4	2.961

381	4	2	2	3	2	4	5	5	5	5	4	3	3	3	4	2	3	3	5	4	3.193
382	4	3	4	4	3	4	4	4	4	4	4	3	4	3	4	3	3	3	3	3	3.172
383	4	3	4	4	4	4	4	4	5	4	4	3	4	4	4	4	4	3	4	5	3.549
384	3	3	2	4	3	4	4	3	4	3	3	3	2	4	3	2	2	2	4	2	2.655
385	4	3	3	3	3	4	4	3	3	3	3	3	4	4	4	4	3	4	4	4	3.168
386	4	4	4	4	3	5	4	4	4	3	3	3	5	3	4	4	3	3	3	4	3.328
387	3	3	3	4	3	4	3	4	4	4	3	2	2	3	4	4	4	2	3	4	2.989
388	4	3	4	4	4	4	5	4	4	4	4	4	4	4	3	3	3	3	3	3	3.261
389	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4	3	4	3	4	4	3.404
390	4	4	5	4	4	5	4	4	3	4	4	5	5	3	4	3	3	3	4	4	3.521
391	3	3	4	3	2	3	4	4	5	5	4	4	3	2	3	3	4	3	4	3	3.049
392	4	4	4	4	3	3	4	4	4	3	3	4	3	3	3	3	3	3	3	3	3.017
393	3	3	2	3	3	2	3	3	4	3	3	3	3	3	2	3	3	3	4	3	2.626
394	4	3	3	4	3	3	4	4	4	4	5	3	3	4	3	3	4	4	4	3	3.205
395	3	2	2	4	3	3	4	4	3	2	2	1	2	2	1	2	2	2	2	1	2.051
396	4	4	3	4	4	5	4	4	5	4	3	4	5	4	4	4	5	5	4	4	3.714
397	3	3	3	4	3	3	3	4	4	3	3	3	4	4	3	4	4	4	4	4	3.136
398	3	3	3	4	3	3	4	3	4	3	3	3	3	4	4	3	4	4	4	3	3.04
399	3	2	2	3	3	3	4	3	3	4	4	3	3	4	4	3	4	4	4	2	2.911
400	4	3	3	3	3	4	4	3	4	3	3	3	3	3	3	3	2	3	4	2	2.801
401	4	3	3	3	2	4	4	3	2	4	3	2	3	3	3	3	3	2	3	3	2.704
402	3	3	3	4	3	4	4	4	4	4	4	4	4	3	3	3	3	3	4	3	3.1
403	3	3	2	3	3	2	4	4	4	3	4	3	2	3	3	3	3	2	4	2	2.675
404	4	3	3	4	3	5	5	4	5	4	3	2	5	4	4	3	3	4	4	5	3.461
405	3	3	3	3	3	4	4	3	4	4	3	4	3	4	4	3	3	3	3	3	2.986
406	4	3	4	4	2	3	4	3	3	3	3	3	2	4	3	3	3	2	4	3	2.812
407	3	3	3	3	4	4	4	4	4	3	3	3	4	3	3	3	3	3	3	3	2.932
408	3	3	3	4	3	3	4	2	3	3	4	2	4	4	3	3	3	2	4	3	2.812
409	4	3	3	5	3	5	4	5	3	4	3	2	5	3	4	4	2	3	5	5	3.406
410	3	3	4	4	3	5	5	4	4	4	5	5	4	5	5	3	4	4	5	5	3.757

411	3	4	4	4	4	4	4	4	4	4	4	3	3	4	4	4	4	5	5	4	3.532

Standard deviation	=	0.391
Variance	=	0.153
Sum of loading factor^2	=	101.788
Sum of measurement error	=	8.911
Composite reliability	=	0.920
Loading factor composite	=	0.37480
Error variance composite	=	0.01230

Appendix B22: Calculation of Student Engagement Composite Indicator

Variables	ac1	ac2	ac3	ac4	ac5	ac6	ac10	al1	al3	al6	al7	al8	ss1	ss2	ss3	ss4	ss5	ss6	ee5	sl1	sl2	sl3	sl4	SEC
LF	0.47	0.46	0.54	0.52	0.51	0.49	0.37	0.47	0.36	0.42	0.44	0.48	0.53	0.54	0.49	0.56	0.44	0.42	0.40	0.44	0.43	0.41	0.402	
FSW	0.037	0.036	0.051	0.047	0.044	0.039	0.027	0.037	0.025	0.023	0.029	0.038	0.038	0.036	0.032	0.042	0.031	0.022	0.02	0.034	0.032	0.025	0.029	
IME	0.476	0.474	0.352	0.38	0.408	0.483	0.487	0.469	0.558	0.873	0.652	0.493	0.624	0.705	0.704	0.607	0.562	1.065	0.837	0.463	0.497	0.722	0.534	
1	4	4	4	3	3	3	4	3	3	4	4	4	2	2	2	2	3	2	2	4	4	2	2	2.391
2	3	3	3	3	3	2	4	3	3	3	4	4	3	4	4	4	3	4	4	4	3	2	2	2.521
3	4	4	4	4	3	3	3	3	4	2	4	2	2	4	3	2	4	1	1	4	4	4	4	2.512
4	3	2	2	2	3	3	3	3	4	1	4	3	1	3	2	2	2	3	2	2	3	3	3	1.967
5	3	5	4	5	4	4	4	3	3	3	4	4	4	4	2	1	4	4	4	3	4	5	5	2.899
6	3	4	5	4	4	4	5	4	5	1	4	2	2	4	1	2	5	1	1	5	4	2	4	2.653
7	5	5	4	3	4	3	5	3	4	5	3	5	1	5	4	3	3	1	1	4	3	3	3	2.745
8	3	3	5	3	5	4	5	3	3	2	2	3	1	4	4	4	5	2	2	3	4	5	4	2.724
9	5	4	4	5	5	5	4	5	5	5	4	4	4	4	4	4	4	4	3	4	4	4	4	3.337
10	4	4	4	4	4	4	4	5	5	4	4	4	3	5	3	3	4	4	4	4	4	3	4	3.069
11	4	4	5	4	2	3	3	4	3	5	3	3	2	3	2	1	3	1	1	4	4	4	2	2.41
12	4	3	2	2	2	3	4	3	4	4	3	4	2	4	3	2	3	4	3	3	2	2	3	2.26
13	4	5	5	3	2	2	4	5	3	3	5	4	3	5	2	4	2	3	2	3	3	4	3	2.709
14	3	4	3	2	4	4	3	4	4	2	4	3	2	2	1	1	4	1	2	4	4	4	4	2.333
15	3	4	4	3	4	5	4	4	3	2	3	3	2	5	3	3	4	2	1	4	3	2	4	2.616
16	5	4	4	4	4	4	4	4	5	2	4	5	3	5	3	2	4	1	3	4	4	4	4	2.955
17	3	4	3	3	3	3	4	3	3	3	3	3	3	3	2	2	3	3	3	4	4	3	3	2.386
18	3	2	4	4	4	4	4	3	2	2	4	3	3	3	2	2	2	4	4	3	3	3	3	2.424
19	4	4	4	4	4	2	4	3	4	2	4	3	2	4	3	2	3	4	3	4	4	3	4	2.638
20	4	4	4	4	4	2	3	3	3	1	3	4	1	3	1	1	3	3	1	3	3	3	4	2.258

21	3	4	3	3	3	3	3	3	3	3	3	3	2	2	2	2	4	3	3	2	2	2	3	2.159
22	5	3	3	3	3	3	4	4	5	1	5	5	2	3	3	3	4	1	2	4	4	4	4	2.653
23	4	3	4	3	3	3	5	3	4	1	5	3	3	3	2	1	3	3	3	4	4	3	5	2.518
24	3	3	2	3	2	2	4	3	5	3	5	2	1	1	1	1	2	5	1	2	3	2	3	1.906
25	3	3	3	3	3	2	4	5	3	2	5	3	2	5	3	2	2	3	5	4	4	3	3	2.501
26	5	4	5	5	4	4	5	5	5	3	5	5	4	4	4	3	4	4	4	4	5	5	5	3.42
27	4	5	5	5	3	4	5	4	4	3	5	5	3	4	2	2	5	1	3	5	5	5	3	3.087
28	4	4	5	4	4	3	4	5	4	2	4	4	5	4	2	3	4	3	3	4	4	4	5	3.027
29	3	4	4	4	4	3	4	4	4	1	1	2	2	5	2	2	1	1	2	2	2	1	2	2.142
30	5	3	3	2	2	3	5	4	4	4	4	5	1	4	1	1	3	4	1	3	3	2	4	2.35
31	4	4	4	2	2	3	4	4	4	4	3	4	3	4	2	2	4	3	2	3	3	4	4	2.538
32	3	5	4	4	2	2	5	4	4	3	4	2	2	5	3	2	4	4	4	4	3	4	4	2.681
33	4	2	4	3	3	3	4	2	3	2	3	4	4	2	1	1	3	2	1	2	4	4	2	2.168
34	4	3	4	4	4	4	3	3	4	3	4	4	3	4	3	3	3	3	4	3	3	3	2	2.671
35	5	3	4	4	3	4	3	4	5	3	3	4	1	4	1	1	3	3	2	3	4	2	4	2.492
36	3	3	3	3	3	3	4	3	3	3	3	3	3	4	3	3	4	3	4	3	4	4	3	2.505
37	3	3	4	3	4	3	4	4	3	3	4	3	3	4	3	3	4	3	3	2	3	3	3	2.552
38	4	3	4	3	3	4	4	4	4	2	4	3	3	4	4	4	5	4	4	3	4	3	4	2.831
39	5	4	3	3	3	2	4	2	3	4	4	5	1	4	2	1	4	2	2	4	3	2	3	2.359
40	3	4	3	3	3	3	4	3	3	1	2	3	2	3	3	3	4	1	3	3	3	3	3	2.268
41	3	4	4	3	3	2	4	4	3	2	2	3	2	2	2	1	3	2	2	4	3	3	3	2.19
42	3	4	4	4	4	4	4	3	4	1	4	4	3	4	3	3	4	4	2	4	4	3	4	2.782
43	3	2	2	3	2	3	3	1	4	1	2	1	1	1	1	1	2	1	1	4	2	2	1	1.502
44	3	3	3	4	3	3	4	3	3	3	2	4	2	2	2	2	4	2	2	4	3	3	3	2.286
45	3	4	2	2	2	2	2	3	3	1	4	3	1	3	2	2	2	4	3	3	3	3	3	1.983
46	4	4	4	4	3	5	4	4	4	2	4	3	3	5	3	4	4	2	3	4	3	3	4	2.861
47	4	4	3	3	4	4	4	3	3	3	4	4	3	3	3	4	4	5	4	4	4	4	4	2.841
48	4	4	4	4	4	4	5	4	4	4	4	5	4	4	3	3	4	4	4	4	4	4	4	3.099
49	4	3	3	2	3	2	3	4	4	3	4	4	3	3	3	2	2	3	2	3	3	3	3	2.315
50	5	3	4	3	2	4	5	4	5	2	3	5	2	3	2	2	3	4	1	2	3	2	4	2.479

51	4	2	3	2	2	3	4	2	4	4	4	4	2	3	2	1	2	2	2	2	3	3	4	2.111
52	3	2	4	3	2	4	3	2	4	3	2	4	3	4	4	2	4	3	2	4	4	4	3	2.463
53	4	4	3	3	3	3	3	4	3	2	1	3	1	4	1	2	3	2	1	4	4	4	3	2.237
54	5	4	4	4	4	4	4	3	4	4	4	4	4	4	3	3	5	4	4	4	4	4	4	3.065
55	4	3	3	2	2	3	4	3	3	4	4	3	1	4	2	2	3	3	2	3	3	3	3	2.219
56	4	4	3	4	4	4	4	4	4	3	4	4	3	5	3	3	3	3	3	3	3	4	4	2.816
57	4	4	4	3	3	4	4	5	3	4	5	4	2	3	2	2	3	2	2	3	3	4	4	2.611
58	4	4	2	2	3	2	5	5	3	3	4	5	4	5	3	2	4	5	4	4	4	5	3	2.782
59	4	3	2	2	4	4	1	3	4	2	4	2	2	3	2	2	3	3	1	4	3	2	2	2.114
60	4	4	3	3	3	4	4	4	3	3	4	4	2	4	2	2	3	2	1	4	4	3	4	2.525
61	2	2	3	3	3	4	4	3	4	1	3	3	1	2	3	1	5	1	1	3	3	3	4	2.108
62	5	5	4	4	4	3	4	4	5	3	4	4	3	5	3	3	5	3	3	4	4	5	5	3.108
63	4	4	4	3	4	5	3	3	5	3	4	4	1	4	1	4	4	1	3	5	4	2	4	2.723
64	4	4	3	3	4	2	4	3	4	3	4	4	3	4	3	4	4	3	2	4	3	1	4	2.627
65	3	3	4	3	3	4	4	3	5	2	4	3	2	4	3	2	3	1	2	2	2	3	3	2.327
66	4	4	2	4	3	3	4	3	3	3	3	4	2	3	2	2	3	3	2	3	3	4	4	2.384
67	5	3	3	4	4	3	4	3	4	3	4	5	3	4	3	3	4	3	3	4	4	3	3	2.786
68	3	2	4	3	3	2	4	3	4	2	4	3	2	3	2	2	1	1	1	2	3	1	3	2.017
69	5	4	2	3	2	3	4	4	5	3	3	5	3	4	2	2	3	2	3	4	4	2	3	2.517
70	4	3	4	2	4	3	4	2	4	1	3	3	3	3	1	2	3	2	2	4	4	2	3	2.275
71	5	3	3	3	3	4	3	3	4	1	3	4	2	3	1	1	3	1	3	3	3	3	4	2.26
72	3	3	3	2	4	4	3	4	3	2	4	3	2	3	2	2	4	3	3	3	3	4	4	2.383
73	5	5	4	4	4	4	4	4	4	4	4	4	3	4	3	3	4	3	3	3	4	4	4	2.99
74	4	4	3	3	3	3	4	4	4	5	4	4	4	4	4	3	3	4	3	3	3	2	3	2.709
75	4	3	4	3	3	2	4	4	4	1	2	2	1	2	1	1	3	2	3	3	3	3	4	2.103
76	2	4	4	4	4	4	4	4	3	3	4	3	3	4	3	3	3	4	4	3	3	3	4	2.714
77	5	2	5	4	5	5	5	3	5	2	5	5	4	4	3	4	1	2	2	4	2	3	4	2.939
78	5	4	3	3	3	3	4	4	4	3	3	5	3	5	3	3	3	2	2	3	3	2	4	2.637
79	4	4	4	4	4	4	5	2	4	3	5	3	3	5	3	1	4	2	2	5	4	5	4	2.838
80	5	3	4	4	4	2	5	3	4	4	4	4	2	5	3	1	4	3	1	4	3	1	4	2.625

81	5	3	4	4	4	4	4	3	3	3	5	5	1	5	1	1	5	4	1	3	4	1	3	2.615
82	3	2	3	2	4	4	2	4	3	2	4	2	4	4	3	3	2	3	1	1	2	2	4	2.21
83	3	3	3	3	3	3	3	3	4	2	4	4	3	3	3	3	3	2	3	3	3	3	4	2.407
84	4	4	4	3	3	3	4	4	5	3	4	4	3	5	4	3	3	3	3	4	3	3	4	2.803
85	4	3	3	3	3	3	4	3	3	3	3	3	3	4	3	3	4	3	2	3	3	3	4	2.468
86	4	3	4	3	4	4	4	3	5	3	4	4	3	3	4	4	4	4	2	2	2	3	4	2.713
87	3	2	3	3	3	2	4	2	3	2	2	3	1	2	1	1	3	1	1	3	3	4	4	1.898
88	4	3	4	3	3	2	4	4	4	4	4	4	3	3	2	2	4	2	3	4	3	3	4	2.557
89	3	3	3	4	4	2	4	3	4	2	4	4	3	4	2	3	3	2	3	3	3	3	4	2.49
90	4	2	3	2	2	2	3	3	3	1	2	4	2	2	2	2	4	3	2	3	3	2	3	2
91	4	3	3	3	3	4	4	3	4	2	3	4	2	3	3	3	4	3	2	3	3	3	4	2.473
92	3	4	2	3	3	2	4	4	4	2	2	3	2	3	2	2	3	2	2	2	3	5	3	2.173
93	4	3	3	3	2	3	4	3	4	1	3	4	2	3	3	3	2	3	2	3	3	4	4	2.33
94	4	3	4	4	4	4	4	3	4	2	2	3	3	3	4	3	4	3	3	3	3	3	3	2.612
95	4	3	3	2	3	2	4	3	4	3	4	4	2	3	3	2	3	1	1	3	2	3	3	2.199
96	4	3	4	4	4	4	4	3	3	1	4	4	3	4	3	3	3	3	1	3	3	4	3	2.612
97	4	4	5	4	4	4	4	2	4	2	4	4	2	3	3	2	4	1	1	3	2	2	3	2.499
98	3	3	3	3	4	3	4	4	2	3	3	4	3	3	3	3	3	4	3	3	3	3	3	2.474
99	4	4	3	3	4	3	3	3	3	4	3	3	3	4	3	3	3	4	4	3	3	4	3	2.577
100	3	2	2	2	3	4	3	3	2	1	2	3	2	4	3	2	3	3	1	1	2	3	4	1.975
101	4	3	4	3	4	3	4	4	4	4	4	4	2	3	4	4	3	3	4	3	2	3	3	2.669
102	4	3	3	3	3	3	4	3	4	3	4	4	3	2	1	2	3	1	2	4	4	4	3	2.369
103	5	3	3	4	4	3	5	4	5	4	4	4	3	2	2	1	4	1	2	3	4	3	3	2.571
104	5	2	4	4	4	5	4	4	5	2	4	5	3	5	3	2	3	1	2	5	5	4	5	2.963
105	4	2	3	3	3	3	3	3	2	1	4	2	2	3	2	2	3	1	3	4	4	4	2	2.158
106	4	3	3	3	3	2	4	3	5	1	4	4	2	2	2	2	3	1	2	3	3	2	3	2.187
107	4	3	3	3	3	3	4	3	4	3	4	4	2	2	3	2	4	1	2	3	3	4	3	2.36
108	3	3	3	3	2	2	4	2	3	2	3	3	2	2	2	1	4	1	2	3	3	2	3	1.964
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263	2	3	3	3	4	4	5	3	5	4	5	3	2	5	1	2	5	5	5	3	3	4	4	2.696
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266	3	3	2	3	3	4	5	3	5	2	2	3	3	3	3	3	4	2	2	4	4	4	2	2.419
267	4	3	3	3	4	4	4	3	5	2	5	3	1	5	3	3	3	2	2	3	3	4	4	2.568
268	4	3	4	3	3	4	5	2	4	1	3	4	3	3	4	3	3	2	3	3	4	3	4	2.563
269	4	4	4	4	3	4	4	3	4	2	4	4	4	3	4	4	3	4	3	3	4	4	4	2.857
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273	3	3	4	3	3	4	4	2	3	3	3	3	2	3	3	2	4	2	2	3	2	3	3	2.285
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337	3	4	4	4	4	4	5	4	2	4	4	4	4	5	2	3	4	4	3	3	3	3	4	2.864
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343	4	4	4	3	3	4	5	4	4	1	3	5	4	5	3	2	3	4	4	4	4	5	5	2.927
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345	4	2	2	2	3	3	2	2	2	1	3	4	4	4	4	1	2	4	3	2	2	2	3	2.059
346	5	3	3	3	4	3	5	3	3	3	3	5	2	3	1	1	3	3	2	3	3	4	3	2.395
347	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	2	3	4	3	3	3	3	4	2.367
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353	4	3	4	4	3	3	4	3	3	2	4	4	2	3	2	2	3	2	3	3	3	4	4	2.457
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356	4	4	3	3	3	3	4	3	3	3	3	3	3	3	4	3	3	3	2	3	3	3	3	2.44
357	4	3	4	4	4	3	4	3	2	3	3	3	3	3	3	3	3	1	4	2	2	2	3	2.4
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364	4	4	3	3	3	3	4	3	4	3	4	4	3	4	3	3	4	3	3	3	3	3	4	2.619
365	5	5	4	4	4	3	3	4	5	4	5	4	3	4	3	3	5	2	4	4	4	4	5	3.073
366	3	3	3	3	3	3	3	3	4	2	4	3	4	4	3	2	2	1	3	2	2	3	3	2.253
367	3	2	4	3	4	4	4	2	4	1	4	2	3	3	3	2	3	3	2	3	3	3	4	2.353
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399	2	4	3	3	3	3	2	3	2	1	4	3	2	4	4	3	3	4	5	3	3	4	4	2.413
400	4	3	3	3	3	4	3	2	4	1	3	3	2	2	1	1	3	3	2	2	2	2	3	2.013
401	4	3	3	3	3	3	3	4	4	3	3	3	4	4	3	2	3	4	2	4	4	3	4	2.556
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407	5	3	3	3	3	3	4	3	5	1	3	4	3	4	2	2	4	3	2	3	4	4	5	2.559
408	4	4	3	4	3	4	3	4	4	3	4	3	3	3	3	3	3	3	4	3	3	2	3	2.579
409	2	3	3	3	4	3	3	5	4	1	3	3	2	4	2	2	3	2	2	4	4	2	3	2.311
410	3	3	4	5	4	4	4	3	5	4	3	4	4	3	2	3	4	2	3	4	3	4	4	2.8

411	4	4	4	4	4	5	4	4	4	3	4	4	4	4	4	4	4	5	4	3	3	4	4	3.08
																			Standard deviation					0.3295392
																			Variance					0.1085961
																			Sum of loading factor^2					10.564
																			Sum of measurement error					13.425
																			Composite reliability					0.4403685
																			Loading factor composite					0.218683
																			Error variance composite					0.0607738

Appendix B23: Calculation of Comfort of Class Size and Learning Facility Composite Indicator

Variables	cl1	cl2	cl3	CLC	lf1	lf2	lf3	lf4	lf5	lf6	lf7	LFC
LF	0.737	0.907	0.691		0.651	0.31	0.694	0.691	0.614	0.567	0.556	
FSW	0.153	0.516	0.14		0.128	0.117	0.156	0.159	0.107	0.075	0.082	
IME	0.646	0.223	0.593		0.49	0.522	0.414	0.392	0.569	0.912	0.719	
1	2	2	2	1.618	3	2	3	3	2	2	2	2.713
2	4	4	3	3.096	3	3	3	2	3	3	3	3.63
3	4	4	1	2.816	4	4	5	4	4	4	4	4.98
4	3	2	2	1.771	4	4	4	4	3	3	3	4.439
5	4	4	4	3.236	3	4	3	4	2	3	4	4.174
6	3	4	5	3.223	3	3	4	4	3	5	5	4.316
7	3	3	3	2.427	2	2	2	2	2	2	3	2.576
8	4	2	4	2.204	4	3	3	5	4	4	5	4.34
9	5	5	5	4.045	4	3	4	4	4	5	5	4.597
10	2	4	5	3.07	4	5	5	5	3	5	5	5.641
11	5	5	4	3.905	3	5	3	2	1	1	4	4.328
12	3	2	2	1.771	3	3	4	4	3	4	3	3.887
13	1	2	3	1.605	2	3	3	3	3	1	2	3.087
14	2	2	4	1.898	4	4	4	4	4	4	4	4.84
15	2	3	4	2.414	3	2	4	3	3	4	5	3.683
16	3	4	4	3.083	5	4	5	4	5	5	5	5.534
17	4	4	4	3.236	4	3	3	4	3	3	4	3.939
18	2	5	5	3.586	2	3	4	4	2	4	3	3.606
19	3	3	4	2.567	4	4	4	4	3	4	4	4.712
20	2	2	1	1.478	5	5	5	2	2	2	3	5.003
21	1	1	1	0.809	1	1	2	2	3	3	3	2.152
22	4	3	4	2.72	4	3	4	3	3	4	4	4.196
23	2	2	2	1.618	4	3	4	3	3	5	5	4.469
24	2	2	3	1.758	2	3	5	3	4	3	4	4.041
25	2	3	4	2.414	2	3	3	3	3	3	3	3.477
26	3	3	3	2.427	4	4	5	3	4	3	2	4.551
27	2	2	5	2.038	4	2	5	3	2	5	5	3.965
28	3	3	3	2.427	4	3	5	4	4	3	2	4.035
29	4	4	2	2.956	2	2	4	4	1	2	3	2.728
30	1	2	3	1.605	3	2	3	4	4	5	5	3.788
31	2	2	4	1.898	2	3	4	4	4	4	4	4.018
32	2	2	4	1.898	3	5	5	4	3	5	5	5.488
33	2	4	4	2.93	2	4	3	3	3	5	5	4.539
34	2	3	4	2.414	4	4	4	4	5	3	3	4.695
35	2	2	2	1.618	4	3	5	4	4	5	4	4.581
36	4	4	4	3.236	4	4	4	4	4	3	3	4.567
37	2	3	4	2.414	2	2	2	3	2	5	3	2.927
38	3	2	3	1.911	3	4	4	4	3	5	4	4.676
39	2	2	2	1.618	4	4	4	4	4	4	4	4.84
40	3	3	3	2.427	3	3	4	4	3	4	4	4.043

41	2	2	3	1.758	2	1	3	2	2	2	3	2.2
42	5	4	4	3.389	4	5	5	5	4	5	4	5.613
43	3	3	2	2.287	2	3	3	2	3	3	4	3.633
44	2	2	3	1.758	3	3	3	3	3	3	4	3.786
45	1	2	3	1.605	3	3	2	2	2	2	3	3.245
46	2	2	2	1.618	2	3	3	3	5	5	5	4.279
47	5	4	4	3.389	4	3	5	4	4	4	5	4.62
48	4	2	4	2.204	4	4	4	4	4	4	4	4.84
49	3	3	3	2.427	4	2	3	2	3	3	3	3.267
50	1	1	1	0.809	2	3	2	2	3	2	2	3.064
51	2	2	2	1.618	2	3	3	3	2	3	3	3.349
52	2	2	4	1.898	3	3	4	3	4	4	4	4.171
53	4	3	4	2.72	4	4	4	4	4	3	4	4.723
54	4	3	4	2.72	4	4	4	4	5	4	5	5.124
55	4	4	4	3.236	3	3	4	3	3	5	5	4.316
56	4	4	4	3.236	4	3	4	4	4	4	4	4.324
57	2	2	2	1.618	4	4	4	4	3	3	4	4.595
58	1	5	5	3.433	1	2	3	2	1	4	4	2.825
59	1	1	1	0.809	4	4	4	3	3	4	3	4.556
60	4	3	4	2.72	4	3	4	4	3	4	5	4.352
61	5	5	4	3.905	5	4	5	4	3	4	4	5.005
62	5	3	4	2.873	1	3	4	3	3	3	3	3.464
63	4	4	4	3.236	5	4	5	5	4	4	5	5.289
64	2	3	2	2.134	3	2	4	4	3	4	3	3.371
65	4	4	4	3.236	4	3	3	3	2	3	3	3.655
66	2	3	2	2.134	3	4	4	4	3	4	3	4.403
67	3	3	3	2.427	4	4	4	3	3	3	3	4.439
68	4	5	3	3.612	2	1	3	3	2	1	4	2.239
69	2	1	3	1.242	3	4	4	4	3	5	4	4.676
70	1	2	4	1.745	4	3	5	3	4	4	4	4.464
71	4	4	4	3.236	5	5	5	4	4	3	5	5.688
72	4	3	4	2.72	3	3	4	3	3	4	3	3.887
73	4	3	4	2.72	3	3	3	4	2	4	3	3.619
74	2	2	2	1.618	1	2	2	3	2	3	1	2.228
75	4	4	2	2.956	2	3	2	2	2	3	2	3.053
76	2	2	4	1.898	3	3	3	3	3	3	3	3.63
77	2	2	4	1.898	3	3	4	3	4	4	3	4.015
78	4	2	2	1.924	2	2	4	4	2	5	5	3.519
79	4	4	5	3.376	5	5	5	5	5	5	5	6.05
80	2	2	1	1.478	2	4	4	4	2	5	5	4.551
81	5	2	4	2.357	1	3	3	3	3	4	4	3.597
82	1	2	3	1.605	1	3	3	2	4	1	2	3.062
83	2	3	3	2.274	2	1	3	2	2	3	3	2.317
84	2	2	3	1.758	4	3	4	3	4	3	4	4.207
85	1	4	4	2.777	3	2	3	3	3	3	3	3.114
86	4	3	4	2.72	3	2	2	2	2	2	3	2.729
87	4	2	5	2.344	2	1	3	2	1	1	3	1.955
88	4	4	4	3.236	3	3	3	2	3	3	4	3.786
89	3	4	4	3.083	2	3	3	3	2	2	4	3.388

90	4	4	4	3.236	3	2	3	2	3	3	3	3.114
91	3	4	4	3.083	2	2	2	2	2	2	4	2.732
92	5	2	3	2.217	4	3	3	3	3	4	4	4.056
93	2	2	2	1.618	2	4	3	3	2	2	4	3.904
94	2	2	2	1.618	3	2	2	2	3	4	4	3.247
95	2	2	3	1.758	3	2	3	3	3	1	3	2.88
96	2	2	3	1.758	1	2	3	2	3	2	4	2.847
97	4	4	3	3.096	2	3	3	4	3	2	3	3.36
98	3	3	3	2.427	3	3	3	3	3	3	3	3.63
99	3	3	4	2.567	3	3	3	4	4	4	3	3.875
100	2	2	3	1.758	3	2	3	3	3	1	3	2.88
101	2	2	2	1.618	1	2	1	3	4	3	2	2.5
102	3	3	3	2.427	2	2	2	3	2	3	4	2.849
103	4	3	3	2.58	3	4	4	4	3	4	5	4.715
104	5	5	5	4.045	5	3	2	5	4	5	5	4.47
105	2	3	4	2.414	3	2	2	3	2	5	4	3.236
106	4	3	4	2.72	3	3	2	3	1	3	2	3.078
107	4	4	4	3.236	2	3	3	3	2	2	2	3.076
108	4	4	4	3.236	2	3	2	2	2	1	1	2.663
109	5	2	4	2.357	1	1	1	1	1	2	2	1.483
110	5	5	5	4.045	4	2	4	4	2	2	3	3.162
111	4	3	4	2.72	2	2	3	3	2	3	4	2.989
112	4	3	3	2.58	2	2	2	2	1	1	2	2.175
113	4	3	5	2.86	4	3	4	4	4	3	4	4.207
114	3	2	3	1.911	3	3	3	3	2	2	2	3.229
115	4	5	5	3.892	3	2	4	2	2	2	3	3.009
116	5	5	3	3.765	3	2	1	2	2	3	3	2.706
117	2	3	4	2.414	3	3	2	3	3	3	4	3.646
118	3	3	2	2.287	2	2	3	2	2	4	2	2.794
119	3	3	3	2.427	4	4	4	4	4	3	4	4.723
120	4	5	4	3.752	2	3	3	1	1	3	3	3.221
121	4	4	4	3.236	3	3	3	4	3	5	4	4.02
122	3	3	3	2.427	3	1	3	3	1	2	2	2.069
123	4	4	4	3.236	3	2	3	3	3	3	5	3.426
124	3	2	3	1.911	2	2	2	2	2	2	2	2.42
125	3	3	4	2.567	3	3	4	3	2	4	4	3.915
126	3	3	4	2.567	1	1	2	2	2	2	4	2.063
127	5	4	5	3.529	2	2	2	2	2	5	4	3.083
128	3	2	3	1.911	2	2	3	4	4	3	3	3.089
129	1	1	1	0.809	1	1	3	2	1	2	2	1.763
130	4	4	4	3.236	3	3	4	3	3	3	4	3.926
131	2	4	5	3.07	4	4	5	4	3	5	5	5.125
132	3	3	2	2.287	2	3	2	2	2	3	4	3.365
133	3	5	4	3.599	3	3	2	4	3	5	5	4.036
134	4	4	4	3.236	3	3	4	4	3	5	3	4.004
135	4	3	4	2.72	3	3	2	3	2	5	3	3.596
136	4	3	4	2.72	4	3	4	4	3	4	3	4.04
137	4	2	2	1.924	3	3	3	3	3	3	3	3.63
138	5	5	5	4.045	4	3	3	3	4	3	4	4.067

139	1	5	5	3.433	3	2	3	2	1	2	2	2.585
140	2	2	4	1.898	3	3	3	3	2	2	4	3.541
141	4	4	5	3.376	4	3	4	4	3	4	4	4.196
142	5	5	3	3.765	5	5	5	2	2	4	3	5.237
143	4	4	5	3.376	3	3	3	4	4	3	3	3.758
144	3	2	3	1.911	3	2	3	3	2	3	3	2.986
145	5	2	2	2.077	2	1	2	2	2	1	1	1.631
146	5	4	4	3.389	4	4	4	2	3	3	4	4.595
147	5	5	5	4.045	4	4	4	5	4	4	4	4.84
148	5	4	5	3.529	4	2	2	2	2	3	2	2.843
149	2	3	2	2.134	3	2	4	3	2	2	3	3.009
150	4	5	5	3.892	3	4	5	4	2	5	3	4.532
151	4	4	4	3.236	2	2	3	3	1	4	4	2.978
152	2	2	4	1.898	3	4	3	3	1	4	4	4.163
153	2	2	2	1.618	3	1	2	2	2	1	3	2.096
154	5	5	5	4.045	3	2	4	3	2	2	4	3.165
155	4	4	5	3.376	3	2	4	3	3	1	4	3.176
156	2	2	2	1.618	3	3	3	3	2	5	4	3.892
157	4	4	4	3.236	2	1	3	4	1	2	2	1.916
158	5	5	5	4.045	2	2	2	1	1	1	1	2.019
159	2	2	4	1.898	2	1	4	3	2	3	2	2.301
160	2	3	3	2.274	5	5	5	5	3	3	4	5.404
161	2	3	3	2.274	5	5	5	5	3	3	4	5.404
162	2	2	3	1.758	3	3	4	4	2	3	3	3.642
163	5	5	5	4.045	3	4	3	3	3	5	5	4.692
164	5	5	5	4.045	3	4	3	3	3	3	4	4.302
165	2	2	3	1.758	3	2	3	2	2	2	2	2.713
166	5	5	5	4.045	3	4	3	2	2	2	3	3.901
167	3	3	3	2.427	3	3	2	3	4	4	3	3.735
168	3	3	3	2.427	4	3	3	4	4	4	4	4.184
169	5	5	5	4.045	3	4	4	4	4	5	5	4.96
170	5	5	5	4.045	3	4	4	4	3	4	4	4.559
171	2	3	3	2.274	2	3	3	3	2	3	3	3.349
172	2	1	3	1.242	3	3	3	3	3	1	1	3.084
173	3	2	3	1.911	3	3	3	3	3	3	3	3.63
174	5	5	5	4.045	3	2	1	3	3	3	3	2.834
175	4	3	4	2.72	4	4	5	4	1	2	3	4.206
176	4	4	4	3.236	4	4	4	4	3	3	3	4.439
177	2	2	3	1.758	3	1	3	3	4	4	4	2.999
178	4	5	3	3.612	2	3	5	3	3	5	1	3.679
179	5	4	4	3.389	3	2	4	3	1	2	2	2.725
180	4	4	4	3.236	3	1	2	3	2	5	5	2.876
181	3	4	5	3.223	3	2	4	5	3	3	3	3.254
182	5	3	5	3.013	4	4	4	4	2	2	3	4.194
183	2	2	3	1.758	3	3	3	3	1	4	2	3.335
184	2	2	3	1.758	2	2	4	4	2	2	2	2.7
185	2	2	4	1.898	3	2	4	4	2	2	2	2.853
186	2	2	3	1.758	2	2	3	4	2	2	2	2.56
187	1	1	2	0.949	3	3	2	3	1	2	2	2.961

188	4	5	5	3.892	3	3	4	3	3	3	4	3.926
189	2	2	4	1.898	3	3	3	3	2	3	3	3.502
190	5	4	5	3.529	4	3	4	1	1	3	3	3.667
191	5	4	4	3.389	3	4	4	3	3	5	1	4.208
192	2	2	3	1.758	3	2	4	3	2	2	3	3.009
193	2	2	2	1.618	2	2	3	2	1	1	1	2.159
194	4	4	5	3.376	4	4	4	3	3	3	3	4.439
195	3	4	4	3.083	2	2	3	2	2	2	3	2.716
196	5	5	5	4.045	3	4	4	2	3	5	5	4.832
197	4	4	5	3.376	4	3	4	4	5	5	5	4.725
198	4	3	4	2.72	3	2	3	2	3	2	3	2.997
199	4	4	5	3.376	3	3	3	3	2	2	3	3.385
200	4	4	4	3.236	1	1	2	1	2	2	2	1.751
201	2	2	4	1.898	3	2	3	2	3	2	2	2.841
202	3	2	3	1.911	2	2	3	2	3	3	3	2.961
203	3	3	4	2.567	2	1	3	2	3	4	3	2.562
204	3	2	4	2.051	3	3	3	3	4	3	4	3.914
205	5	5	5	4.045	4	3	4	3	4	4	5	4.48
206	4	4	4	3.236	2	4	4	4	3	5	3	4.367
207	4	4	5	3.376	5	3	4	3	3	2	3	3.959
208	5	5	5	4.045	2	2	2	1	2	2	2	2.42
209	5	5	5	4.045	4	1	5	2	5	3	5	3.599
210	4	4	4	3.236	3	3	3	3	3	3	4	3.786
211	5	5	5	4.045	4	4	3	4	4	4	4	4.7
212	5	5	5	4.045	2	1	3	2	2	1	1	1.771
213	4	4	3	3.096	2	2	4	3	3	3	3	3.101
214	4	3	3	2.58	2	4	3	3	3	5	5	4.539
215	4	3	4	2.72	2	3	3	4	4	4	3	3.722
216	2	5	5	3.586	2	2	2	2	3	2	2	2.548
217	3	4	4	3.083	2	2	2	2	2	3	2	2.537
218	5	5	5	4.045	4	4	4	4	4	4	4	4.84
219	4	5	5	3.892	5	4	5	4	3	3	2	4.576
220	4	5	5	3.892	3	3	3	4	3	3	4	3.786
221	4	3	5	2.86	4	3	4	3	3	3	5	4.235
222	5	4	5	3.529	4	2	4	3	2	2	4	3.318
223	2	4	5	3.07	4	2	5	2	3	4	3	3.664
224	4	4	4	3.236	2	1	2	2	1	1	2	1.659
225	4	3	4	2.72	3	2	3	2	2	2	2	2.713
226	4	4	5	3.376	5	3	4	3	3	4	3	4.193
227	4	3	4	2.72	3	3	4	4	3	3	2	3.614
228	3	3	3	2.427	5	5	5	4	4	4	4	5.649
229	2	3	4	2.414	4	3	4	3	2	3	3	3.795
230	3	3	3	2.427	4	3	3	4	4	4	3	4.028
231	4	4	3	3.096	3	2	4	3	3	2	2	2.981
232	4	4	4	3.236	2	3	3	3	2	4	3	3.466
233	4	4	4	3.236	3	2	4	4	2	3	3	3.126
234	4	4	4	3.236	3	3	4	4	3	4	3	3.887
235	3	3	3	2.427	3	2	3	3	2	2	1	2.557
236	4	4	4	3.236	4	2	3	4	2	1	3	2.905

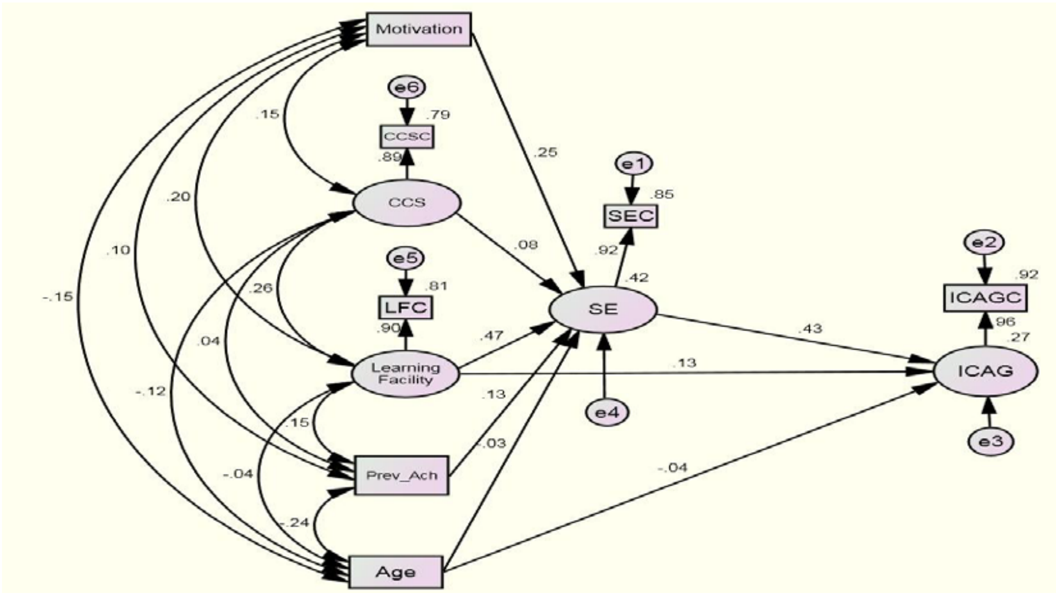
237	4	4	4	3.236	3	3	3	3	4	4	3	3.875
238	3	3	3	2.427	3	3	4	3	2	3	2	3.486
239	4	4	4	3.236	2	2	3	3	2	2	2	2.56
240	3	3	4	2.567	3	3	4	3	3	4	3	3.887
241	4	4	2	2.956	2	3	2	3	2	3	3	3.209
242	2	3	4	2.414	3	2	3	3	2	2	4	3.025
243	4	3	4	2.72	2	2	2	3	2	2	2	2.42
244	2	1	5	1.522	1	1	1	1	1	1	1	1.21
245	4	3	4	2.72	3	2	3	2	1	2	3	2.741
246	5	5	4	3.905	2	2	2	1	3	4	3	2.938
247	4	4	3	3.096	3	2	2	2	3	3	3	2.974
248	5	4	4	3.389	5	2	5	4	4	3	2	3.672
249	2	2	2	1.618	3	1	3	3	4	2	3	2.609
250	3	3	4	2.567	3	2	3	3	3	4	1	2.919
251	3	4	4	3.083	4	3	4	3	3	4	3	4.04
252	5	5	5	4.045	2	2	4	4	5	5	4	3.747
253	3	4	3	2.943	3	4	5	3	4	3	4	4.71
254	2	4	4	2.93	4	3	4	5	4	2	3	3.934
255	3	4	5	3.223	4	3	5	4	4	5	4	4.581
256	3	3	4	2.567	4	3	4	4	5	2	3	4.062
257	1	1	1	0.809	1	2	3	3	2	1	3	2.446
258	4	4	4	3.236	4	3	4	3	3	3	4	4.079
259	2	2	3	1.758	3	2	4	3	4	1	1	2.836
260	2	2	4	1.898	4	2	4	3	4	4	4	3.808
261	2	4	4	2.93	3	2	2	3	2	1	1	2.3
262	4	4	5	3.376	5	4	5	5	5	5	5	5.534
263	5	5	4	3.905	4	1	5	4	5	5	5	3.833
264	3	4	4	3.083	3	3	4	3	4	5	5	4.444
265	3	2	2	1.771	2	3	4	3	3	2	2	3.344
266	2	2	4	1.898	2	4	4	4	4	3	4	4.417
267	3	4	4	3.083	4	4	4	3	2	5	4	4.701
268	4	3	4	2.72	4	3	4	4	4	4	5	4.48
269	4	4	4	3.236	3	3	4	4	2	4	3	3.759
270	1	2	2	1.465	3	2	2	2	3	1	3	2.74
271	2	2	3	1.758	3	2	2	3	2	1	2	2.456
272	3	2	2	1.771	2	2	3	3	3	2	3	2.844
273	5	4	3	3.249	3	1	4	2	2	2	4	2.649
274	3	3	4	2.567	3	2	4	3	4	2	3	3.265
275	3	4	4	3.083	4	3	4	3	3	3	4	4.079
276	4	2	4	2.204	4	3	3	4	4	4	4	4.184
277	4	3	3	2.58	4	3	5	4	3	2	3	3.946
278	2	3	4	2.414	3	3	3	4	4	4	4	4.031
279	3	4	5	3.223	4	3	4	4	4	3	4	4.207
280	5	4	5	3.529	3	3	4	4	4	3	4	4.054
281	4	4	5	3.376	4	5	4	4	3	5	5	5.501
282	4	3	3	2.58	4	3	4	4	5	4	4	4.452
283	5	5	5	4.045	4	1	5	4	4	2	2	2.886
284	3	2	4	2.051	2	3	3	4	2	3	2	3.193
285	2	4	4	2.93	2	1	4	4	3	2	2	2.312

286	4	4	5	3.376	4	2	5	4	4	5	5	4.221
287	5	5	5	4.045	3	2	4	4	4	3	3	3.382
288	1	1	4	1.229	3	4	2	5	5	5	5	4.808
289	4	5	5	3.892	3	4	4	5	5	5	1	4.464
290	3	5	5	3.739	4	3	4	3	4	3	5	4.363
291	4	4	5	3.376	4	3	5	4	3	4	5	4.492
292	2	3	3	2.274	4	2	3	4	3	4	5	3.696
293	2	1	4	1.382	4	3	4	4	4	4	4	4.324
294	3	1	4	1.535	4	3	4	4	4	4	4	4.324
295	2	1	4	1.382	4	3	4	4	4	4	4	4.324
296	5	5	4	3.905	2	3	5	3	5	4	2	3.974
297	2	3	2	2.134	2	1	3	3	3	2	3	2.328
298	4	4	4	3.236	3	3	3	3	4	4	5	4.187
299	4	3	3	2.58	3	3	3	3	4	1	5	3.836
300	4	4	4	3.236	3	2	4	4	3	2	3	3.137
301	3	2	4	2.051	5	2	3	2	3	2	3	3.303
302	3	3	3	2.427	3	3	4	3	2	3	3	3.642
303	2	2	3	1.758	3	3	3	2	2	3	4	3.658
304	3	2	4	2.051	4	2	3	4	3	2	4	3.306
305	2	2	3	1.758	3	4	4	3	2	2	3	4.041
306	4	4	4	3.236	3	3	2	2	3	5	2	3.568
307	4	3	4	2.72	3	1	2	3	3	3	3	2.458
308	2	2	3	1.758	3	2	4	4	4	2	3	3.265
309	2	4	4	2.93	5	3	3	3	2	2	2	3.535
310	2	2	1	1.478	3	1	1	1	1	5	4	2.452
311	4	4	4	3.236	3	3	3	3	4	4	4	4.031
312	2	3	2	2.134	3	2	3	3	2	4	4	3.259
313	5	5	5	4.045	5	3	4	5	3	5	4	4.466
314	1	1	5	1.369	1	4	4	1	3	5	4	4.37
315	2	3	2	2.134	2	2	2	2	1	2	2	2.292
316	5	2	4	2.357	3	4	4	3	3	3	3	4.286
317	2	3	2	2.134	3	3	4	3	4	4	4	4.171
318	2	2	3	1.758	2	3	3	3	2	3	2	3.193
319	4	2	4	2.204	2	1	3	4	3	4	4	2.718
320	5	5	5	4.045	4	5	4	5	3	5	4	5.345
321	2	2	2	1.618	4	3	4	3	3	5	5	4.469
322	1	1	1	0.809	1	1	2	1	3	4	3	2.269
323	2	4	4	2.93	2	4	3	3	4	4	3	4.238
324	2	2	2	1.618	4	3	4	3	3	3	4	4.079
325	5	4	4	3.389	4	4	4	4	4	5	3	4.801
326	2	2	1	1.478	2	2	2	3	2	2	2	2.42
327	2	3	4	2.414	3	2	3	4	3	4	3	3.231
328	2	2	1	1.478	2	2	2	3	2	2	2	2.42
329	4	4	4	3.236	3	4	3	4	4	5	3	4.508
330	2	3	3	2.274	3	3	3	3	2	3	3	3.502
331	2	2	2	1.618	4	3	4	3	4	3	3	4.051
332	5	5	5	4.045	3	2	3	2	3	3	3	3.114
333	4	3	4	2.72	5	4	4	4	4	4	4	4.993
334	2	3	5	2.554	4	3	5	2	4	5	3	4.425

335	2	3	3	2.274	4	4	4	4	3	4	4	4.712
336	2	2	2	1.618	4	3	4	3	4	5	4	4.441
337	2	1	2	1.102	3	2	3	2	3	3	3	3.114
338	3	3	3	2.427	3	2	4	3	4	4	4	3.655
339	2	2	4	1.898	3	2	4	3	4	4	5	3.811
340	2	1	3	1.242	4	3	4	2	3	5	3	4.157
341	1	2	2	1.465	3	2	3	3	3	3	2	2.958
342	2	3	3	2.274	4	3	4	3	3	3	3	3.923
343	4	4	4	3.236	3	3	4	4	3	4	4	4.043
344	4	3	4	2.72	3	2	4	3	2	3	2	2.97
345	2	2	2	1.618	2	2	3	3	3	3	3	2.961
346	1	2	1	1.325	2	2	3	3	3	4	2	2.922
347	2	2	4	1.898	2	2	3	2	4	4	4	3.362
348	4	3	4	2.72	3	3	3	2	3	3	3	3.63
349	2	2	2	1.618	4	5	5	5	5	5	5	5.897
350	5	4	4	3.389	4	3	3	4	3	5	4	4.173
351	4	3	3	2.58	3	3	3	3	3	4	3	3.747
352	3	2	2	1.771	3	3	3	3	3	4	4	3.903
353	2	2	3	1.758	4	4	4	4	4	5	4	4.957
354	3	2	2	1.771	3	2	4	3	3	4	4	3.527
355	2	2	2	1.618	3	2	3	3	4	5	3	3.476
356	2	2	2	1.618	3	3	3	3	3	3	3	3.63
357	1	2	2	1.465	3	2	3	2	2	2	2	2.713
358	2	3	3	2.274	3	2	3	3	3	3	2	2.958
359	1	5	5	3.433	2	1	3	3	3	1	3	2.211
360	5	5	5	4.045	3	3	4	4	3	3	4	3.926
361	2	1	2	1.102	2	2	4	2	2	4	4	3.246
362	2	2	3	1.758	3	2	3	3	3	3	3	3.114
363	2	3	3	2.274	2	2	3	2	3	3	2	2.805
364	2	2	3	1.758	4	3	4	4	4	4	4	4.324
365	4	4	3	3.096	4	3	5	4	4	5	3	4.425
366	2	2	2	1.618	2	2	3	3	2	3	1	2.521
367	5	4	5	3.529	3	3	4	3	3	2	2	3.497
368	4	4	4	3.236	3	3	4	3	4	2	2	3.625
369	5	5	5	4.045	3	3	3	3	2	3	3	3.502
370	2	4	4	2.93	3	3	4	3	4	5	5	4.444
371	2	2	3	1.758	3	3	3	2	3	2	2	3.357
372	2	2	2	1.618	2	2	3	3	3	3	3	2.961
373	5	5	5	4.045	3	4	4	3	4	5	5	4.96
374	2	2	2	1.618	2	3	3	3	3	4	5	3.906
375	4	4	4	3.236	4	3	4	4	3	4	4	4.196
376	4	4	5	3.376	3	4	4	4	4	5	3	4.648
377	2	2	4	1.898	2	3	2	4	3	1	3	3.103
378	2	1	3	1.242	2	2	3	3	3	4	3	3.078
379	4	3	4	2.72	2	3	3	2	4	4	4	3.878
380	3	3	4	2.567	4	3	4	3	3	5	5	4.469
381	2	3	4	2.414	3	4	4	3	3	3	3	4.286
382	1	2	4	1.745	2	3	3	3	3	3	3	3.477
383	2	3	4	2.414	3	2	4	4	3	5	3	3.488

384	2	2	4	1.898	3	2	3	4	3	4	4	3.387
385	3	4	5	3.223	3	4	4	4	4	4	4	4.687
386	2	3	3	2.274	2	2	5	5	5	5	3	3.731
387	1	4	5	2.917	2	2	2	2	2	3	3	2.693
388	3	3	2	2.287	3	2	4	3	4	5	3	3.616
389	2	2	2	1.618	3	3	4	4	3	4	3	3.887
390	3	2	3	1.911	3	2	3	3	3	4	2	3.075
391	5	4	5	3.529	3	4	4	3	3	4	3	4.403
392	2	2	3	1.758	2	3	3	3	2	4	2	3.31
393	4	4	4	3.236	2	3	3	2	3	3	3	3.477
394	4	4	4	3.236	2	3	3	3	4	3	4	3.761
395	2	2	2	1.618	1	2	3	3	3	4	3	2.925
396	4	4	4	3.236	4	3	4	3	4	4	3	4.168
397	2	2	4	1.898	3	3	3	4	3	4	4	3.903
398	2	2	3	1.758	2	3	3	3	4	4	4	3.878
399	4	4	4	3.236	3	3	4	3	3	4	4	4.043
400	4	4	4	3.236	4	2	4	3	3	2	3	3.29
401	4	4	4	3.236	2	2	3	4	3	4	4	3.234
402	4	4	4	3.236	3	3	4	4	3	3	3	3.77
403	3	3	3	2.427	4	3	4	3	3	2	3	3.806
404	2	3	4	2.414	3	4	4	4	4	4	4	4.687
405	2	3	3	2.274	2	3	3	3	3	3	4	3.633
406	2	1	1	0.962	2	3	2	3	4	4	3	3.582
407	3	3	4	2.567	3	2	3	3	4	3	3	3.242
408	3	4	2	2.803	3	3	3	4	3	4	4	3.903
409	2	2	1	1.478	2	2	2	2	3	4	4	3.094
410	3	5	5	3.739	3	2	2	3	5	5	5	3.776
411	2	2	4	1.898	3	3	3	3	3	2	3	3.513
Standard deviation				0.818774								0.850496
Variance				0.670391								0.723343
Sum of loading factor^2				5.452225								16.67089
Sum of measurement error				1.462								4.018
Composite reliability				0.788552								0.805789
Loading factor composite				0.727075								0.763454
Error variance composite				0.141753								0.140481

Appendix B24: Preliminary Model 1 for Developing ICAG Using SEM Single Composite Indicator



CCS: Comfort of Class Size
LFC: Learning Facility Composite
SEC: Student Engagement-Composite
Prev_Ach: Previous Achievement
CCSC: Comfort of Class Size-Composite
SE: Student Engagement
ICAGC: ICAG-Composite

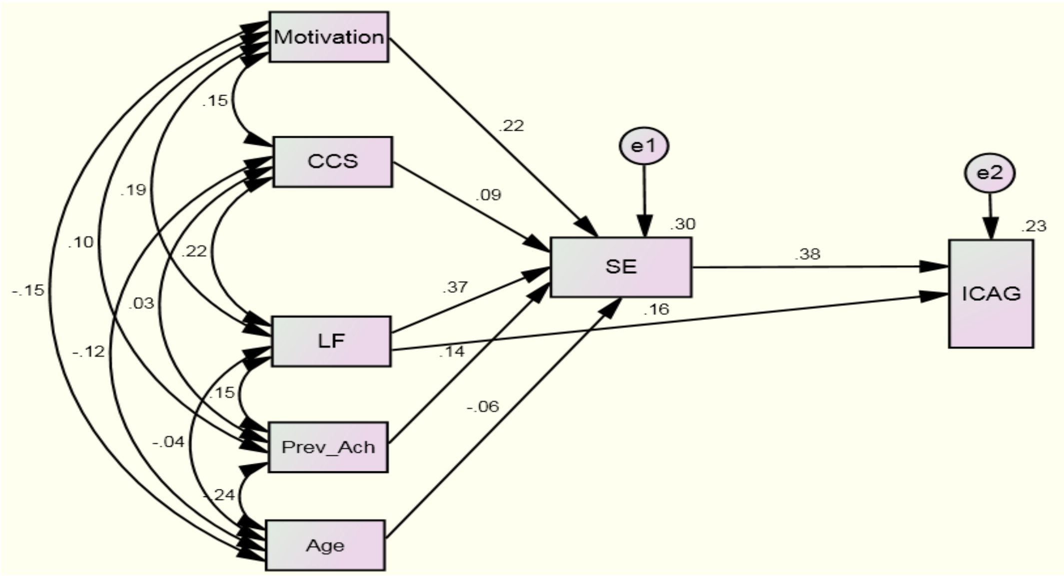
ESTIMATES

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	P	
SE ← Learning Facility	.478	.054	8.818	***	.475
SE ← CCS	.077	.053	1.435	.151	.076
SE ← Age	-.028	.041	-.690	.490	-.032
SE ← Prev_Ach	.236	.081	2.909	.004	.135
SE ← Motivation	1.703	.313	5.433	***	.251
ICAG ← SE	.429	.065	6.607	***	.432
ICAG ← Learning Facility	.127	.066	1.907	.057	.127
ICAG ← Age	-.032	.040	-.779	.436	-.036

MODEL FIT

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	1.043 (P=0.791)	Insignificant	Fit
2	GFI	0.999	More than 0.9	Fit
3	AGFI	0.993	More than 0.9	Fit
4	RMSEA	0.000	Less than 0.05	Fit
5	NFI	0.997	More than 0.9	Fit

Appendix B25: Preliminary Model 2 for Developing ICAG Using Path Analysis



CCS: Comfort of Class Size **LF:** Learning Facility **SE:** Student Engagement
Prev_Ach: Previous Achievement

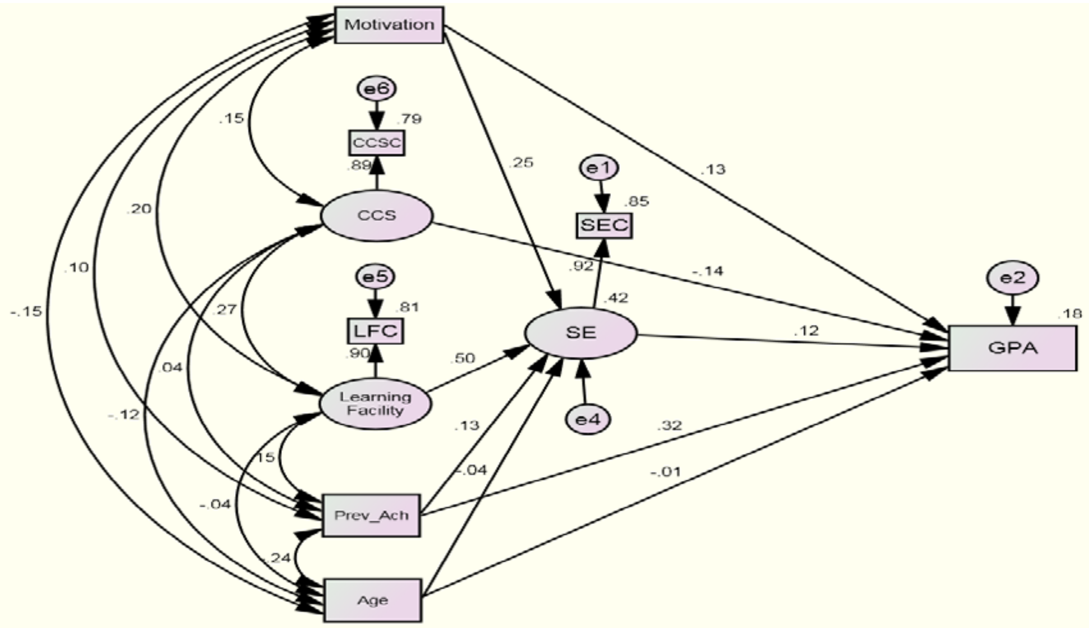
REGRESSION ESTIMATE

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	P	
SE ← LF	1.022	.119	8.610	***	.373
SE ← CCS	.387	.190	2.038	.042	.087
SE ← Age	-.651	.487	-1.337	.181	-.058
SE ← Previous Achievement	3.155	.963	3.277	.001	.141
SE ← Motivation	18.805	3.710	5.069	***	.217
ICAG ← LF	.295	.090	3.284	.001	.160
ICAG ← SE	.257	.033	7.852	***	.383

GOODNESS OF FIT TESTS

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	2.779 (*p*=.595)	Insignificant	Fit
2	GFI	.998	More than 0.9	Fit
3	AGFI	.987	More than 0.9	Fit
4	RMSEA	.000	Less than 0.05	Fit
5	NFI	.992	More than 0.9	Fit

Appendix B26: Preliminary Model 3 for Developing GPA Using SEM Single Composite Indicator



CCS: Comfort of Class Size
LFC: Learning Facility Composite
SEC: Student Engagement-Composite
CCSC: Comfort of Class Size-Composite
SE: Student Engagement
Prev_Ach: Previous Achievement

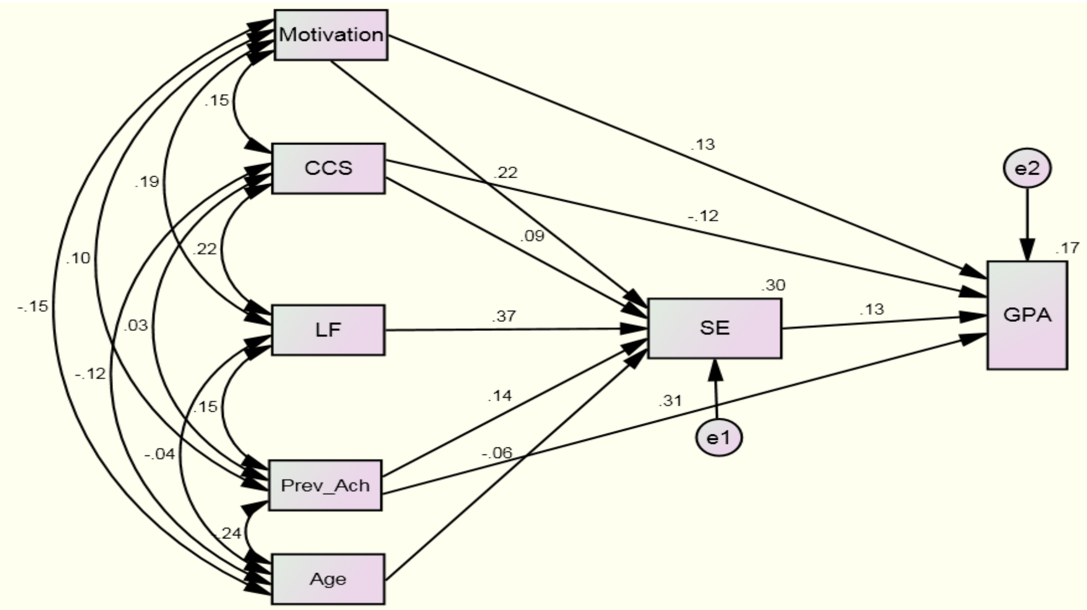
Regression Estimates

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	P	
SE ← Learning Facility	.502	.052	9.625	***	.499
SE ← Age	-.036	.041	-.873	.383	-.040
SE ← Motivation	1.725	.314	5.488	***	.254
SE ← Previous Achievement	.230	.082	2.815	.005	.131
GPA ← Motivation	.245	.091	2.706	.007	.134
GPA ← SE	.032	.015	2.108	.035	.118
GPA← Previous Achievement	.150	.023	6.634	***	.317
GPA ← CCS	-.039	.014	-2.714	.007	-.144
GPA ← Age	-.002	.011	-.182	.856	-.009

GOODNESS OF FIT TESTS

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	2.154 (*p*=.341)	Insignificant	Fit
2	GFI	0.998	More than 0.9	Fit
3	AGFI	0.979	More than 0.9	Fit
4	RMSEA	0.014	Less than 0.05	Fit
5	NFI	0.993	More than 0.9	Fit

Appendix B27: Preliminary Model 4 for Developing GPA Using Path Analysis



CCS: Comfort of Class Size
LF: Learning Facilities
SE: Student Engagement
Prev_Ach: Previous Achievement

Regression Estimates

	Regression Weight				Standardised Regression Weight
	Estimate	S.E.	C.R.	P	
SE ← LF	1.022	.114	8.994	***	.373
SE ← Prev_Ach	3.151	.923	3.414	***	.141
SE ← CCS	.387	.188	2.061	.039	.087
SE ← Age	-.652	.469	-1.392	.164	-.058
SE ← Motivation	18.809	3.419	5.502	***	.217
GPA ← SE	.003	.001	2.556	.011	.132
GPA ← Motivation	.243	.081	2.999	.003	.133
GPA ← CCS	-.011	.004	-2.484	.013	-.119
GPA ← Prev_Ach	.148	.022	6.715	***	.315

GOODNESS OF FIT TESTS

No	Goodness of Fit	Coefficient	Standard	Remark
1	CMIN	0.003 (*p*=.998)	Insignificant	Fit
2	GFI	1.000	More than 0.9	Fit
3	AGFI	1.000	More than 0.9	Fit
4	RMSEA	0.000	Less than 0.05	Fit
5	NFI	1.000	More than 0.9	Fit

Appendix B28: The Influence of Student Motivation, Student Previous Achievement, Comfort of Class Size, and Learning Facilities on Student Engagement

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.546[a]	.298	.291	10.819	1.812

a. Predictors: (Constant), CCS, Prev_Ach, Motivation, LF

b. Dependent Variable: SE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20142.618	4	5035.655	43.025	.000[a]
	Residual	47518.525	406	117.041		
	Total	67661.144	410			

a. Predictors: (Constant), CCS, Prev_Ach, Motivation, LF

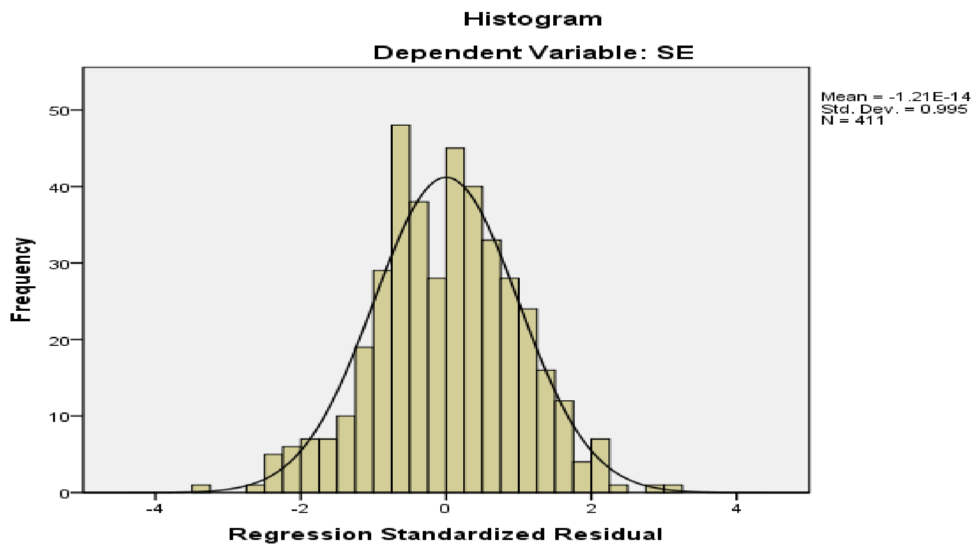
b. Dependent Variable: SE

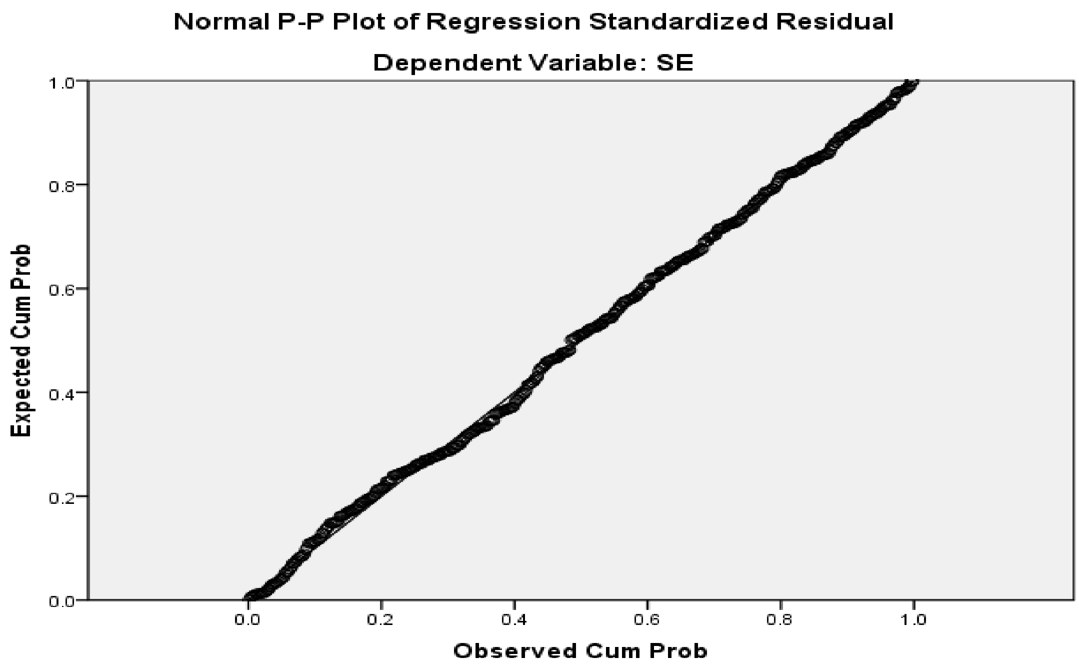
Coefficients[a]

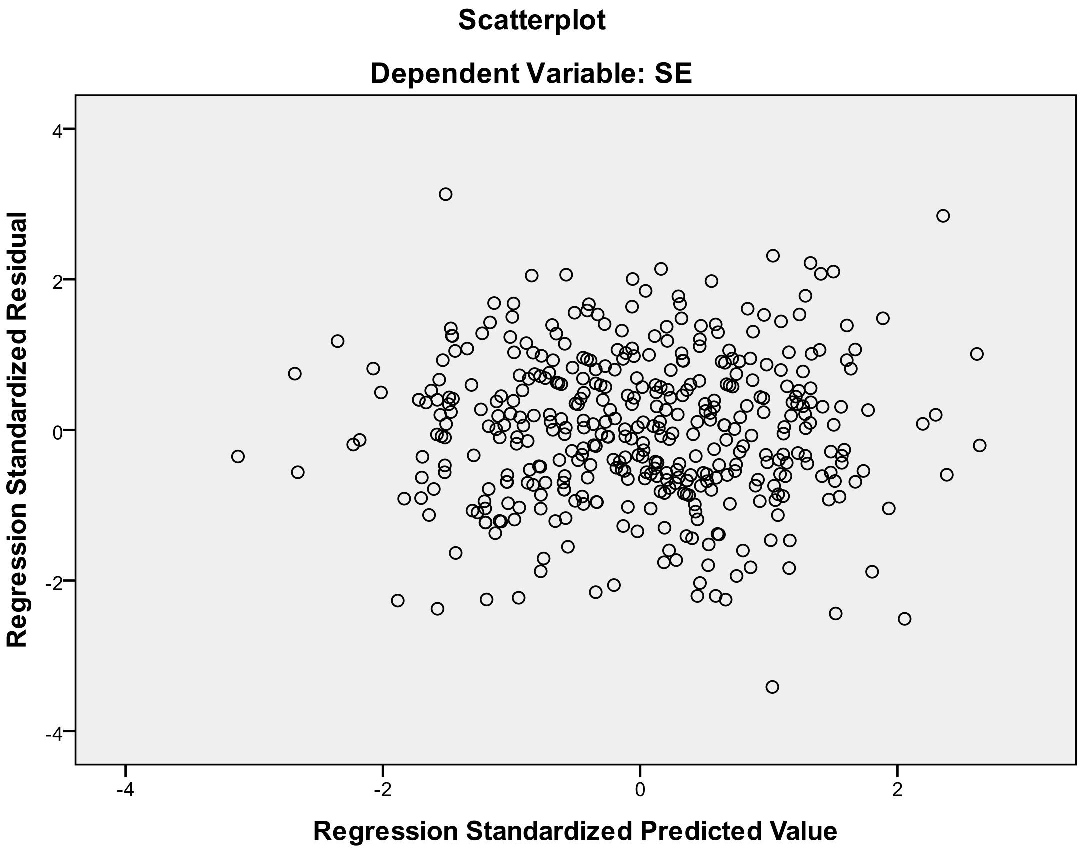
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-21.621	16.153		-1.339	.181		
	Prev_Ach	3.454	.943	.154	3.663	.000	.972	1.028
	Motivation	19.409	3.709	.224	5.233	.000	.948	1.055
	LF	1.016	.119	.371	8.507	.000	.910	1.099
	CCS	.414	.190	.093	2.175	.030	.939	1.064

a. Dependent Variable: SE

CCS: Comfort of Class Size
SE: Student Engagement
LF: Learning Facilities
Prev_Ach: Previous Achievement




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: SE
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Scatterplot
Dependent Variable: SE
Regression Standardized Residual
Regression Standardized Predicted Value
4
2
0
-2
-4

Appendix B29: The Influence of Student Motivation, Student Previous Achievement, Comfort of Class Size, and Learning Facilities on GPA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.402[a]	.161	.153	.249410

a. Predictors: (Constant), LF, Prev_Ach, Motivation, CCS

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.857	4	1.214	19.520	.000[a]
	Residual	25.255	406	.062		
	Total	30.112	410			

a. Predictors: (Constant), LF, Prev_Ach, Motivation, CCS

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.770	.372		2.068	.039		
	Motivation	.298	.085	.163	3.484	.001	.948	1.055
	Prev_Ach	.158	.022	.335	7.276	.000	.972	1.028
	CCS	-.010	.004	-.106	-2.270	.024	.939	1.064
	LF	.003	.003	.047	.993	.322	.910	1.099

a. Dependent Variable: GPA

CCS: Comfort of Class Size

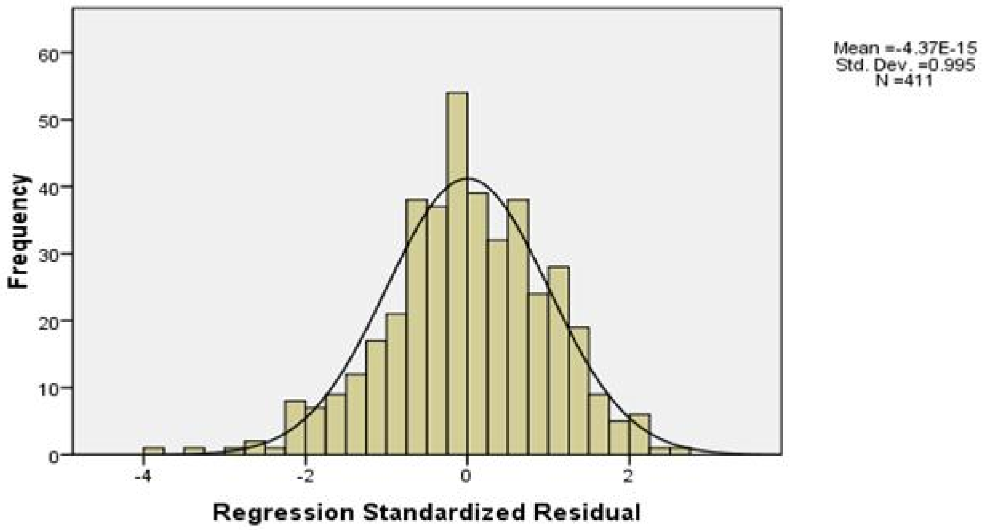
LF: Learning Facilities

Prev_Ach: Previous Achievement

Motivation: Student Motivation

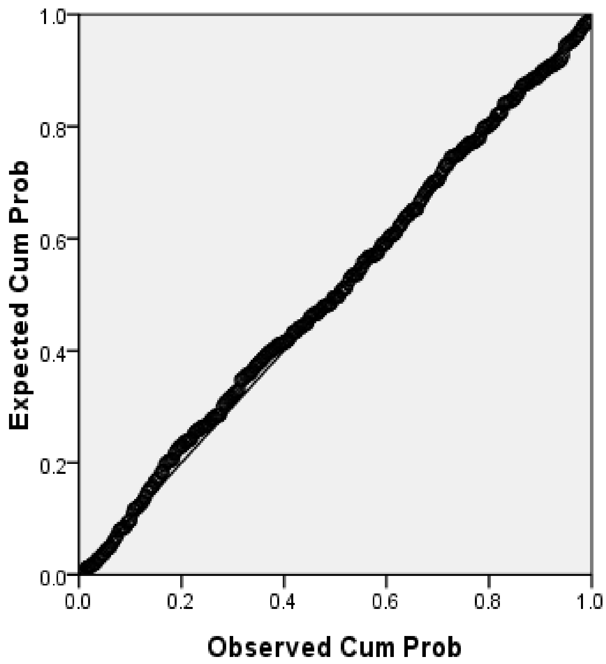
Histogram

Dependent Variable: GPA



Normal P-P Plot of Regression Standardized Residual

Dependent Variable: GPA



Appendix B30: Residual Test for Detecting Moderating Effect

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.023[a]	.001	-.002	.271264

a. Predictors: (Constant), ABS_RES1

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.017	1	.017	.225	.635[a]
	Residual	30.096	409	.074		
	Total	30.112	410			

a. Predictors: (Constant), ABS_RES1

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.234	.022		147.018	.000
	ABS_RES1	-.001	.002	-.023	-.475	.635

a. Dependent Variable: GPA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.19896	3.23424	3.22599	.006359	411
Residual	-1.031651	.669378	.000000	.270933	411
Std. Predicted Value	-4.250	1.298	.000	1.000	411
Std. Residual	-3.803	2.468	.000	.999	411

a. Dependent Variable: GPA

Appendix B31: Stepwise Regression to Identify the Effect of Student Motivation, Student Previous Achievement, Comfort of Class Size, Learning Facilities on GPA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.355	.126	.124	.253658
2	.387	.150	.146	.250464
3	.400	.160	.154	.249268
4	.417	.174	.165	.247572

ANOVA[e]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.796	1	3.796	59.004	.000[a]
	Residual	26.316	409	.064		
	Total	30.112	410			
2	Regression	4.518	2	2.259	36.007	.000[b]
	Residual	25.595	408	.063		
	Total	30.112	410			
3	Regression	4.824	3	1.608	25.878	.000[c]
	Residual	25.289	407	.062		
	Total	30.112	410			
4	Regression	5.228	4	1.307	21.324	.000[d]
	Residual	24.884	406	.061		
	Total	30.112	410			

a. Predictors: (Constant), Prev_Ach

b. Predictors: (Constant), Prev_Ach, Motivation

c. Predictors: (Constant), Prev_Ach, Motivation, SE

d. Predictors: (Constant), Prev_Ach, Motivation, SE, CCS

e. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.893	.174		10.881	.000
	Prev_Ach	.167	.022	.355	7.681	.000
2	(Constant)	.770	.373		2.065	.040
	Prev_Ach	.160	.022	.340	7.402	.000
	Motivation	.285	.084	.156	3.391	.001
3	(Constant)	.845	.373		2.267	.024
	Prev_Ach	.150	.022	.317	6.784	.000
	Motivation	.225	.088	.123	2.554	.011
	SE	.002	.001	.109	2.220	.027
4	(Constant)	.831	.370		2.244	.025
	Prev_Ach	.148	.022	.315	6.779	.000
	Motivation	.244	.088	.133	2.779	.006
	SE	.003	.001	.132	2.656	.008
	CCS	-.011	.004	-.119	-2.568	.011

a. Dependent Variable: GPA

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	SE	.148[a]	3.143	.002	.154	.945
	Motivation	.156[a]	3.391	.001	.166	.990
	CCS	-.073[a]	-1.579	.115	-.078	.999
	LF	.052[a]	1.123	.262	.056	.978
2	SE	.109[b]	2.220	.027	.109	.854
	CCS	-.097[b]	-2.115	.035	-.104	.978
	LF	.026[b]	.549	.583	.027	.948
3	CCS	-.119[c]	-2.568	.011	-.126	.947
	LF	-.020[c]	-.393	.694	-.020	.788
4	LF	-.002[d]	-.036	.971	-.002	.772

a. Predictors in the Model: (Constant), Prev_Ach

b. Predictors in the Model: (Constant), Prev_Ach, Motivation

c. Predictors in the Model: (Constant), Prev_Ach, Motivation, SE

d. Predictors in the Model: (Constant), Prev_Ach, Motivation, SE, CCS

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.893	.174		10.881	.000
	Prev_Ach	.167	.022	.355	7.681	.000
2	(Constant)	.770	.373		2.065	.040
	Prev_Ach	.160	.022	.340	7.402	.000
	Motivation	.285	.084	.156	3.391	.001
3	(Constant)	.845	.373		2.267	.024
	Prev_Ach	.150	.022	.317	6.784	.000
	Motivation	.225	.088	.123	2.554	.011
	SE	.002	.001	.109	2.220	.027
4	(Constant)	.831	.370		2.244	.025
	Prev_Ach	.148	.022	.315	6.779	.000
	Motivation	.244	.088	.133	2.779	.006
	SE	.003	.001	.132	2.656	.008
	CCS	-.011	.004	-.119	-2.568	.011

e. Dependent Variable: GPA

Appendix B32: Hierarchical Regression to Identify the Effect of Student Motivation, Student Previous Achievement, Comfort of Class Size, and Learning Facilities on GPA

Regression 1: The Effect of Comfort of Class Size on GPA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.061	.004	.001	.270835

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.112	1	.112	1.521	.218[a]
	Residual	30.001	409	.073		
	Total	30.112	410			

a. Predictors: (Constant), CCS

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.282	.047		69.274	.000
	CCS	-.006	.005	-.061	-1.233	.218

a. Dependent Variable: GPA

Regression 2: The Effect of Comfort of Class Size and Previous Achievement on GPA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.362	.131	.127	.253196

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.956	2	1.978	30.856	.000[a]
	Residual	26.156	408	.064		
	Total	30.112	410			

a. Predictors: (Constant), Prev_Ach, CCS

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.951	.177		10.992	.000
	CCS	-.007	.004	-.073	-1.579	.115
	Prev_Ach	.169	.022	.358	7.744	.000

a. Dependent Variable: GPA

Regression 3: The Effect of CCS, PA, Motivation on GPA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.399	.159	.153	.249405

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.796	3	1.599	25.700	.000[a]
	Residual	25.317	407	.062		
	Total	30.112	410			

a. Predictors: (Constant), Motivation, Prev_Ach, CCS

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.746	.372		2.008	.045
	CCS	-.009	.004	-.097	-2.115	.035
	Prev_Ach	.161	.022	.341	7.473	.000
	Motivation	.311	.085	.170	3.674	.000

a. Dependent Variable: GPA

Regression 4: The Effect of CCS, PA, Motivation, and LF on GPA

Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.402	.161	.153	.249410

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.857	4	1.214	19.520	.000[a]
	Residual	25.255	406	.062		
	Total	30.112	410			

a. Predictors: (Constant), LF, Prev_Ach, Motivation, CCS

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.770	.372		2.068	.039		
	CCS	-.010	.004	-.106	-2.270	.024	.939	1.064
	Prev_Ach	.158	.022	.335	7.276	.000	.972	1.028
	Motivation	.298	.085	.163	3.484	.001	.948	1.055
	LF	.003	.003	.047	.993	.322	.910	1.099

a. Dependent Variable: GPA

Regression 5: The Effect of Comfort of Class Size, Previous Achievements, Student Motivation, Learning Facilities, and Student Engagement on GPA

Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.417	.174	.163	.247877

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.228	5	1.046	17.018	.000[a]
	Residual	24.884	405	.061		
	Total	30.112	410			

a. Predictors: (Constant), SE, CCS, Prev_Ach, Motivation, LF

b. Dependent Variable: GPA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.228	5	1.046	17.018	.000[a]
	Residual	24.884	405	.061		
	Total	30.112	410			

a. Predictors: (Constant), SE, CCS, Prev_Ach, Motivation, LF

b. Dependent Variable: GPA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.830	.371		2.239	.026		
	CCS	-.011	.004	-.119	-2.535	.012	.929	1.077
	Prev_Ach	.149	.022	.315	6.763	.000	.941	1.062
	Motivation	.244	.088	.133	2.775	.006	.888	1.126
	LF	.000	.003	-.002	-.036	.971	.772	1.295
	SE	.003	.001	.132	2.457	.014	.702	1.424

Appendix B33: ICAG-Teaching Content by University, Accreditation, and Location

1. ICAG-Teaching Content by University

Descriptives

ICAG

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Min	Max
1	25	74.04	11.400	2.280	69.33	78.75	55	100
2	18	69.33	9.899	2.333	64.41	74.26	53	88
3	28	69.39	11.422	2.159	64.96	73.82	54	100
4	20	71.35	9.149	2.046	67.07	75.63	53	87
5	17	63.29	13.846	3.358	56.17	70.41	40	91
6	33	80.03	7.990	1.391	77.20	82.86	65	95
7	26	72.69	7.498	1.470	69.66	75.72	60	88
8	21	71.38	9.014	1.967	67.28	75.48	53	92
Total	188	72.21	10.822	.789	70.65	73.76	40	100

ANOVA

ICAG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3859.731	7	551.390	5.502	.000
Within Groups	18039.179	180	100.218		
Total	21898.910	187			

2. ICAG-Teaching Content by Accreditation

Descriptives

ICAG

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Min	Max
1.00	38	67.76	11.976	1.943	63.83	71.70	40	92
2.00	92	70.74	9.595	1.000	68.75	72.73	53	100
3.00	58	77.45	9.976	1.310	74.83	80.07	55	100
Total	188	72.21	10.822	.789	70.65	73.76	40	100

ANOVA

ICAG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2541.957	2	1270.979	12.147	.000
Within Groups	19356.952	185	104.632		
Total	21898.910	187			

2. ICAG-Teaching Content by University Location

ANOVA

ICAG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.427	1	2.427	.021	.886
Within Groups	21896.483	186	117.723		
Total	21898.910	187			

Appendix B34: Lecturer Job Satisfaction by University, Accreditation, and Location

1. Lecturer Job Satisfaction by University

Descriptives

LJS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	25	98.00	11.765	2.353	93.14	102.86	68	127
2	18	92.50	14.022	3.305	85.53	99.47	67	112
3	28	94.18	12.620	2.385	89.29	99.07	62	126
4	20	88.85	14.709	3.289	81.97	95.73	65	112
5	17	86.47	21.518	5.219	75.41	97.53	31	122
6	33	105.45	11.771	2.049	101.28	109.63	82	128
7	26	85.85	11.739	2.302	81.10	90.59	55	109
8	21	92.00	16.410	3.581	84.53	99.47	56	119
Total	188	93.85	15.308	1.116	91.64	96.05	31	128

ANOVA

LJS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8073.568	7	1153.367	5.807	.000
Within Groups	35748.959	180	198.605		
Total	43822.527	187			

2. Lecturer Job Satisfaction by accreditation

Descriptives

LJS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
1.00	38	89.53	18.803	3.050	83.35	95.71	31	122
2.00	92	90.34	13.369	1.394	87.57	93.11	55	126
3.00	58	102.24	12.245	1.608	99.02	105.46	68	128
Total	188	93.85	15.308	1.116	91.64	96.05	31	128

ANOVA

LJS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5929.878	2	2964.939	14.475	.000
Within Groups	37892.649	185	204.825		
Total	43822.527	187			

3. Lecturer Job Satisfaction by Location

ANOVA

LJS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	595.293	1	595.293	2.561	.111
Within Groups	43227.234	186	232.404		
Total	43822.527	187			

Appendix B35: Working Experience by University, Accreditation, and Location

1. Lecturer Experience by University

Descriptives

Wor_exp

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	25	12.920	8.7365	1.7473	9.314	16.526	2.0	26.0
2	18	9.611	6.8611	1.6172	6.199	13.023	2.0	27.0
3	28	13.857	8.4840	1.6033	10.567	17.147	1.0	35.0
4	20	11.750	7.6494	1.7105	8.170	15.330	2.0	23.0
5	17	8.176	6.2972	1.5273	4.939	11.414	1.0	28.0
6	33	11.909	7.4807	1.3022	9.257	14.562	2.0	25.0
7	26	16.808	6.7232	1.3185	14.092	19.523	1.0	28.0
8	21	10.119	11.7685	2.5681	4.762	15.476	1.0	35.0
Total	188	12.237	8.3850	.6115	11.030	13.443	1.0	35.0

ANOVA

Wor_exp

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1135.232	7	162.176	2.430	.021
Within Groups	12012.485	180	66.736		
Total	13147.717	187			

2. Lecturer Experience by Accreditation

Descriptives

Wor_exp

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	38	9.250	9.6421	1.5642	6.081	12.419	1.0	35.0
2	92	13.402	7.8489	.8183	11.777	15.028	1.0	35.0
3	58	12.345	7.9880	1.0489	10.244	14.445	2.0	26.0
Total	188	12.237	8.3850	.6115	11.030	13.443	1.0	35.0

ANOVA

Wor_exp

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	464.619	2	232.309	3.389	.036
Within Groups	12683.098	185	68.557		
Total	13147.717	187			

3. Lecturer Experience by Location

Descriptives

Wor_exp

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	90	12.728	9.0464	.9536	10.833	14.623	1.0	35.0
2	98	11.786	7.7476	.7826	10.232	13.339	1.0	35.0
Total	188	12.237	8.3850	.6115	11.030	13.443	1.0	35.0

ANOVA

Wor_exp

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	41.636	1	41.636	.591	.443
Within Groups	13106.081	186	70.463		
Total	13147.717	187			

Appendix B36: Lecturer Education by University, Accreditation and Location

1. Lecturer Education Attainment by University

Descriptives

Edu_att

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	25	2.16	.374	.075	2.01	2.31	2	3
2	18	2.00	.000	.000	2.00	2.00	2	2
3	28	2.07	.378	.071	1.92	2.22	1	3
4	20	2.05	.224	.050	1.95	2.15	2	3
5	17	1.82	.529	.128	1.55	2.10	1	3
6	33	1.88	.650	.113	1.65	2.11	1	3
7	26	2.19	.402	.079	2.03	2.35	2	3
8	21	1.86	.359	.078	1.69	2.02	1	2
Total	188	2.01	.439	.032	1.95	2.07	1	3

ANOVA

Edu_att

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.216	7	.459	2.524	.017
Within Groups	32.763	180	.182		
Total	35.979	187			

2. Lecturer Education Attainment by University

Descriptives

Edu_att

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	38	1.84	.437	.071	1.70	1.99	1	3
2	92	2.09	.320	.033	2.02	2.15	1	3
3	58	2.00	.562	.074	1.85	2.15	1	3
Total	188	2.01	.439	.032	1.95	2.07	1	3

ANOVA

Edu_att

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.622	2	.811	4.366	.014
Within Groups	34.357	185	.186		
Total	35.979	187			

3. Lecturer Education Attainment by Location

Descriptives

Edu_att

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	90	2.07	.361	.038	1.99	2.14	1	3
2	98	1.96	.496	.050	1.86	2.06	1	3
Total	188	2.01	.439	.032	1.95	2.07	1	3

ANOVA

Edu_att

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.542	1	.542	2.845	.093
Within Groups	35.437	186	.191		
Total	35.979	187			

Appendix B37: Lecturer Appointment by University, Accreditation, and Location

1. Lecturer Current's Appointment by University

Descriptives

Cur_app

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	25	1.88	.881	.176	1.52	2.24	1	4
2	18	1.56	.705	.166	1.21	1.91	1	3
3	28	2.25	.799	.151	1.94	2.56	1	3
4	20	2.05	.826	.185	1.66	2.44	1	3
5	17	1.88	.697	.169	1.52	2.24	1	3
6	33	2.03	.847	.147	1.73	2.33	1	4
7	26	1.96	.528	.103	1.75	2.17	1	3
8	21	1.62	.865	.189	1.23	2.01	1	3
Total	188	1.93	.795	.058	1.82	2.05	1	4

ANOVA

Cur_app

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.168	7	1.167	1.911	.070
Within Groups	109.933	180	.611		
Total	118.101	187			

2. Lecturer Current's Appointment by Accreditation

Descriptives

Cur_app

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	38	1.74	.795	.129	1.48	2.00	1	3
2	92	1.99	.749	.078	1.83	2.14	1	3
3	58	1.97	.858	.113	1.74	2.19	1	4
Total	188	1.93	.795	.058	1.82	2.05	1	4

ANOVA

Cur_app

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.812	2	.906	1.442	.239
Within Groups	116.289	185	.629		
Total	118.101	187			

3. Lecturer Current's Appointment by Location

Descriptives

Cur_app

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	90	1.78	.761	.080	1.62	1.94	1	4
2	98	2.07	.803	.081	1.91	2.23	1	4
Total	188	1.93	.795	.058	1.82	2.05	1	4

ANOVA

Cur_app

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.046	1	4.046	6.597	.011
Within Groups	114.056	186	.613		
Total	118.101	187			

Appendix B38: Lecturer Certification by University, Accreditation, and Location

1. Lecturer Certification by University

Descriptives

Lec_cer

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	25	.32	.476	.095	.12	.52	0	1
2	18	.11	.323	.076	-.05	.27	0	1
3	28	.50	.509	.096	.30	.70	0	1
4	20	.40	.503	.112	.16	.64	0	1
5	17	.18	.393	.095	-.03	.38	0	1
6	33	.27	.452	.079	.11	.43	0	1
7	26	.31	.471	.092	.12	.50	0	1
8	21	.24	.436	.095	.04	.44	0	1
Total	188	.30	.461	.034	.24	.37	0	1

ANOVA

Lec_cer

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.336	7	.334	1.607	.136
Within Groups	37.382	180	.208		
Total	39.718	187			

2. Lecturer Certification by Accreditation

Descriptives

Lec_cer

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	38	.21	.413	.067	.07	.35	0	1
2	92	.35	.479	.050	.25	.45	0	1
3	58	.29	.459	.060	.17	.41	0	1
Total	188	.30	.461	.034	.24	.37	0	1

ANOVA

Lec_cer

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.515	2	.258	1.216	.299
Within Groups	39.203	185	.212		
Total	39.718	187			

3. Lecturer Certification by Location

Descriptives

Lec_cer

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	90	.26	.439	.046	.16	.35	0	1
2	98	.35	.478	.048	.25	.44	0	1
Total	188	.30	.461	.034	.24	.37	0	1

ANOVA

Lec_cer

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.392	1	.392	1.853	.175
Within Groups	39.326	186	.211		
Total	39.718	187			

Appendix B39: Research Productivity by University, Accreditation, and Location

1. Lecturer Research Productivity by University

Descriptives

Res_pro

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	25	2.32	1.819	.364	1.57	3.07	0	6
2	18	3.56	2.148	.506	2.49	4.62	0	8
3	28	2.71	1.941	.367	1.96	3.47	0	6
4	20	2.90	2.049	.458	1.94	3.86	0	10
5	17	1.88	1.536	.373	1.09	2.67	0	5
6	33	3.52	2.635	.459	2.58	4.45	0	12
7	26	3.58	1.554	.305	2.95	4.20	1	7
8	21	3.14	1.878	.410	2.29	4.00	0	8
Total	188	2.99	2.054	.150	2.70	3.29	0	12

ANOVA

Res_pro

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	58.671	7	8.382	2.066	.049
Within Groups	730.323	180	4.057		
Total	788.995	187			

2. Lecturer Research Productivity by Accreditation

Descriptives

Res_pro

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	38	2.58	1.825	.296	1.98	3.18	0	8
2	92	3.16	1.917	.200	2.77	3.56	0	10
3	58	3.00	2.377	.312	2.38	3.62	0	12
Total	188	2.99	2.054	.150	2.70	3.29	0	12

ANOVA

Res_pro

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.177	2	4.589	1.089	.339
Within Groups	779.818	185	4.215		
Total	788.995	187			

3. Lecturer Research Productivity by Location

Descriptives

Res_pro

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	90	3.12	1.877	.198	2.73	3.52	0	8
2	98	2.88	2.207	.223	2.44	3.32	0	12
Total	188	2.99	2.054	.150	2.70	3.29	0	12

ANOVA

Res_pro

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.809	1	2.809	.664	.416
Within Groups	786.186	186	4.227		
Total	788.995	187			

Appendix B40: Article Publication by University, Accreditation, and Location Lecturer Article Publication by University

1. Lecturer Article Publication by University

Descriptives

Pub_artc

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	25	1.68	1.930	.386	.88	2.48	0	6
2	18	1.50	1.654	.390	.68	2.32	0	6
3	28	2.57	2.714	.513	1.52	3.62	0	9
4	20	3.30	2.886	.645	1.95	4.65	0	10
5	17	1.88	1.833	.445	.94	2.82	0	5
6	33	1.30	1.741	.303	.69	1.92	0	5
7	26	2.58	2.817	.552	1.44	3.71	0	12
8	21	1.67	1.278	.279	1.08	2.25	0	5
Total	188	2.04	2.256	.165	1.72	2.37	0	12

ANOVA

Pub_artc

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	76.915	7	10.988	2.261	.031
Within Groups	874.744	180	4.860		
Total	951.660	187			

2. Lecturer Article Publication by Accreditation

Descriptives

Pub_artc

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	38	1.76	1.532	.249	1.26	2.27	0	5
2	92	2.52	2.637	.275	1.98	3.07	0	12
3	58	1.47	1.818	.239	.99	1.94	0	6
Total	188	2.04	2.256	.165	1.72	2.37	0	12

ANOVA

Pub_artc

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	43.404	2	21.702	4.420	.013
Within Groups	908.256	185	4.909		
Total	951.660	187			

3. Lecturer Article Publication by Location

Descriptives

Pub_artc

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	90	1.90	2.077	.219	1.46	2.34	0	12
2	98	2.17	2.411	.244	1.69	2.66	0	10
Total	188	2.04	2.256	.165	1.72	2.37	0	12

ANOVA

Pub_artc

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.509	1	3.509	.688	.408
Within Groups	948.151	186	5.098		
Total	951.660	187			

Appendix B41: Book Publication by University, Accreditation, and Location

1. Lecturer Book Publication by University

Descriptives

Pub_book

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	25	.32	.690	.138	.04	.60	0	2
2	18	.89	1.530	.361	.13	1.65	0	6
3	28	.61	1.031	.195	.21	1.01	0	4
4	20	1.00	1.338	.299	.37	1.63	0	4
5	17	.76	2.333	.566	-.43	1.96	0	9
6	33	.09	.384	.067	-.05	.23	0	2
7	26	.19	.491	.096	-.01	.39	0	2
8	21	.29	.644	.140	-.01	.58	0	2
Total	188	.47	1.130	.082	.31	.63	0	9

ANOVA

Pub_book

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.802	7	2.686	2.198	.036
Within Groups	220.007	180	1.222		
Total	238.809	187			

2. Lecturer Book Publication by Accreditation

Descriptives

Pub_book

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	38	.50	1.623	.263	-.03	1.03	0	9
2	92	.63	1.136	.118	.40	.87	0	6
3	58	.19	.545	.072	.05	.33	0	2
Total	188	.47	1.130	.082	.31	.63	0	9

ANOVA

Pub_book

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.960	2	3.480	2.777	.065
Within Groups	231.849	185	1.253		
Total	238.809	187			

3. Lecturer Book Publication by Location

Descriptives

Pub_book

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	90	.39	.896	.094	.20	.58	0	6
2	98	.54	1.310	.132	.28	.80	0	9
Total	188	.47	1.130	.082	.31	.63	0	9

ANOVA

Pub_book

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.083	1	1.083	.847	.359
Within Groups	237.726	186	1.278		
Total	238.809	187			

Appendix B42: Age by University, Accreditation, and Location

1. Lecturers' Age by University

Descriptives

Age

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	25	40.28	8.264	1.653	36.87	43.69	26	53
2	18	37.11	8.373	1.973	32.95	41.27	31	64
3	28	41.50	9.268	1.751	37.91	45.09	25	62
4	20	39.50	6.955	1.555	36.25	42.75	30	51
5	17	34.24	6.906	1.675	30.68	37.79	25	55
6	33	39.88	7.339	1.278	37.28	42.48	29	53
7	26	45.04	8.969	1.759	41.42	48.66	27	63
8	21	36.48	12.828	2.799	30.64	42.32	25	62
Total	188	39.69	9.118	.665	38.38	41.00	25	64

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1688.515	7	241.216	3.133	.004
Within Groups	13857.591	180	76.987		
Total	15546.106	187			

2. Lecturers' Age by Accreditation

Descriptives

Age

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	38	35.47	10.529	1.708	32.01	38.93	25	62
2	92	41.21	8.886	.926	39.37	43.05	25	64
3	58	40.05	7.683	1.009	38.03	42.07	26	53
Total	188	39.69	9.118	.665	38.38	41.00	25	64

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	894.712	2	447.356	5.649	.004
Within Groups	14651.395	185	79.197		
Total	15546.106	187			

3. Lecturers' Age by Location

Descriptives

Age

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	90	40.13	10.170	1.072	38.00	42.26	25	64
2	98	39.29	8.064	.815	37.67	40.90	25	62
Total	188	39.69	9.118	.665	38.38	41.00	25	64

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.706	1	33.706	.404	.526
Within Groups	15512.400	186	83.400		
Total	15546.106	187			

Appendix B43: Comfort of Class Size by University, Accreditation, and Location

1. Comfort of Class Size by University

Descriptives

Class_Size

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Min	Max
1	25	12.00	3.215	.643	10.67	13.33	5	15
2	18	11.39	2.279	.537	10.26	12.52	7	15
3	28	13.25	2.137	.404	12.42	14.08	6	15
4	20	12.35	2.455	.549	11.20	13.50	6	15
5	17	12.24	2.562	.621	10.92	13.55	7	15
6	33	11.21	3.333	.580	10.03	12.39	6	15
7	26	10.50	3.102	.608	9.25	11.75	5	15
8	21	10.33	3.006	.656	8.97	11.70	6	15
Total	188	11.65	2.947	.215	11.23	12.08	5	15

ANOVA

Class_Size

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	168.708	7	24.101	2.980	.006
Within Groups	1455.818	180	8.088		
Total	1624.527	187			

2. Comfort of Class Size by Accreditation

ANOVA

Class_Size

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.167	2	7.583	.872	.420
Within Groups	1609.360	185	8.699		
Total	1624.527	187			

3. Comfort of Class Size by Location

Descriptives

Class_Size

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
1.00	90	11.06	2.999	.316	10.43	11.68	5	15
2.00	98	12.20	2.803	.283	11.64	12.77	6	15
Total	188	11.65	2.947	.215	11.23	12.08	5	15

ANOVA

Class_Size

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	61.886	1	61.886	7.366	.007
Within Groups	1562.641	186	8.401		
Total	1624.527	187			

Appendix B44: Learning Facilities by University, Accreditation, and Location

1. Learning Facilities by University

Descriptives

LF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
1	25	25.40	4.708	.942	23.46	27.34	17	33
2	18	22.00	4.029	.950	20.00	24.00	16	32
3	28	22.14	5.068	.958	20.18	24.11	10	29
4	20	21.45	3.804	.851	19.67	23.23	13	28
5	17	17.00	6.403	1.553	13.71	20.29	7	35
6	33	26.09	4.503	.784	24.49	27.69	16	34
7	26	23.54	3.829	.751	21.99	25.08	18	34
8	21	22.76	3.807	.831	21.03	24.49	15	29
Total	188	22.98	5.121	.373	22.24	23.72	7	35

ANOVA

LF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1166.538	7	166.648	8.026	.000
Within Groups	3737.377	180	20.763		
Total	4903.915	187			

2. Learning Facilities by Accreditation

Descriptives

LF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
1.00	38	20.18	5.830	.946	18.27	22.10	7	35
2.00	92	22.36	4.280	.446	21.47	23.25	10	34
3.00	58	25.79	4.564	.599	24.59	26.99	16	34
Total	188	22.98	5.121	.373	22.24	23.72	7	35

ANOVA

LF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	791.524	2	395.762	17.804	.000
Within Groups	4112.391	185	22.229		
Total	4903.915	187			

3. Learning Facilities by Location

ANOVA

LF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	59.682	1	59.682	2.292	.132
Within Groups	4844.233	186	26.044		
Total	4903.915	187			

Appendix B45: Student-Faculty Engagement by University, Accreditation, and Location

1. Student-Faculty Engagement by University

Descriptives

SFE

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Min	Max
1	25	127.32	15.617	3.123	120.87	133.77	90	161
2	18	126.22	10.647	2.510	120.93	131.52	109	154
3	28	120.36	14.376	2.717	114.78	125.93	90	147
4	20	122.95	14.174	3.169	116.32	129.58	97	143
5	17	120.06	16.177	3.923	111.74	128.38	97	158
6	33	134.03	14.477	2.520	128.90	139.16	106	159
7	26	125.81	12.228	2.398	120.87	130.75	99	157
8	21	129.81	11.294	2.465	124.67	134.95	107	155
Total	188	126.30	14.349	1.046	124.24	128.37	90	161

ANOVA

SFE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4138.601	7	591.229	3.097	.004
Within Groups	34361.117	180	190.895		
Total	38499.718	187			

2. Student-Faculty Engagement by Accreditation Level

Descriptives

SFE

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Min	Max
1.00	38	125.45	14.362	2.330	120.73	130.17	97	158
2.00	92	123.61	13.100	1.366	120.90	126.32	90	157
3.00	58	131.14	15.218	1.998	127.14	135.14	90	161
Total	188	126.30	14.349	1.046	124.24	128.37	90	161

ANOVA

SFE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2051.514	2	1025.757	5.206	.006
Within Groups	36448.204	185	197.017		
Total	38499.718	187			

Multiple Comparisons

SFE
Tukey HSD

(I) Accreditation	(J) Accreditation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	1.839	2.707	.776	-4.56	8.23
	3.00	-5.691	2.929	.130	-12.61	1.23
2.00	1.00	-1.839	2.707	.776	-8.23	4.56
	3.00	-7.529*	2.353	.005	-13.09	-1.97
3.00	1.00	5.691	2.929	.130	-1.23	12.61
	2.00	7.529*	2.353	.005	1.97	13.09

*. The mean difference is significant at the 0.05 level.

SFE

Tukey HSD[a,b]

Accreditation	N	Subset for alpha = 0.05	
		1	2
2.00	92	123.61	
1.00	38	125.45	125.45
3.00	58		131.14
Sig.		.771	.087

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 55.120.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

3. Student-Faculty Engagement by Location

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	152.963	1	152.963	.742	.390
Within Groups	38346.755	186	206.165		
Total	38499.718	187			

Appendix B46: Lecturer Job Satisfaction, ICAG-Teaching Content, and Student-Faculty Engagement Relationships and Mediation Test

1. The Influence of Lecturer Job Satisfaction on ICAG-Teaching Content

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.572[a]	.328	.324	8.897

a. Predictors: (Constant), LJS

b. Dependent Variable: ICAG_TC

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7174.140	1	7174.140	90.622	.000[a]
	Residual	14724.770	186	79.165		
	Total	21898.910	187			

a. Predictors: (Constant), LJS

b. Dependent Variable: ICAG_TC

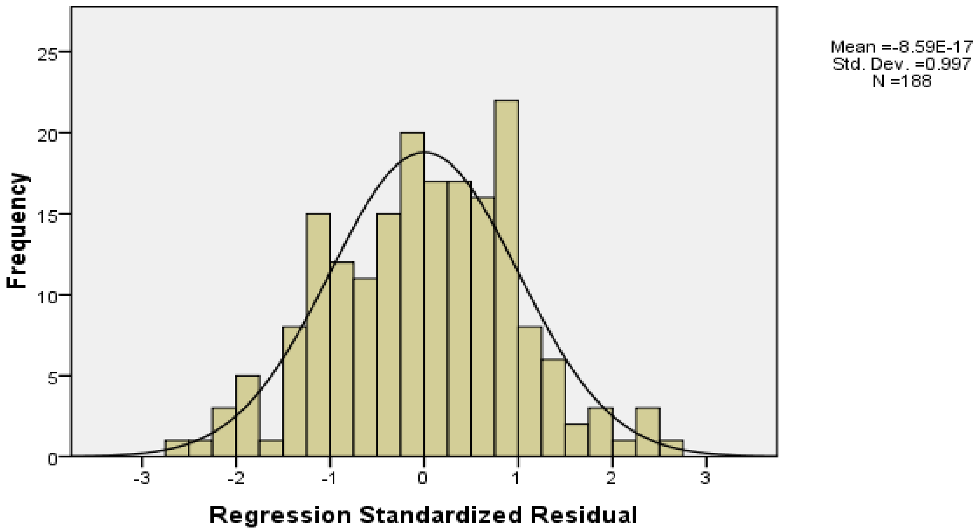
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	34.237	4.041		8.472	.000
	LJS	.405	.043	.572	9.520	.000

a. Dependent Variable: ICAG_TC

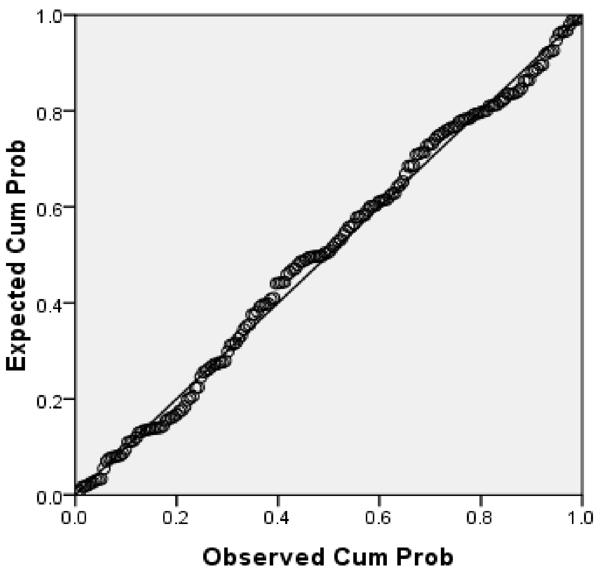
Histogram

Dependent Variable: ICAG_TC



Normal P-P Plot of Regression Standardized Residual

Dependent Variable: ICAG_TC



1. **The Influence of Lecturer Job Satisfaction on Student-Faculty Engagement**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.491[a]	.241	.237	12.535

a. Predictors: (Constant), LJS

b. Dependent Variable: SFE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9273.243	1	9273.243	59.016	.000[a]
	Residual	29226.476	186	157.132		
	Total	38499.718	187			

a. Predictors: (Constant), LJS

b. Dependent Variable: SFE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	83.133	5.693		14.602	.000
	LJS	.460	.060	.491	7.682	.000

a. Dependent Variable: SFE

2. **The influence of ICAG-Teaching Content on Student-Faculty Engagement**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649[a]	.422	.419	10.940

a. Predictors: (Constant), ICAG_TC

b. Dependent Variable: SFE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16239.657	1	16239.657	135.695	.000[a]
	Residual	22260.061	186	119.678		
	Total	38499.718	187			

a. Predictors: (Constant), ICAG_TC

b. Dependent Variable: SFE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	64.122	5.397		11.880	.000
	ICAG_TC	.861	.074	.649	11.649	.000

a. Dependent Variable: SFE

3. The Influence of Lecturer Job Satisfaction and ICAG-Teaching Content on Student-Faculty Engagement

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.665[a]	.443	.437	10.767

a. Predictors: (Constant), LJS, ICAG_TC

b. Dependent Variable: SFE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17051.097	2	8525.548	73.535	.000[a]
	Residual	21448.621	185	115.938		
	Total	38499.718	187			

a. Predictors: (Constant), LJS, ICAG_TC

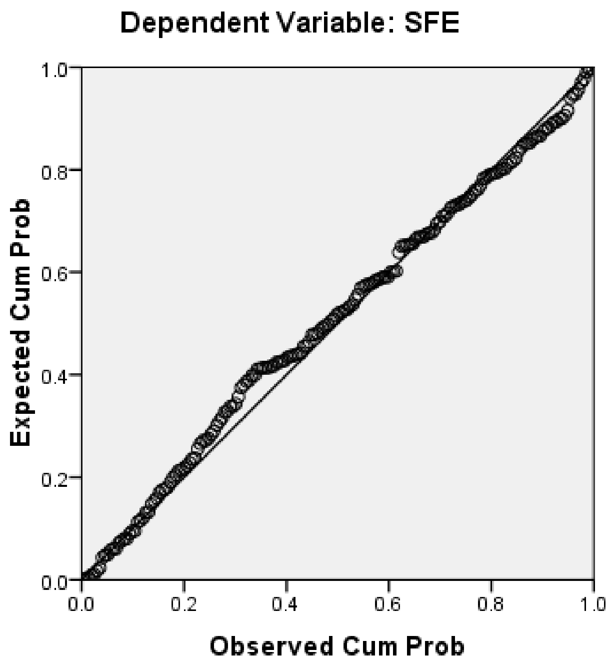
b. Dependent Variable: SFE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	58.251	5.757		10.118	.000		
	ICAG_TC	.727	.089	.548	8.191	.000	.672	1.487
	LJS	.166	.063	.177	2.646	.009	.672	1.487

a. Dependent Variable: SFE

Normal P-P Plot of Regression Standardized Residual



Appendix B47: Learning Facilities, ICAG-Teaching Content, and Student-Faculty Engagement Relationships and Mediation Test

1. The Influence of LF on ICAG-Teaching Content

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.588[a]	.346	.343	8.774

a. Predictors: (Constant), LF

b. Dependent Variable: ICAG_TC

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7579.930	1	7579.930	98.461	.000[a]
	Residual	14318.979	186	76.984		
	Total	21898.910	187			

a. Predictors: (Constant), LF

b. Dependent Variable: ICAG_TC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	43.639	2.949		14.796	.000		
	LF	1.243	.125	.588	9.923	.000	1.000	1.000

a. Dependent Variable: ICAG_TC

1. The Influence of Learning Facilities on Student-Faculty Engagement

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518[a]	.268	.264	12.309

a. Predictors: (Constant), LF

b. Dependent Variable: SFE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10320.739	1	10320.739	68.124	.000[a]
	Residual	28178.980	186	151.500		
	Total	38499.718	187			

a. Predictors: (Constant), LF

b. Dependent Variable: SFE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	92.967	4.137		22.470	.000		
	LF	1.451	.176	.518	8.254	.000	1.000	1.000

a. Dependent Variable: SFE

2. The Influence of Learning Facilities and ICAG-Teaching Content on Student-Faculty Engagement

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.671[a]	.450	.444	10.699

a. Predictors: (Constant), ICAG_TC, LF

b. Dependent Variable: SFE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17323.172	2	8661.586	75.668	.000[a]
	Residual	21176.546	185	114.468		
	Total	38499.718	187			

a. Predictors: (Constant), ICAG_TC, LF

b. Dependent Variable: SFE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17323.172	2	8661.586	75.668	.000[a]
	Residual	21176.546	185	114.468		
	Total	38499.718	187			

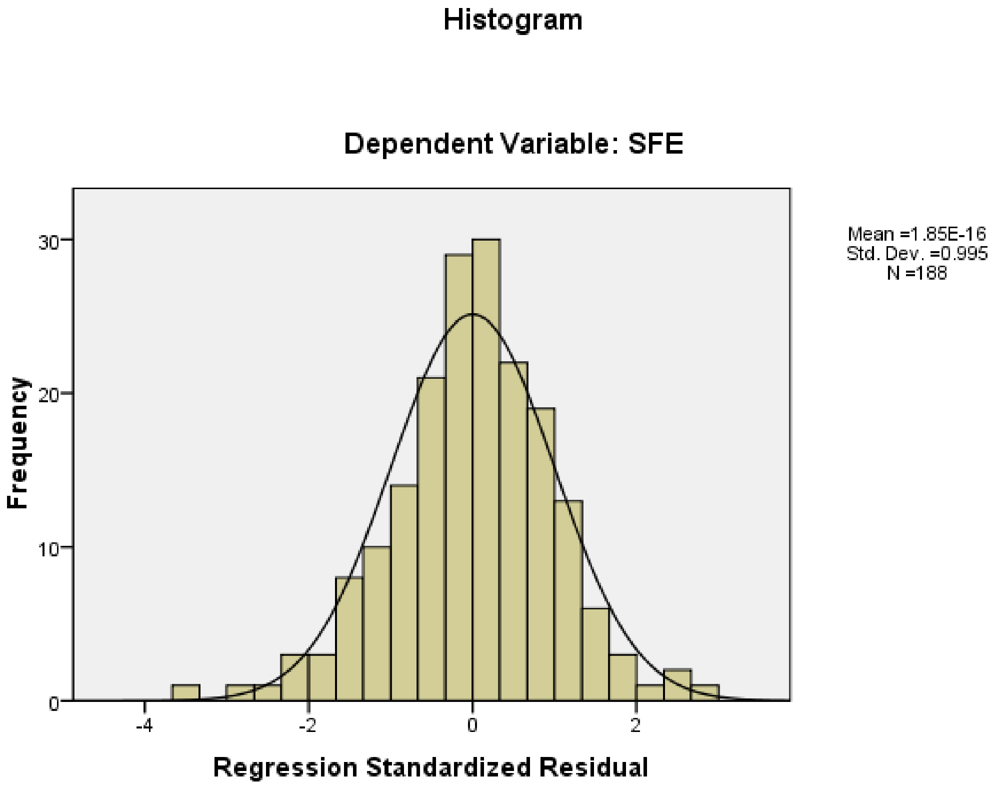
a. Predictors: (Constant), ICAG_TC, LF

b. Dependent Variable: SFE

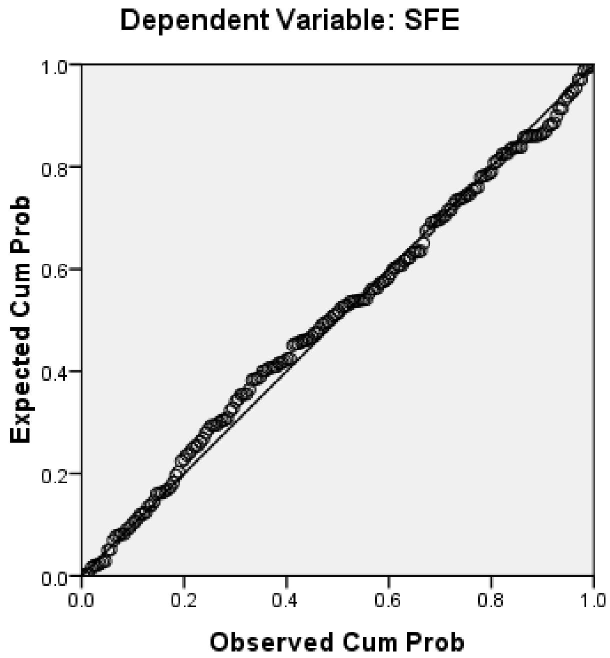
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	62.450	5.306		11.769	.000		
	LF	.581	.189	.207	3.077	.002	.654	1.529
	ICAG_TC	.699	.089	.527	7.821	.000	.654	1.529

a. Dependent Variable: SFE



Normal P-P Plot of Regression Standardized Residual



Appendix B48: The Effect of Learning Facilities on Lecturer Job Satisfaction

Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.627a	.393	.390	11.961

a. Predictors: (Constant), LF

b. Dependent Variable: LJS

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17212.372	1	17212.372	120.311	.000a
	Residual	26610.155	186	143.065		
	Total	43822.527	187			

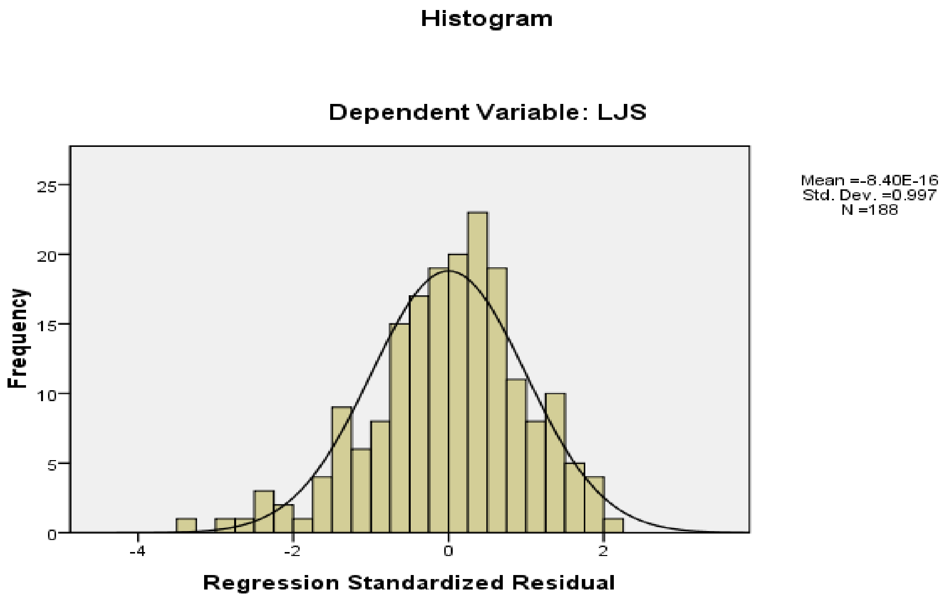
a. Predictors: (Constant), LF

b. Dependent Variable: LJS

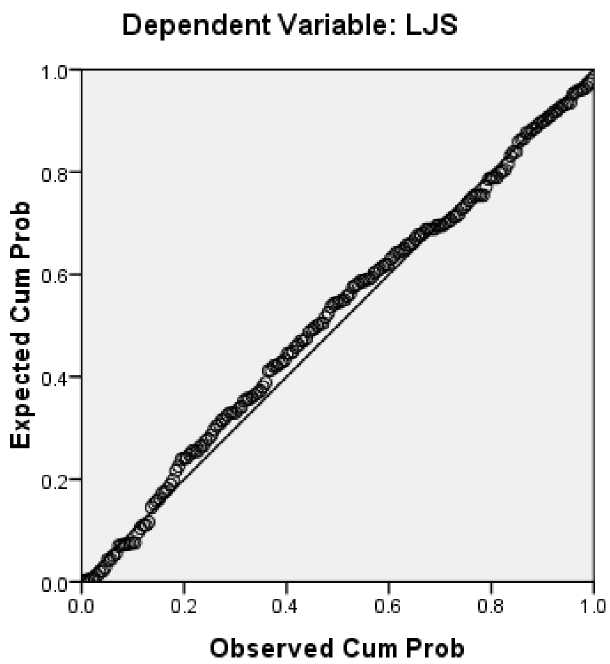
Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	50.796	4.021		12.634	.000		
	LF	1.873	.171	.627	10.969	.000	1.000	1.000

a. Dependent Variable: LJS



Normal P-P Plot of Regression Standardized Residual



Appendix B49: Factor Loading, Measurement Error, and Factor Score Weight (Lecturer Perception)

1. Lecturer Job Satisfaction

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
lj2	<---	ljs	.613
lj3	<---	ljs	.671
lj4	<---	ljs	.675
lj6	<---	ljs	.612
lj7	<---	ljs	.678
lj8	<---	ljs	.683
lj9	<---	ljs	.717
lj10	<---	ljs	.684
lj11	<---	ljs	.693
lj12	<---	ljs	.585
lj13	<---	ljs	.604
lj14	<---	ljs	.664
lj15	<---	ljs	.680
lj16	<---	ljs	.662
lj17	<---	ljs	.663
lj18	<---	ljs	.739
lj19	<---	ljs	.757
lj20	<---	ljs	.596
lj21	<---	ljs	.697
lj22	<---	ljs	.620
lj23	<---	ljs	.549
lj24	<---	ljs	.493
lj25	<---	ljs	.639
lj26	<---	ljs	.653

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
ljs	.331	.073	4.552	***	par_24
e2	.550	.059	9.356	***	par_25
e3	.434	.047	9.244	***	par_26
e4	.413	.045	9.234	***	par_27
e6	.615	.066	9.358	***	par_28
e7	.392	.042	9.227	***	par_29
e8	.384	.042	9.214	***	par_30
e9	.407	.045	9.119	***	par_31
e10	.458	.050	9.212	***	par_32
e11	.466	.051	9.189	***	par_33
e12	.535	.057	9.399	***	par_34
e13	.469	.050	9.371	***	par_35
e14	.436	.047	9.258	***	par_36
e15	.422	.046	9.223	***	par_37
e16	.339	.037	9.263	***	par_38
e17	.449	.048	9.261	***	par_39
e18	.439	.049	9.042	***	par_40
e19	.371	.041	8.972	***	par_41
e20	.399	.043	9.383	***	par_42
e21	.297	.032	9.178	***	par_43
e22	.375	.040	9.344	***	par_44
e23	.421	.045	9.445	***	par_45
e24	.586	.062	9.503	***	par_46
e25	.321	.034	9.310	***	par_47
e26	.281	.030	9.283	***	par_48

Factor Score Weights (Group number 1 - Default model)

	lj26	lj25	lj24	lj23	lj22	lj21	lj20	lj19	lj18
LJS	0.048	0.043	0.022	0.03	0.038	0.052	0.034	0.056	0.049

lj17	lj16	lj15	lj14	lj13	lj12	lj11	lj10	lj9	lj8
0.039	0.045	0.042	0.039	0.032	0.029	0.041	0.041	0.047	0.044

lj7	lj6	lj4	lj3	lj2
0.043	0.029	0.042	0.04	0.031

2. **ICAG-Teaching Content**

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
b7	<---	ICAG_TC	.686
b6	<---	ICAG_TC	.694
b5	<---	ICAG_TC	.684
b4	<---	ICAG_TC	.708
b3	<---	ICAG_TC	.709
b2	<---	ICAG_TC	.744
b1	<---	ICAG_TC	.695
p7	<---	ICAG_TC	.558
p6	<---	ICAG_TC	.599
p5	<---	ICAG_TC	.567
p4	<---	ICAG_TC	.662
p3	<---	ICAG_TC	.564
p2	<---	ICAG_TC	.713
p1	<---	ICAG_TC	.560
f6	<---	ICAG_TC	.672
f5	<---	ICAG_TC	.653
f4	<---	ICAG_TC	.603
f3	<---	ICAG_TC	.691
f2	<---	ICAG_TC	.606
f1	<---	ICAG_TC	.661

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
ICAG_TC	.340	.065	5.241	***	par_20
e20	.382	.042	9.114	***	par_21
e19	.307	.034	9.091	***	par_22
e18	.390	.043	9.120	***	par_23
e17	.331	.037	9.041	***	par_24
e16	.389	.043	9.039	***	par_25
e15	.286	.032	8.897	***	par_26
e14	.347	.038	9.087	***	par_27
e13	.461	.049	9.387	***	par_28
e12	.542	.058	9.320	***	par_29
e11	.315	.034	9.375	***	par_30
e10	.306	.033	9.184	***	par_31
e9	.304	.032	9.379	***	par_32
e8	.265	.029	9.025	***	par_33

	Estimate	S.E.	C.R.	P	Label
e7	.383	.041	9.385	***	par_34
e6	.389	.042	9.156	***	par_35
e5	.401	.044	9.205	***	par_36
e4	.387	.042	9.313	***	par_37
e3	.342	.038	9.098	***	par_38
e2	.446	.048	9.307	***	par_39
e1	.350	.038	9.184	***	par_40

Factor Score Weights (Group number 1 - Default model)

	f1	f2	f3	f4	f5	f6
ICAG_TC	0.053	0.04	0.058	0.043	0.048	0.051

p1	p2	p3	p4	p5	p6	p7
0.038	0.07	0.044	0.056	0.043	0.036	0.035

b1	b2	b3	b4	b5	b6	b7
0.058	0.073	0.057	0.062	0.053	0.061	0.054

3. Student-Faculty Engagement

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
ac2	<---	SFEC	.560
ac3	<---	SFEC	.631
ac4	<---	SFEC	.693
ac5	<---	SFEC	.614
ac6	<---	SFEC	.653
ac7	<---	SFEC	.380
ac9	<---	SFEC	.352
ac10	<---	SFEC	.405
al2	<---	SFEC	.397
al4	<---	SFEC	.453
al5	<---	SFEC	.559
al6	<---	SFEC	.589
al7	<---	SFEC	.647
ss3	<---	SFEC	.438
ss4	<---	SFEC	.508
ss5	<---	SFEC	.380
ss6	<---	SFEC	.458

			Estimate
ee1	<---	SFEC	.704
ee2	<---	SFEC	.700
ee3	<---	SFEC	.391
ee4	<---	SFEC	.537
ee5	<---	SFEC	.631
sle1	<---	SFEC	.376
sle2	<---	SFEC	.391
sle3	<---	SFEC	.470
sle4	<---	SFEC	.404

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
ac2	<---	SFEC	.560
ac3	<---	SFEC	.631
ac4	<---	SFEC	.693
ac5	<---	SFEC	.614
ac6	<---	SFEC	.653
ac7	<---	SFEC	.380
ac9	<---	SFEC	.352
ac10	<---	SFEC	.405
al2	<---	SFEC	.397
al4	<---	SFEC	.453
al5	<---	SFEC	.559
al6	<---	SFEC	.589
al7	<---	SFEC	.647
ss3	<---	SFEC	.438
ss4	<---	SFEC	.508
ss5	<---	SFEC	.380
ss6	<---	SFEC	.458
ee1	<---	SFEC	.704
ee2	<---	SFEC	.700
ee3	<---	SFEC	.391
ee4	<---	SFEC	.537
ee5	<---	SFEC	.631
sle1	<---	SFEC	.376
sle2	<---	SFEC	.391
sle3	<---	SFEC	.470
sle4	<---	SFEC	.404

Factor Score Weights (Group number 1 - Default model)

	sle4	sle3	sle2	sle1	ee5	ee4	ee3	ee2
SFEC	0.024	0.03	0.024	0.022	0.037	0.03	0.024	0.045

ee1	ss6	ss5	ss4	ss3	al7	al6	al5	al4
0.05	0.025	0.024	0.03	0.025	0.049	0.031	0.04	0.026

al2	ac10	ac9	ac7	ac6	ac5	ac4	ac3	ac2
0.025	0.027	0.016	0.024	0.056	0.049	0.068	0.055	0.038

4. Comfort of Class Size (CCS)

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
CS1	<---	LCSIZE	.903
CS2	<---	LCSIZE	.908
CS3	<---	LCSIZE	.821

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
CS1	<---	LCSIZE	.903
CS2	<---	LCSIZE	.908
CS3	<---	LCSIZE	.821

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
CS1	<---	LCSIZE	.903
CS2	<---	LCSIZE	.908
CS3	<---	LCSIZE	.821

5. Learning Facilities

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
LF1	<---	LLF	.700
LF2	<---	LLF	.719
LF3	<---	LLF	.749
LF4	<---	LLF	.753
LF5	<---	LLF	.747

	Estimate
LF6 <--- LLF	.664
LF7 <--- LLF	.686

Standardized Regression Weights: (Group number 1 - Default model)

	Estimate
LF1 <--- LLF	.700
LF2 <--- LLF	.719
LF3 <--- LLF	.749
LF4 <--- LLF	.753
LF5 <--- LLF	.747
LF6 <--- LLF	.664
LF7 <--- LLF	.686

Factor Score Weights (Group number 1 - Default model)

	LF7	LF6	LF5	LF4	LF3	LF2	LF1
LLF	.100	.085	.125	.156	.138	.111	.112

Appendix B50: Calculation of Lecturer Job Satisfaction Composite Indicator

Variables	LJ2	LJ3	LJ4	LJ6	LJ7	LJ8	LJ9	LJ10	LJ11	LJ12	LJ13	LJ14	LJ15	LJ16	LJ17	LJ18	LJ19	LJ20	LJ21	LJ22	LJ23	LJ24	LJ25	LJ26	LJSC
FL	0.613	0.671	0.675	0.612	0.678	0.683	0.717	0.684	0.693	0.585	0.604	0.664	0.68	0.662	0.663	0.739	0.757	0.596	0.697	0.62	0.549	0.493	0.639	0.653	
FSW	0.031	0.04	0.042	0.029	0.043	0.044	0.047	0.041	0.041	0.029	0.032	0.039	0.042	0.045	0.039	0.049	0.056	0.034	0.052	0.038	0.03	0.022	0.043	0.048	
IME	0.55	0.434	0.413	0.615	0.392	0.384	0.407	0.458	0.466	0.535	0.469	0.436	0.422	0.339	0.449	0.439	0.371	0.399	0.297	0.375	0.421	0.586	0.321	0.281	
1	5	4	4	3	4	4	4	3	4	3	2	2	2	3	4	4	2	5	4	5	5	4	4	5	3.523
2	4	4	4	4	3	3	4	4	3	4	4	4	3	3	4	4	3	5	4	4	4	3	4	4	3.565
3	4	4	4	4	3	3	4	4	3	4	4	4	3	3	4	4	3	5	4	4	4	3	4	4	3.565
4	3	3	3	3	4	4	3	4	3	3	3	3	3	3	4	4	4	4	4	4	4	3	3	4	3.342
5	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	4	4	3.908
6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3.824
7	5	5	5	5	5	5	5	4	4	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	4.659
8	4	2	2	2	4	4	2	2	4	4	4	2	2	3	2	2	2	4	2	2	2	2	1	4	2.518
9	5	4	3	3	4	4	5	3	3	3	3	4	4	4	5	5	3	4	3	4	5	5	4	5	3.768
10	2	2	3	2	4	4	3	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	2.997
11	2	4	3	4	5	5	3	4	3	3	4	3	3	3	3	4	4	4	4	4	4	4	4	5	3.573
12	5	4	5	4	4	4	4	3	3	3	3	4	4	4	3	4	4	5	3	4	4	4	4	4	3.697
13	2	2	2	2	2	2	2	2	2	3	4	3	4	4	2	4	4	4	5	5	5	4	2	3	2.948
14	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3.766
15	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	4	3	4	3.483
16	5	5	5	4	5	5	5	4	4	3	4	3	4	4	4	4	4	5	4	5	4	4	4	5	4.123
17	3	4	4	4	4	4	5	3	4	3	4	3	4	4	3	3	3	4	3	3	4	3	3	4	3.432
18	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	3.683
19	5	3	4	4	3	3	3	3	3	4	4	4	4	4	3	3	3	4	3	3	4	4	4	4	3.365
20	4	4	4	3	4	4	4	4	3	3	3	4	4	4	5	5	5	5	5	4	4	4	4	4	3.923
21	4	5	4	4	5	5	4	4	4	3	3	2	4	4	4	1	4	4	4	4	5	3	4	5	3.721
22	4	2	3	2	3	3	3	1	2	4	4	3	4	4	3	4	2	4	2	3	4	4	4	4	2.973
23	4	4	4	4	4	4	4	3	3	3	3	3	4	3	4	4	4	3	4	4	4	2	3	3	3.428
24	5	5	5	5	5	5	4	4	4	3	3	3	3	3	3	3	3	5	4	4	4	4	4	4	3.756
25	3	4	4	4	5	5	5	4	4	4	4	4	4	4	4	5	4	5	4	5	4	5	4	5	4.118
26	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	5	5	5	5	4	4	3.917
27	3	4	4	4	4	4	4	3	4	3	3	4	3	3	3	2	2	4	3	4	4	4	4	4	3.303
28	4	4	4	4	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	4	5	4.096
29	4	3	3	3	4	4	4	3	2	3	4	4	3	3	2	2	2	4	4	4	4	3	3	4	3.121
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31	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3.824
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34	2	2	3	2	4	2	3	2	2	2	2	3	2	2	3	2	2	4	4	2	4	3	3	3	2.51
35	4	4	4	4	4	5	4	4	4	5	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3.858
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37	2	3	2	2	2	4	3	2	2	2	4	4	3	4	3	2	2	2	2	2	4	4	2	2	2.504
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65	4	3	3	3	3	4	3	3	2	4	4	3	4	4	3	3	3	3	3	4	3	3	3	3	3.088
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73	4	4	3	4	4	3	4	2	3	4	4	4	4	4	3	4	3	4	4	4	4	4	3	4	3.477
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79	4	4	3	4	4	4	4	3	4	5	5	5	4	4	4	4	4	4	4	4	4	4	2	5	3.803
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87	2	2	2	3	3	4	3	3	1	2	2	2	2	2	2	2	2	3	3	3	4	4	4	4	2.529
88	4	4	4	4	4	4	4	2	3	3	2	2	4	4	4	4	4	4	4	4	4	4	4	3	3.482
89	4	4	5	4	5	5	4	4	4	3	3	3	2	4	3	4	4	4	5	5	4	2	4	5	3.824
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92	5	5	5	5	5	5	5	4	5	5	5	5	5	5	4	4	4	4	5	4	5	5	4	4	4.432
93	2	4	4	4	4	4	4	3	4	2	4	4	4	4	4	2	2	2	4	4	3	3	4	4	3.333
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96	5	5	5	3	5	4	5	3	3	3	4	4	5	4	4	4	3	4	5	4	4	4	4	4	3.925
97	5	5	4	4	4	4	5	2	3	2	5	4	5	5	4	4	4	5	5	5	5	2	5	5	4.081
98	4	2	3	1	2	1	2	4	1	3	4	2	4	4	3	1	3	3	4	5	5	4	4	5	2.913
99	4	4	4	1	4	4	4	4	4	5	5	5	4	5	5	5	5	1	5	5	5	5	5	5	4.157
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102	1	3	3	2	4	3	3	4	2	3	4	4	4	4	2	2	2	4	4	4	4	2	4	4	3.057
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110	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	4	5	5	4.729
111	3	4	4	4	4	4	4	4	3	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	3.685
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125	5	5	4	4	5	5	5	3	4	4	4	4	4	4	4	4	4	4	5	4	3	4	4	4	4.01
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164	4	4	3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	4	4	4	3	3	3	4	3.002
165	4	4	3	2	4	3	2	2	2	2	1	2	2	2	2	2	2	4	3	3	4	2	3	4	2.551
166	3	3	3	4	3	3	3	2	2	3	4	4	4	4	2	3	3	3	3	3	2	3	3	3	2.904
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172	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	4	3.729
173	4	5	5	5	5	5	5	5	4	4	4	4	5	4	4	4	4	5	5	4	4	5	4	4	4.26
174	2	4	3	4	4	4	4	2	3	3	3	4	4	4	2	4	4	4	4	4	4	2	4	4	3.414
175	4	4	4	5	4	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3.944
176	4	4	4	5	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4	3.834
177	4	4	3	4	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	4	4	3.785
178	4	3	3	3	3	3	5	3	4	3	3	5	3	3	3	4	4	4	4	4	5	4	4	4	3.514
179	3	2	2	3	4	4	4	4	4	3	4	4	4	4	4	3	3	4	4	3	3	2	3	3	3.263
180	3	4	3	3	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	2	4	4	3.596
181	3	3	3	5	5	5	4	3	3	3	3	3	3	3	4	4	4	3	4	4	4	3	3	3	3.411
182	1	2	2	4	4	4	4	2	2	2	4	3	4	4	1	1	1	3	4	4	1	3	4	3	2.68
183	4	4	3	5	4	4	5	4	4	3	4	4	4	4	3	3	3	3	4	4	4	4	4	4	3.651
184	3	3	3	2	4	5	4	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	3.515
185	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	4	2	4	2	2.842

186	4	4	4	2	4	4	4	3	4	3	4	4	4	4	3	4	3	4	4	4	4	4	4	4	3.601
187	4	4	4	2	1	1	2	1	2	4	4	4	3	3	4	4	3	3	4	3	3	3	3	3	2.848
188	3	3	3	3	2	3	2	2	2	2	3	3	3	3	2	1	1	2	2	2	3	2	3	3	2.272

Standard deviation	0.561886892
Variance	0.31571688
Sum of loading factor^2	62.078641
Sum of measurement error	8.275
Composite reliability	0.882379933
Loading factor composite	0.527809
Error variance composite	0.037134641

Appendix B51: Calculation of Comfort of Class Size and Learning Facilities Composite Indicator

Variables	CS1	CS2	CS3	CLSIZE
FL	0.903	0.908	0.821	
FSW	0.22	0.422	0.362	
IME	0.247	0.194	0.314	
1	2	2	3	2.37
2	4	5	5	4.8
3	3	4	4	3.796
4	3	3	3	3.012
5	4	4	4	4.016
6	5	5	5	5.02
7	5	5	5	5.02
8	1	2	2	1.788
9	5	5	5	5.02
10	5	5	4	4.658
11	5	5	4	4.658
12	5	5	5	5.02
13	2	2	2	2.008
14	4	5	5	4.8
15	4	4	4	4.016
16	5	5	5	5.02
17	5	4	5	4.598
18	4	4	4	4.016
19	5	5	5	5.02
20	2	5	2	3.274
21	4	4	4	4.016
22	2	2	2	2.008
23	4	4	4	4.016
24	4	4	4	4.016
25	5	5	5	5.02
26	5	5	5	5.02
27	3	3	4	3.374
28	4	4	4	4.016
29	5	5	5	5.02
30	3	3	3	3.012
31	4	4	4	4.016
32	5	5	5	5.02
33	4	4	4	4.016
34	2	4	4	3.576
35	3	4	4	3.796

LF1	LF2	LF3	LF5	LF6	LFC
0.745	0.776	0.797	0.652	0.605	
0.183	0.196	0.236	0.112	0.091	
0.37	0.394	0.311	0.588	0.697	
2	3	3	2	4	2.792
3	4	3	4	4	3.434
3	4	3	4	4	3.434
3	3	4	4	4	3.374
4	3	3	3	4	3.232
4	2	3	3	4	2.81
5	5	5	3	5	5.02
2	2	2	3	3	2.008
5	4	4	4	5	4.236
2	2	3	2	3	2.37
3	2	3	3	2	2.59
2	3	3	3	4	2.792
5	5	5	3	5	5.02
4	4	4	4	4	4.016
3	2	3	3	3	2.59
4	2	3	3	4	2.81
4	4	4	4	5	4.016
4	4	4	4	4	4.016
5	5	4	5	5	4.658
3	4	4	3	4	3.796
3	4	4	4	4	3.796
2	1	1	3	4	1.224
3	3	4	3	3	3.374
4	4	4	4	4	4.016
5	4	5	4	4	4.598
4	3	2	3	4	2.87
3	3	3	3	3	3.012
3	3	3	4	3	3.012
3	3	3	3	3	3.012
2	3	3	3	3	2.792
4	4	4	4	4	4.016
3	3	3	3	2	3.012
4	3	3	4	4	3.232
2	2	3	3	2	2.37
4	3	4	3	4	3.594

36	4	4	4	4.016
37	4	4	4	4.016
38	4	4	4	4.016
39	4	4	4	4.016
40	4	4	4	4.016
41	2	2	4	2.732
42	2	2	3	2.37
43	3	3	3	3.012
44	5	5	5	5.02
45	5	5	5	5.02
46	5	5	5	5.02
47	5	5	5	5.02
48	4	4	5	4.378
49	5	5	5	5.02
50	4	4	4	4.016
51	5	5	5	5.02
52	4	4	4	4.016
53	2	5	4	3.998
54	3	4	4	3.796
55	4	5	5	4.8
56	2	2	2	2.008
57	4	3	3	3.232
58	5	5	5	5.02
59	4	4	4	4.016
60	5	5	5	5.02
61	4	5	5	4.8
62	4	4	4	4.016
63	4	4	5	4.378
64	5	5	3	4.296
65	5	5	5	5.02
66	5	5	4	4.658
67	5	4	4	4.236
68	5	5	5	5.02
69	5	5	5	5.02
70	5	5	5	5.02
71	4	3	4	3.594
72	2	2	4	2.732
73	4	5	5	4.8
74	5	5	5	5.02
75	5	5	5	5.02
76	4	4	5	4.378
77	4	4	4	4.016
78	5	5	5	5.02
79	5	5	3	4.296
80	2	2	2	2.008
81	4	4	4	4.016
82	4	4	4	4.016
83	3	3	3	3.012
84	4	4	4	4.016
85	5	5	5	5.02

3	3	3	3	2	3.012
2	3	2	2	2	2.43
4	3	3	3	4	3.232
3	2	2	3	3	2.228
5	4	5	5	5	4.598
2	2	2	2	2	2.008
3	3	3	1	5	3.012
2	3	3	3	3	2.792
4	1	2	3	4	2.026
3	3	3	3	3	3.012
3	2	2	2	4	2.228
3	4	4	2	5	3.796
4	5	5	3	4	4.8
4	4	4	3	4	4.016
4	4	4	3	3	4.016
3	4	4	4	2	3.796
3	3	4	3	3	3.374
2	3	3	2	4	2.792
3	3	2	2	2	2.65
3	1	2	1	1	1.806
2	2	2	2	3	2.008
3	3	4	4	4	3.374
2	2	3	2	2	2.37
4	4	4	3	4	4.016
2	3	2	2	5	2.43
4	4	4	2	3	4.016
3	3	3	3	4	3.012
4	3	5	4	4	3.956
2	2	2	2	2	2.008
3	2	3	2	3	2.59
4	4	4	2	4	4.016
4	4	4	3	4	4.016
4	4	5	5	4	4.378
4	4	5	5	4	4.378
4	4	4	4	5	4.016
2	4	4	4	2	3.576
3	3	3	3	4	3.012
4	3	4	3	4	3.594
4	2	4	3	5	3.172
4	2	5	5	4	3.534
3	3	3	2	4	3.012
2	2	2	1	2	2.008
3	3	4	4	5	3.374
3	2	4	4	4	2.952
3	4	4	2	5	3.796
3	2	3	2	3	2.59
3	2	3	3	4	2.59
4	2	3	3	2	2.81
3	3	3	2	3	3.012
2	2	3	3	3	2.37

86	4	4	4	4.016	4	4	3	4	4	3.654
87	3	4	4	3.796	3	2	2	3	3	2.228
88	4	4	4	4.016	3	4	4	2	4	3.796
89	5	5	5	5.02	2	3	3	2	4	2.792
90	5	4	5	4.598	3	2	3	3	2	2.59
91	4	4	4	4.016	2	2	2	3	3	2.008
92	5	5	5	5.02	5	5	5	5	5	5.02
93	4	4	4	4.016	3	3	4	2	1	3.374
94	5	5	5	5.02	4	3	3	2	3	3.232
95	4	4	4	4.016	3	1	2	2	1	1.806
96	4	5	5	4.8	3	2	3	2	2	2.59
97	5	5	5	5.02	3	1	3	4	4	2.168
98	4	5	5	4.8	3	2	4	1	1	2.952
99	5	5	5	5.02	3	2	4	2	2	2.952
100	2	2	3	2.37	2	1	2	2	2	1.586
101	2	4	4	3.576	4	3	3	3	3	3.232
102	5	5	5	5.02	2	2	2	1	1	2.008
103	4	4	3	3.654	1	1	1	1	1	1.004
104	2	4	5	3.938	3	1	1	1	2	1.444
105	3	3	4	3.374	3	1	4	1	2	2.53
106	4	3	4	3.594	2	1	2	1	2	1.586
107	4	4	5	4.378	2	1	2	1	1	1.586
108	2	2	4	2.732	3	2	3	2	2	2.59
109	4	4	4	4.016	1	2	2	4	4	1.788
110	2	3	4	3.154	5	3	5	5	5	4.176
111	4	4	4	4.016	3	3	4	4	5	3.374
112	5	5	5	5.02	4	5	5	5	5	4.8
113	5	5	5	5.02	4	3	4	4	4	3.594
114	3	5	5	4.58	5	3	4	5	3	3.814
115	3	5	5	4.58	4	4	4	4	3	4.016
116	2	2	2	2.008	3	2	3	4	3	2.59
117	3	4	4	3.796	4	4	4	4	5	4.016
118	4	4	4	4.016	4	4	4	4	5	4.016
119	2	3	4	3.154	3	3	4	2	3	3.374
120	2	2	3	2.37	3	2	4	4	4	2.952
121	5	5	5	5.02	4	4	5	5	4	4.378
122	4	4	4	4.016	3	3	4	5	5	3.374
123	5	5	5	5.02	4	2	5	5	4	3.534
124	5	5	5	5.02	4	4	4	5	5	4.016
125	4	4	4	4.016	5	3	3	2	4	3.452
126	2	2	2	2.008	2	2	4	2	2	2.732
127	3	3	3	3.012	4	3	4	4	3	3.594
128	5	5	5	5.02	5	4	5	4	4	4.598
129	4	4	4	4.016	4	3	4	3	2	3.594
130	3	3	3	3.012	4	4	4	4	4	4.016
131	5	5	5	5.02	3	4	4	4	5	3.796
132	5	5	4	4.658	4	5	4	4	5	4.438
133	2	2	2	2.008	3	3	2	2	3	2.65
134	5	5	4	4.658	4	4	5	4	3	4.378
135	5	5	5	5.02	3	3	4	2	3	3.374

136	5	5	5	5.02	4	4	4	5	5	4.016
137	2	2	2	2.008	3	3	4	3	4	3.374
138	3	3	3	3.012	4	2	4	4	4	3.172
139	2	2	2	2.008	1	1	4	3	4	2.09
140	3	3	3	3.012	4	2	4	4	3	3.172
141	2	3	2	2.43	3	4	4	4	3	3.796
142	2	2	2	2.008	2	2	2	3	3	2.008
143	5	4	4	4.236	4	3	3	4	5	3.232
144	5	5	4	4.658	4	4	3	4	5	3.654
145	4	4	4	4.016	4	3	4	4	5	3.594
146	4	4	4	4.016	3	3	3	3	3	3.012
147	2	4	5	3.938	4	3	3	3	4	3.232
148	4	4	3	3.654	2	2	2	3	2	2.008
149	4	4	4	4.016	3	3	3	3	3	3.012
150	1	2	2	1.788	2	3	3	2	5	2.792
151	3	4	4	3.796	3	3	3	3	4	3.012
152	4	3	3	3.232	3	3	4	3	3	3.374
153	4	4	5	4.378	3	2	3	4	4	2.59
154	2	2	2	2.008	3	2	3	3	4	2.59
155	5	5	5	5.02	4	4	4	2	2	4.016
156	3	3	4	3.374	4	3	3	3	3	3.232
157	5	5	5	5.02	4	4	4	4	4	4.016
158	3	3	3	3.012	4	4	4	4	5	4.016
159	2	2	2	2.008	3	3	4	4	4	3.374
160	2	2	4	2.732	3	3	3	3	3	3.012
161	3	3	3	3.012	4	4	4	3	4	4.016
162	5	5	5	5.02	5	5	5	5	5	5.02
163	3	4	4	3.796	3	4	4	2	3	3.796
164	2	2	2	2.008	2	2	4	3	4	2.732
165	5	5	5	5.02	2	3	3	3	3	2.792
166	3	2	4	2.952	3	3	4	4	4	3.374
167	3	3	3	3.012	3	2	2	4	4	2.228
168	5	5	5	5.02	2	3	4	5	5	3.154
169	2	1	4	2.31	4	3	3	4	5	3.232
170	3	3	3	3.012	2	2	2	3	3	2.008
171	2	2	2	2.008	2	1	2	3	4	1.586
172	2	2	4	2.732	3	3	3	3	4	3.012
173	4	4	5	4.378	3	3	3	4	4	3.012
174	5	5	5	5.02	3	2	3	2	4	2.59
175	2	2	3	2.37	3	2	5	4	4	3.314
176	5	5	5	5.02	2	2	2	3	3	2.008
177	4	4	4	4.016	3	3	3	4	3	3.012
178	2	4	2	2.852	3	4	3	4	5	3.434
179	2	4	2	2.852	2	2	2	3	4	2.008
180	2	4	4	3.576	3	3	3	3	3	3.012
181	3	3	3	3.012	5	4	4	4	3	4.236
182	2	4	2	2.852	1	1	2	3	3	1.366
183	2	3	4	3.154	3	3	2	3	4	2.65
184	3	3	4	3.374	3	3	3	3	4	3.012

185	4	4	5	4.378		3	3	4	3	5	3.374
186	2	4	2	2.852		2	2	3	3	4	2.37
187	5	5	5	5.02		5	5	4	2	3	4.658
188	4	4	4	4.016		4	3	3	4	4	3.232

Standard deviation	0.974472738	Standard deviation	0.8318207359
Variance	0.949597117	Variance	0.6919257366
Sum of loading factor^2	6.927424	Sum of loading factor^2	12.7806250000
Sum of measurement error	0.755	Sum of measurement error	2.3600000000
Composite reliability	0.901723727	Composite reliability	0.8441279670
Loading factor composite	0.925350880	Loading factor composite	0.7642472541
Error variance composite	0.093322866	Error variance composite	0.1078518713

Appendix B52: Calculation of ICAG-Teaching Content Composite Indicator

Variables	F1	F2	F3	F4	F5	F6	P1	P2	P3	P4	P5	P6	P7	B1	B2	B3	B4	B5	B6	B7	ICAGC
FL	0.661	0.606	0.691	0.603	0.653	0.672	0.56	0.713	0.564	0.662	0.567	0.599	0.558	0.695	0.744	0.709	0.708	0.684	0.694	0.689	
FSW	0.057	0.043	0.062	0.046	0.052	0.055	0.041	0.075	0.047	0.061	0.046	0.039	0.038	0.062	0.079	0.061	0.058	0.066	0.057	0.066	
IME	0.350	0.446	0.342	0.387	0.401	0.389	0.383	0.265	0.304	0.306	0.315	0.542	0.461	0.347	0.286	0.389	0.331	0.390	0.307	0.382	
1	4	3	4	5	3	5	3	4	5	4	3	2	5	5	4	5	3	5	3	5	4.51
2	2	2	2	2	3	3	3	2	4	4	3	3	4	2	2	2	3	3	3	4	3.06
3	2	2	2	2	3	3	3	3	4	4	3	3	4	2	2	2	3	3	3	4	3.135
4	4	4	4	4	3	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4.346
5	3	2	3	4	3	4	4	4	4	4	4	3	4	3	4	4	3	3	4	4	3.962
6	3	3	3	3	3	3	3	3	4	4	4	2	2	2	3	3	3	3	3	3	3.348
7	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5.555
8	3	3	2	2	2	3	3	2	3	2	3	3	3	3	3	2	4	3	3	3	3.034
9	2	5	4	4	4	4	5	5	5	4	5	3	4	3	5	3	4	5	3	4	4.508
10	3	3	2	2	3	3	3	3	3	3	4	3	3	3	3	2	3	2	3	3	3.144
11	4	4	3	3	3	2	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4.099
12	4	3	4	5	3	5	4	4	4	3	4	3	4	3	4	4	4	3	4	4	4.222
13	5	4	4	4	4	5	5	5	5	5	4	3	4	5	5	4	4	5	5	5	5.071
14	5	4	5	4	3	4	4	4	4	4	4	4	4	5	5	4	4	4	4	4	4.652
15	3	4	4	4	3	4	3	4	4	3	4	3	4	5	5	5	5	4	4	4	4.454
16	4	3	4	3	3	4	3	4	3	3	4	3	4	4	4	4	4	3	4	4	4.049
17	3	3	3	5	4	4	5	3	3	4	4	3	4	5	3	3	4	3	4	4	4.064
18	3	4	3	4	4	4	5	4	4	4	4	5	5	4	4	5	4	4	4	4	4.504
19	4	3	4	5	3	5	5	4	4	4	5	3	3	3	4	3	3	3	3	4	4.156
20	5	4	4	4	4	4	4	4	4	3	3	3	3	5	5	4	4	4	4	4	4.458
21	3	3	4	3	3	4	5	5	5	5	5	4	5	3	4	3	3	4	4	5	4.439
22	3	3	3	2	4	4	4	4	4	4	3	4	4	4	4	5	5	4	5	5	4.386
23	4	3	4	3	2	3	3	4	3	3	4	2	3	4	3	2	2	3	3	3	3.425
24	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	3.782
25	3	4	4	4	4	5	5	5	5	5	4	4	4	4	4	4	4	5	5	4	4.789
26	4	4	5	4	4	5	4	5	4	5	4	5	4	4	4	5	4	5	4	5	4.929
27	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3.388
28	4	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	2	3	3	3.206
29	4	4	3	3	4	4	4	4	4	3	4	3	4	2	3	4	3	2	3	4	3.786
30	4	3	3	4	4	3	4	4	4	3	3	4	4	3	3	4	3	3	3	3	3.789

31	4	4	4	4	4	4	4	5	4	4	4	5	5	4	4	4	5	5	4	4	4.72
32	4	3	4	4	4	4	5	5	4	4	4	3	4	4	3	3	4	3	4	4	4.272
33	3	2	3	4	4	4	4	4	4	3	4	4	4	4	4	3	3	2	4	3	3.861
34	3	2	4	4	5	2	4	4	5	4	4	3	4	4	4	3	3	4	3	3	4.009
35	4	4	4	4	4	5	4	5	3	3	4	3	5	4	4	4	3	5	4	5	4.539
36	2	2	3	3	2	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3.451
37	3	4	3	2	2	4	4	4	3	2	3	2	4	2	2	2	2	2	3	3	3.061
38	3	3	4	4	4	4	4	4	4	4	4	4	3	4	4	4	3	3	4	4	4.182
39	3	3	3	4	2	2	3	3	3	4	4	2	3	3	3	3	3	3	3	2	3.274
40	4	3	3	4	2	4	5	4	4	3	2	2	4	2	3	4	3	2	4	5	3.718
41	2	1	1	2	2	4	4	2	3	4	4	4	3	3	3	1	1	3	4	2	2.888
42	3	3	4	3	2	3	4	4	4	4	4	4	4	3	4	4	4	4	5	4	4.134
43	3	4	4	3	3	4	4	3	4	4	4	3	4	3	4	4	4	3	3	4	3.99
44	4	3	4	4	3	4	4	4	3	4	4	3	4	3	4	4	3	4	4	3	4.077
45	3	3	3	3	3	2	4	3	3	3	3	2	2	3	3	3	3	3	3	2	3.176
46	3	4	4	5	3	4	3	3	4	3	3	2	3	3	3	3	2	3	3	3	3.535
47	4	2	2	4	3	3	4	4	4	4	3	2	2	4	4	3	3	4	4	3	3.742
48	2	3	3	4	4	3	3	3	4	3	3	2	3	3	3	2	3	4	2	2	3.264
49	4	4	5	4	4	5	5	5	5	4	4	2	4	4	4	4	4	4	5	5	4.769
50	4	3	4	3	4	4	3	3	4	4	4	3	4	3	3	3	3	3	3	4	3.817
51	4	2	4	4	4	5	3	3	4	4	4	2	5	3	4	4	4	4	4	5	4.261
52	4	4	3	3	4	4	3	4	3	3	4	3	4	4	3	4	4	3	3	4	3.946
53	3	4	2	3	2	4	4	4	3	3	3	3	5	3	4	3	3	2	2	5	3.597
54	3	3	4	4	3	3	3	3	4	4	4	3	3	4	3	4	4	4	4	3	3.899
55	3	2	3	3	3	2	3	4	3	2	3	3	2	3	3	3	4	2	3	3	3.203
56	3	3	3	3	2	2	3	3	2	3	3	3	2	4	4	4	3	3	3	3	3.343
57	3	3	4	4	3	4	4	3	4	4	4	3	3	4	3	4	4	4	4	3	3.995
58	2	2	3	3	2	2	4	3	3	3	2	2	4	3	3	3	3	3	3	3	3.12
59	2	2	2	3	3	4	4	4	4	4	4	2	4	3	3	2	2	3	3	4	3.442
60	4	4	4	4	3	3	3	4	4	4	4	4	4	3	3	4	4	2	5	3	4.014
61	4	3	3	3	4	4	5	4	4	4	4	4	5	4	3	4	3	4	4	4	4.235
62	3	3	3	3	2	4	3	3	4	3	4	2	3	3	3	3	3	3	3	3	3.39
63	3	3	4	4	4	4	4	4	4	4	3	4	4	3	3	3	4	3	3	3	3.907
64	2	3	3	2	2	3	3	3	3	3	2	2	2	2	3	3	3	3	3	4	3.059
65	3	3	3	3	3	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3.603

66	4	2	2	3	3	3	2	4	4	5	5	4	5	5	4	4	5	4	4	4	4.264
67	3	3	3	3	4	3	4	4	4	4	4	4	4	2	2	2	2	3	3	2	3.406
68	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5.555
69	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5.555
70	4	3	3	4	3	4	4	4	4	4	4	3	3	4	4	4	4	4	4	4	4.21
71	4	3	3	4	3	4	4	4	4	3	4	1	2	3	4	3	3	4	3	4	3.795
72	4	4	5	5	3	5	4	4	4	4	5	5	4	5	5	5	4	4	4	4	4.842
73	4	3	4	4	4	4	3	4	4	3	3	4	4	3	4	4	4	4	5	4	4.248
74	3	4	4	4	3	4	4	3	4	5	4	2	4	5	4	4	4	3	5	4	4.296
75	4	4	4	5	5	5	4	4	3	3	4	3	4	3	3	3	3	3	3	3	4.001
76	3	3	3	3	3	3	2	2	3	3	2	2	3	2	3	2	3	2	3	3	2.943
77	4	4	4	3	2	2	2	4	3	3	2	2	2	3	3	2	3	2	3	3	3.172
78	5	4	4	3	3	4	4	5	4	4	4	3	3	5	5	5	5	3	4	4	4.595
79	4	4	3	4	3	3	4	5	4	4	4	3	3	4	4	2	3	4	4	4	4.093
80	4	3	4	4	4	3	4	4	3	4	5	5	3	5	5	5	5	4	4	3	4.54
81	3	4	4	4	3	4	4	4	4	3	5	2	4	3	3	3	3	4	4	3	3.916
82	3	4	4	4	3	3	4	4	3	4	4	3	4	4	4	3	3	3	4	4	4.009
83	3	2	3	3	4	4	3	3	3	4	4	4	4	4	4	4	4	3	4	3	3.898
84	3	3	2	3	3	3	3	3	3	3	4	3	4	2	2	3	3	3	3	2	3.148
85	2	3	3	3	2	2	4	4	4	3	4	3	2	4	3	4	4	5	4	3	3.71
86	3	4	4	4	4	5	4	4	3	4	4	2	4	4	3	4	4	4	4	4	4.238
87	4	4	4	4	4	3	5	4	4	4	4	4	3	4	4	3	3	3	4	3	4.141
88	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4.362
89	3	4	3	4	2	4	2	3	3	4	4	3	4	4	4	4	3	3	4	5	3.92
90	2	2	2	3	2	4	3	3	3	3	4	3	3	3	2	2	3	3	4	3	3.137
91	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	3	4	4	3	4.281
92	4	4	5	4	5	5	5	4	5	5	4	5	5	4	4	5	5	4	4	5	5.024
93	4	3	3	3	3	3	4	4	4	4	4	3	3	3	3	3	3	4	3	3	3.726
94	3	3	4	4	3	2	3	4	4	4	4	2	2	3	3	3	3	3	3	3	3.538
95	4	2	4	3	3	3	5	4	4	3	3	2	3	3	3	4	3	2	4	3	3.626
96	2	2	2	3	2	3	3	3	3	3	3	2	3	3	2	3	3	2	3	4	3.001
97	5	4	4	5	5	4	5	4	4	4	4	4	3	5	5	4	4	4	4	4	4.743
98	4	3	4	2	2	3	5	4	4	4	4	1	3	4	4	3	3	3	4	4	3.851
99	3	2	3	4	3	4	5	4	5	5	4	2	4	3	2	2	3	3	4	3	3.726
100	3	3	4	4	3	5	3	4	4	4	4	3	5	4	4	5	4	3	5	5	4.423

101	3	3	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	3	4.24
102	3	3	3	3	3	3	2	2	3	2	3	2	2	2	2	2	2	2	2	2	2.63
103	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.222
104	2	2	2	3	2	2	2	2	3	3	3	3	2	2	2	2	2	2	3	2	2.518
105	3	2	3	4	3	3	4	3	3	3	3	2	2	2	3	2	2	3	4	3	3.176
106	4	3	3	3	3	2	4	3	3	4	3	2	2	3	3	3	3	3	3	2	3.294
107	2	2	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3.126
108	3	3	3	2	1	3	3	3	3	3	3	2	4	3	2	3	2	2	3	3	2.979
109	3	2	3	2	3	4	4	3	4	4	4	3	4	4	4	4	4	3	4	4	3.915
110	5	4	4	4	4	5	5	5	5	4	4	4	4	5	4	3	3	3	4	5	4.662
111	4	4	5	3	3	5	4	4	3	4	3	3	4	4	3	4	4	3	3	4	4.129
112	4	4	5	5	5	5	4	5	4	5	4	4	4	4	5	5	4	4	5	4	4.992
113	4	4	5	5	5	5	4	5	4	5	4	4	4	4	5	5	4	4	5	4	4.992
114	4	3	4	4	3	5	4	4	4	4	4	2	4	5	5	5	4	4	4	5	4.594
115	4	3	4	4	2	3	3	4	4	4	5	3	3	4	4	3	4	4	4	3	4.043
116	3	3	4	4	4	4	4	3	3	4	4	4	5	4	4	4	5	5	5	5	4.507
117	5	5	5	4	5	5	4	5	4	5	5	5	4	5	4	4	5	4	4	5	5.12
118	4	4	4	4	3	4	5	4	5	5	5	4	4	4	4	4	5	5	5	5	4.834
119	3	3	4	4	3	3	4	3	4	3	3	3	4	4	3	3	3	3	4	4	3.752
120	2	3	3	4	4	3	4	4	4	4	3	3	3	4	4	4	4	4	4	3	3.981
121	4	4	4	4	4	4	5	4	4	4	4	4	4	3	4	4	4	5	5	5	4.612
122	4	4	4	4	4	4	5	4	4	5	4	5	5	4	4	4	4	4	4	4	4.623
123	5	5	5	5	4	5	5	5	5	5	5	5	5	4	3	4	4	4	5	5	5.098
124	4	4	4	4	4	4	4	3	4	4	4	4	4	3	4	4	4	3	4	4	4.241
125	4	4	4	4	3	3	4	4	4	4	4	3	4	4	3	4	5	3	4	4	4.211
126	4	4	5	5	4	5	4	4	5	4	4	4	3	4	3	3	3	3	4	4	4.352
127	4	4	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	4.831
128	5	5	5	5	4	5	5	5	5	4	5	3	4	4	5	4	4	5	5	5	5.145
129	3	2	3	4	2	4	4	4	4	4	4	2	4	4	3	2	2	3	3	4	3.617
130	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	3	3	3	4	4	4.22
131	4	4	3	4	3	4	4	5	4	3	4	4	4	3	4	5	3	3	4	4	4.219
132	4	5	4	4	4	5	4	5	4	5	4	5	4	4	5	4	5	4	5	4	4.911
133	4	4	4	4	4	4	4	4	5	5	5	4	4	3	3	3	4	3	3	4	4.273
134	4	4	4	4	4	4	4	4	5	3	4	3	4	4	4	4	4	5	5	5	4.58
135	4	4	4	4	3	3	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3.85

136	5	4	5	5	5	5	5	5	5	5	5	4	5	5	4	4	4	5	5	5	5.275
137	4	4	4	4	3	4	4	4	3	4	4	4	3	4	4	4	3	4	4	3	4.183
138	4	4	4	3	3	5	4	4	4	4	4	3	4	3	3	5	5	3	5	4	4.331
139	5	5	5	5	5	5	4	4	3	5	3	4	3	4	4	3	5	4	4	5	4.752
140	4	3	4	3	3	4	4	4	3	5	5	3	4	3	4	4	4	4	4	4	4.262
141	4	3	3	3	4	3	4	3	3	3	3	4	3	4	3	3	4	4	4	4	3.831
142	4	3	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4	4	5	5	4.603
143	3	4	2	3	3	4	4	4	3	4	5	3	5	3	3	3	4	3	3	4	3.838
144	4	4	4	5	4	4	4	4	3	3	4	5	4	4	4	3	4	4	4	4	4.36
145	4	3	3	4	4	4	4	4	5	4	4	4	3	5	5	4	4	4	4	4	4.489
146	4	4	4	4	3	4	4	4	3	4	4	4	4	3	4	3	4	3	3	3	4.033
147	3	4	4	3	3	4	3	4	4	4	4	3	4	3	3	2	3	2	3	4	3.699
148	4	4	4	4	4	3	5	4	4	4	4	4	4	5	5	4	5	4	5	5	4.752
149	4	3	3	3	3	4	3	3	4	4	4	3	3	3	3	2	3	3	3	3	3.538
150	3	3	3	4	5	4	5	4	3	4	4	3	4	5	4	3	4	4	4	4	4.29
151	2	2	3	2	3	3	3	3	3	3	4	3	4	3	3	3	4	2	3	4	3.329
152	3	3	4	5	3	4	4	4	4	5	5	4	3	4	3	3	4	4	3	4	4.21
153	4	5	4	3	3	3	4	4	5	4	4	3	2	3	4	4	3	2	2	2	3.768
154	3	2	5	4	4	4	5	5	4	3	5	2	4	3	3	5	3	3	2	4	4.068
155	4	4	4	4	4	4	5	4	3	3	3	3	3	4	4	3	4	3	3	3	4.004
156	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3.447
157	3	4	4	4	4	3	4	4	3	3	4	3	3	3	3	4	4	3	4	3	3.874
158	5	5	4	4	5	4	4	5	5	5	4	4	4	5	4	4	4	4	5	4	4.898
159	4	4	4	4	3	4	4	4	4	4	4	4	5	3	4	4	4	4	4	5	4.434
160	4	4	4	4	4	4	3	4	4	4	4	4	4	4	3	4	4	4	4	4	4.324
161	4	3	4	4	4	4	3	3	3	3	3	3	4	4	3	3	3	3	3	4	3.771
162	3	3	3	3	4	5	3	4	4	4	5	3	5	3	4	5	5	5	5	5	4.541
163	3	2	4	4	3	3	4	4	3	3	4	2	3	4	3	3	2	3	4	4	3.648
164	3	3	3	4	3	4	3	3	4	4	4	3	4	4	4	3	4	4	4	4	4.014
165	3	3	3	3	4	3	4	4	3	4	4	3	4	3	3	3	3	4	4	4	3.835
166	3	3	3	3	2	3	4	3	4	3	3	2	3	3	3	4	3	4	3	2	3.391
167	3	3	4	4	4	4	4	3	4	3	5	2	3	4	4	3	3	4	4	2	3.887
168	3	3	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3.833
169	4	4	5	3	4	5	4	4	5	3	5	2	3	4	3	3	4	4	5	4	4.348
170	3	3	4	3	3	5	5	4	4	3	3	4	4	4	3	3	4	3	5	5	4.152

171	2	2	2	4	3	4	4	2	4	2	4	2	5	2	3	3	3	3	3	3	3.245
172	4	4	4	4	3	4	4	4	3	3	4	4	4	4	4	4	3	3	4	4	4.16
173	4	5	4	5	4	4	5	5	5	5	5	5	5	4	4	4	5	5	4	5	5.07
174	3	3	5	5	4	4	4	4	4	3	4	4	4	3	3	3	3	2	3	3	3.876
175	2	2	4	5	3	4	4	4	4	3	3	4	4	3	3	2	2	1	3	4	3.497
176	4	2	4	3	3	4	4	4	4	5	4	5	4	4	5	5	5	4	5	3	4.549
177	4	3	4	5	5	5	5	4	4	4	4	4	5	3	3	4	4	4	3	4	4.435
178	4	5	5	4	4	4	3	4	4	4	4	5	5	3	4	3	3	2	4	5	4.338
179	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4.282
180	4	4	4	4	3	3	4	4	4	3	3	3	3	4	4	3	4	3	3	3	3.903
181	3	3	3	3	3	3	4	4	4	3	4	3	3	3	2	2	3	3	3	3	3.402
182	2	3	3	3	2	2	4	4	4	3	3	2	2	3	3	2	2	2	2	2	2.947
183	4	3	4	4	3	4	4	4	4	4	4	3	4	4	4	4	4	3	4	4	4.244
184	3	2	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	4	4	3.913
185	4	3	3	4	3	3	3	2	4	2	4	3	3	2	2	2	3	3	4	3	3.248
186	3	3	3	4	3	3	4	3	3	4	4	3	3	3	3	3	3	3	3	3	3.527
187	4	4	4	4	3	3	5	5	5	4	4	3	3	3	3	3	3	4	4	3	4.097
188	3	3	3	3	4	4	3	3	3	3	3	3	4	4	3	3	3	3	4	4	3.663

Standard deviation	=	0.610
Variance	=	0.372
Sum of loading factor^2	=	169.833
Sum of measurement error	=	7.323
Composite reliability	=	0.959
Loading factor composite	=	0.5971083
Error variance composite	=	0.01537351

Appendix B53: Calculation of Student-Faculty Engagement Composite Indicator

Variables	AC2	AC3	AC4	AC5	AC6	AC7	AC9	AC10	AL2	AL4	AL5	AL6	AL7	SS3	SS4	SS5	SS6	EE1	EE2	EE3	EE4	EE5	SL1	SL2	SL3	SL4	SFEC
FL	0.56	0.631	0.693	0.614	0.653	0.38	0.352	0.405	0.397	0.453	0.559	0.589	0.647	0.438	0.508	0.38	0.458	0.704	0.7	0.391	0.537	0.631	0.376	0.391	0.47	0.404	
FSW	0.038	0.055	0.068	0.049	0.056	0.024	0.016	0.027	0.025	0.026	0.04	0.031	0.049	0.025	0.03	0.024	0.025	0.05	0.045	0.024	0.03	0.037	0.022	0.024	0.03	0.024	
IME	0.466	0.318	0.29	0.368	0.341	0.423	0.783	0.397	0.451	0.539	0.422	0.814	0.444	0.541	0.557	0.429	0.641	0.564	0.707	0.448	0.644	0.708	0.513	0.468	0.447	0.485	
1	4	3	4	4	3	2	3	4	3	2	3	3	3	4	5	4	2	2	2	1	3	3	4	3	3	4	2.801
2	2	4	4	1	4	2	3	5	3	3	5	3	3	5	5	4	2	2	1	2	2	2	5	4	4	4	2.835
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59	3	2	2	2	3	2	2	4	4	4	3	2	3	4	3	3	3	2	3	2	3	2	4	4	3	4	2.501
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68	3	5	5	5	5	2	5	5	5	5	5	1	5	4	4	3	5	5	5	2	5	1	4	4	4	3	3.751
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76	3	3	3	3	2	1	1	3	5	4	4	2	3	2	3	3	3	2	1	2	2	1	4	4	2	4	2.378
77	3	3	3	3	4	2	2	3	4	5	5	3	4	3	4	3	4	3	4	2	3	2	3	3	2	3	2.913
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79	3	4	4	4	4	2	2	3	4	3	4	4	3	5	3	4	4	3	3	2	2	3	4	4	3	4	3.081
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91	2	3	3	2	2	2	4	4	4	4	1	2	4	4	3	4	1	1	1	1	3	1	4	4	2	2	2.226
92	5	5	4	4	5	3	4	5	5	4	5	5	5	5	5	5	5	5	5	2	4	5	5	5	5	5	4.161
93	4	4	4	4	4	2	3	5	5	5	5	3	3	4	4	4	4	4	4	2	3	3	4	4	4	5	3.459
94	4	4	4	4	4	2	2	5	4	4	4	3	4	5	2	5	4	4	4	2	3	4	4	4	4	4	3.403
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96	5	4	4	4	5	2	2	4	4	3	4	4	5	4	3	3	3	4	4	2	3	4	4	3	3	3	3.378
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98	2	3	3	2	3	2	2	3	3	3	4	1	2	3	2	4	2	4	4	2	3	2	3	4	3	3	2.511
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102	4	3	3	4	4	2	2	3	3	3	4	4	3	3	3	3	3	3	3	2	1	3	2	2	3	3	2.726
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137	3	4	4	4	4	2	2	3	5	5	4	4	3	4	4	4	3	3	4	2	4	4	4	4	3	3	3.256
138	4	3	3	3	3	2	2	4	4	4	3	4	4	4	4	3	4	4	4	3	3	4	4	4	4	4	3.15
139	3	5	4	5	3	2	2	5	4	4	5	4	5	5	4	4	4	4	5	3	4	5	2	3	3	3	3.583
140	3	4	4	4	4	2	2	5	3	4	4	3	4	4	4	5	4	3	3	3	4	4	4	4	4	4	3.334
141	5	4	4	4	3	2	2	5	5	4	5	4	4	5	5	4	3	4	3	3	4	4	3	3	4	4	3.485
142	4	4	3	4	4	4	4	5	4	4	4	3	4	4	4	4	4	4	4	2	4	3	3	3	3	3	3.319
143	4	4	4	3	4	3	2	4	4	3	4	4	4	4	4	3	4	3	2	3	3	4	3	4	2	2	3.097
144	4	4	4	4	5	3	4	5	5	5	4	4	4	5	4	4	3	4	4	4	4	4	4	4	4	4	3.686
145	4	4	4	4	5	3	3	4	4	3	4	3	4	5	4	4	4	3	3	4	3	4	4	4	4	4	3.435

146	3	5	4	3	4	2	2	4	3	5	5	5	3	3	4	5	3	3	3	1	3	5	4	3	3	3	3.223
147	3	3	3	3	3	2	1	3	4	4	4	2	4	4	4	5	3	3	2	2	2	3	4	4	4	4	2.839
148	4	5	4	4	3	2	3	5	5	5	5	3	4	4	4	3	4	5	5	2	5	3	2	3	5	4	3.576
149	4	3	3	4	4	2	2	4	3	4	4	3	3	3	4	4	3	3	3	3	3	3	3	3	3	3	2.932
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151	4	3	3	3	3	2	2	4	4	4	4	2	4	4	2	4	4	4	4	2	2	3	3	3	2	3	2.871
152	5	3	4	4	3	2	3	5	3	5	5	4	4	4	4	3	3	2	1	2	3	4	3	4	4	4	3.123
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157	4	3	3	4	4	2	3	4	4	4	5	4	4	4	4	4	4	4	4	2	4	4	3	3	3	4	3.305
158	3	4	4	4	4	2	3	4	5	4	3	3	3	3	2	4	4	1	2	2	2	1	4	4	4	4	2.835
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160	5	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	3	3	3	3	3.978
161	4	3	3	3	3	3	2	4	3	4	4	3	4	4	3	4	4	3	3	2	3	4	4	4	3	4	3.003
162	4	3	4	4	4	2	2	5	5	3	4	2	5	2	3	3	4	3	3	2	3	4	4	4	3	4	3.147
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164	5	4	4	4	4	2	2	5	5	5	5	3	3	5	5	3	3	3	3	3	4	5	3	3	3	3	3.396
165	3	3	3	4	4	3	3	4	3	4	3	4	4	4	4	3	3	4	4	3	4	3	3	3	3	3	3.1
166	2	3	3	3	3	2	1	4	4	3	2	1	3	1	4	4	4	1	1	1	3	1	3	4	4	4	2.333
167	4	3	3	3	4	2	3	3	4	3	4	3	4	2	3	3	3	3	2	2	3	3	3	4	3	3	2.796
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169	4	3	4	5	4	3	2	4	5	4	3	3	3	5	3	3	3	4	5	2	3	3	3	3	4	5	3.273
170	5	4	4	5	4	2	2	4	3	4	5	4	5	4	4	5	3	4	3	3	4	4	4	4	4	4	3.577
171	4	3	4	4	3	3	2	4	3	3	3	3	4	2	4	4	4	2	2	1	3	4	3	3	3	4	2.869
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173	5	5	4	5	5	3	2	5	4	4	4	4	5	4	4	5	4	5	5	3	4	5	4	5	5	5	4.004
174	4	5	5	5	5	2	2	4	4	4	4	3	4	4	3	4	4	4	4	2	3	3	3	3	3	4	3.472
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176	5	4	5	4	5	3	2	5	4	3	5	5	5	5	5	5	5	5	4	5	4	5	5	4	4	4	4.04
177	5	5	5	4	4	3	2	4	4	4	5	4	4	4	4	5	3	3	3	2	4	4	4	4	4	4	3.577
178	3	4	4	5	4	2	3	4	5	3	3	3	3	4	4	5	4	3	2	3	3	3	4	4	3	5	3.189
179	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4	2	2	2	2	3.4
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181	5	4	4	3	4	3	3	4	4	4	4	4	4	4	4	4	4	4	3	3	4	4	3	3	3	3	3.356
182	3	3	3	3	3	2	3	4	4	3	3	4	2	3	3	4	2	3	3	2	1	2	2	2	2	2	2.47
183	4	4	3	3	4	2	2	4	4	4	3	3	3	4	3	4	3	3	3	2	3	4	3	4	3	3	2.955
184	3	4	4	4	4	3	2	4	4	5	5	4	4	4	3	4	4	3	3	3	4	4	4	4	3	4	3.369

185	4	4	4	2	4	3	2	4	4	5	4	3	3	5	4	4	2	2	2	2	3	2	4	4	4	4	3.001
186	3	4	3	3	4	2	3	4	3	4	4	2	3	4	4	4	4	3	4	3	3	3	3	3	3	4	3.004
187	3	3	3	3	3	3	4	5	4	5	5	4	3	4	3	4	1	4	4	3	1	5	4	4	4	4	3.148
188	3	3	4	4	4	2	3	4	3	3	2	1	3	4	4	4	3	3	3	2	2	4	4	4	4	4	2.918

Standard deviation	0.44327
Variance	0.19648
Sum of loading factor^2	48.06649
Sum of measurement error	6.05600
Composite reliability	0.88811
Loading factor composite	0.41773
Error variance composite	0.02199