Determinants of Business Education on Student Satisfaction in Higher Education: A Case Study in Cambodia.

Sovang Long

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Innovative Technology Management
Faculty of Graduate School of Business and
Advanced Technology Management
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ABSTRACT

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Dissertation Title: DETERMINANTS OF BUSINESS EDUCATION ON STUDENT SATISFACTION IN HIGHER EDUCATION: A CASE STUDY IN CAMBODIA

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The study uses innovative management perspective to investigate Higher Education Institution's environment to ensure survival of universities in Cambodia. This has led Cambodian universities expand their educational offerings to students in Years 2, 3 and 4. The data was collected through Google Forms survey to facilitate and accelerate data collection. The sample of 500 students come from each higher education institution by employing multi-stage sampling technique of probability and non-probability sampling methods to ensure representation of the research population. The data were analyzed by using Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) to investigate the impact of these determinants on students' satisfaction and loyalty, via answering 54 questions. The results showed that the three Cambodian universities perform well in terms of satisfactory conditions such as transformative quality, university image. There are four issues to which universities need to pay attention. They are: teaching methods, infrastructure facilities, learning material and academic environment that are yet to meet the needs of students. This study contributes to the principle of innovative management under the context of Cambodian academic environment. The results help to fathom the depth of enhancing quality and institutional survival.

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Long Sovang

October 17, 2021

Phnom Penh, Cambodia

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CHAPTER ONE

GENERALITIES OF THE STUDY

The introductory chapter of the research consisted of seven significant parts. The first part began with the introduction of the study, which explained about the Cambodian higher education such as history, the role of Accreditation Committee of Cambodia (ACC), the statistics of Higher Education Institutions (HEIs), and Cambodian Higher Education Reform. Furthermore, the chapter also covers the research objectives, research questions, statement of the problems, scope of the research, the significance of the study, and the definition of terms that are involved in this research.

1.1. Introduction of the Study

Nowadays, higher education institutions in Cambodia and the surrounding educational institutions were experiencing a competitive environment (De Lourdes Machado *et al.*, 2011), aside to developing customer needs (Nguyen *et al.*, 2004). For college preparation, it was difficult to manage these institutions from a marketing perspective because customer concept is unclear. Professional literature reviews discovered the presence of diverse groups that could be classified as stakeholders of educational institutions such as students, employees, families, and society (Jiménez-Aleixandre *et al.*, 2000). Despite this diversity, one group agreed to consider that the client was a student at the institution (Navarro *et al*., 2005). Among the new classifications, the students were classified as 'Adult Students'. These stakeholders were often very talented professional individuals, but who wanted to pursue education (Novoa *et al.*, 2000).

The Cambodian education system have changed over five cycles. In the early days during French colonial period between 1863 and 1954, the educational organization heavily influenced Cambodian's education system (Foley, 2006). The first university was opened in

1954 to provide religious studies and Khmer language studies, Buddhist University (Rany *et al*., 2012). In the second stage, higher education was significantly improved throughout Sang Kum Reas Niyum between 1954 and 1969 (Sokunrith & Kawai, 2020). The third stage was that the country's educational system was almost destroyed in the 1970s, and had to fight the legacy of this destruction for years (Ayres, 1999). During this period, all schools and colleges were closed.

The situation got worse after the Pol Pot took hold of country in 1975. The Cambodian people did not require most basic level of higher education. The teachers were in doubt, as it was possible to escape the country as majority of the people were dying (Chen & Tsai, 2007). Only 3,000 trained secondary school teachers remained in Cambodia after 1979 from an estimated pre-1975 total of 21,000 (Ayres, 1999). The failure of the Pol Pot regime in 1979 brought Cambodia the fourth stage of educational development to 1993. There was reestablishment for Cambodian education system; schools and research institutes were re-opened, and Cambodian higher education resumed again (Mukherjee *et al*., 2000). Since the first general election sponsored by the United Nations in Cambodia in 1993, there was a dramatic change in political and economic conditions, and as a result, the educational system has changed.

The number of college graduates were inadequate to recover from a civil war from 1970 to 1993. And the last stage was the Paris Agreement on 23 October 1993, bringing an independent market and wealth signal to Cambodia. Since economics had reformed, there was an increase of foreign investment with high demand of human resources. In this regards, education services had been invested heavily (Bray, 1996). The Cambodian education during this period was led by privatization. Ahead of 1996, there were only state-run universities, and the response rate received was very low, due to insufficient budget and less talented professors. Cambodian higher education administration was directly controlled by local centers,

departments and unrelated local offices. The "education flow" was controlled by the General Administration (Un & Sok, 2018). Nowadays, there were two departments: The Higher Education Department (DHE), which was responsible for joint and undergraduate programs, and the Research Science Department, which oversees graduate and research graduate programs. "Technology and Occupation" of the Technical Director and Vocational Training conducted by MoLVT (Un & Sok, 2016).

Table 1.1 The History of Cambodian Higher Education at Each Era

No	Each Era	Years	Higher Education	Published by
1	Sang Kum Reas Niyum	1954-1969	Improvement	Ayres (1999)
2	Pol Pot Regime	1975-1979	Destroyed	Chen and Tsai (2007)
3	People's Republic of Kampuchea	1979-1989	Re-Established	Mukherjee *et al.* (2000)
4	State of Cambodia	1989-1993	In progress	Bray (1996)
5	Kingdom of Cambodia	1993-Present	Growth & Significant Achievements	Leng (2010); Education Congress Report, Cambodia (1), 69-79 (2020)

Source: Constructed by Author (Based on Ayres, 1999; Chen and Tsai, 2007; Mukherjee et al., 2000; Bray, 1996; Leng, 2010 & Education Congress Report, Cambodia (1), 69-79, 2020, Retrieved from https://www.moeys.gov.kh)

1.1.1. Higher Education in Cambodia

Higher education executives and HEIs absorbed more money to expand the program by strengthening the planning, supervision and capacity management to manage research grants and scholarships. The Accreditation Committee of Cambodia (ACC) was able to organize and achieve the accreditation system as well. The research culture began to emerge through the implementation of innovative research grant programs, and was making stronger regional

cooperation, collaboration and action. Several key policy actions were taken, including the master plan, research policy, the decree on teacher classification, and the preparation of the Higher Education Vision 2030.

The establishment of a higher education technical working group was an important milestone in setting up a forum for discussion and debate on higher education issues. The upcoming year's main challenge was to address the discrepancy between labor market needs in terms of technology, critical thinking and knowledge and current products in the market. This required understanding of the job market, coordination and industry linkages, and better information about students, so the students can choose the right course. Moreover, maintaining internationally recognized certification for high-quality software at an affordable price was also a challenge. Many talented students from poor educational background needed more effort and resources to get better higher education through student loan programs or schemes.

The government recognized the importance of providing higher education opportunities and the importance of ensuring relevance and quality. ASEAN integration would provide opportunities for collaboration among research institutions and setting quality standards. The Ministry of Education, Youth and Sport has set the Accreditation Committee of Cambodia (ACC) and its role on the innovative management such as:

1.1.2. The Role of Accreditation Committee of Cambodia (ACC)

According to the Policy-on Higher-Education-2030 in Cambodia, the Accreditation Committee of Cambodia (ACC) plays an important role to:

- Develop and promote advancements in post-secondary education certification.
- Cooperate with related ministries to develop and implement an authentic system.
- Assess the external performance of HEI with minimum standards and put an external score on the site for public information.
- Member of Higher Education Subcommittee.

1.1.3. Innovative Education Management in Cambodia

Through the efforts of the Royal Government of Kingdom of Cambodia, the Ministry of Education, Youth and Sport was making efforts to improve education in Cambodia to be more effective. Human resources were to make Cambodia a middle-income country by 2030 by increasing and promoting support for government policies and technologies through culture, economy and societal development via management education reform strategy. Making regular student evaluations to promote quality of the country and the world was especially focused on knowledge; smooth technology and life; compliance with rules and regulations; compliance community; sustainable development and political participation and action (Education Congress Report in Cambodia, 2019).

Students in developing countries such as Cambodia needed higher education to earn lifelong income and improve the quality of life in the long run. It was also important when globalization, especially in ASEAN countries, intensified competition in the labor market. As the interconnection regionally increased, the specialists moved freely in eight majors: medical doctor, dentistry, nursing, engineering, architecture, accounting social science, and tourism (Forum, 2019). In an increasingly competitive global environment, Cambodian youth were considered to have the opportunity to be accessed only by the most skilled. Most of the low-skilled and non-skilled rural graduates, were also affected by the worst in this situation. However, Cambodian students were trying to adapt new technologies to cope up with the technological advancements to expand into the 4.0 industry.

1.1.4. Innovative Education Management in ASEAN

ASEAN integration and the fourth industrial revolution provided opportunities in the challenging sub-sectors. One of the prime challenges included promoting higher education. Quality, relevance by promoting education, learning and research. This was urgent in

increasing the number of full-time faculty and faculty requires significant investment doctorates. This allowed the higher education to produce enough time and advanced features. High-quality graduates who meet market and social requirements and international standards. Another owner of the problem was the effectiveness of governance and management in higher education. This was necessary in improving financial and human resource management systems and ensuring financial stability.

Table 1.2. Innovation and Educational Technology Priorities for ASEAN Economic Community

Order	Present	Next 10 years
1	Technology management of ASEAN Economic Community in the future	1) Use of technological innovations in education management in critical areas 2) Announcement of clear policies for AEC (ASEAN Economic Community) 3) Strategic planning for international technology management 4) Various learning types to promote self-learning 5) Focus on ASEAN people using technology design learning experience management
2	Organization transformation	1) Restructuring and commitment of educational institutions that supports dynamic and diverse learning 2) Education Innovation and Technology Goal Change Management focused on regional centers to create AEC's international education excellence
3	Innovations and educational technologies	1) Data processing for various data generation forms of electronic devices and the use of educational technology 2) Activation of modern innovation that changes various learning distance using satellite TV 3) Appropriate Usage

4	Futuristic innovations and educational technologies for AEC	1) The goal of connecting to the educational network using the internet systematic learning 2) Quality of international education technological innovation to create intellectual capital for people 3) Help ASEAN people develop their own effective and efficient use through cooperation

Source: Future vision of educational innovation and technology for ASEAN community (2019). https://www.semanticscholar.org

1.1.5. **The Statistics of Higher Education Institutions (HEIs) in Cambodia**

There were 124 higher education institutions across the country, including 48 public higher education institutions and 76 private higher education institutions in 20 capitals/provinces. HEI was under the supervision of 16 ministries and agencies. 76 HEIs were under the control of the Ministry of Education, Youth and Sport including 63 private higher education institutions with 13 public higher education institutions. There had been 16,525 educational lecturers (3,439 Female), 222,879 pursuing students (106,952 Female), and 51,352 graduated students (25,785 Female) in the academic year 2018-2019. HEI offered graduate programs, including 20 institutions that offered doctoral degrees (Education Congress Report in Cambodia, 2020).

Table 1.3 The List of Cambodian Higher Education Institutions Parental Ministries

No.	Ministries/Institutions	Public	Private	Total
1	Ministry of Education, Youth and Sport	13	63	76
2	Ministry of Labor and Vocational Training	12	13	25
3	Ministry of National Defense	5	0	5
4	Ministry of Cult and Religion	3	0	3
5	Ministry of Agriculture, Forestry and Fishery	3	0	3
6	Ministry of Health	2	0	2
7	Ministry of Culture and Fine Arts	1	0	1
8	Ministry of Interior	1	0	1
9	Office of the Council of Minister	1	0	1
10	Ministry of Public Work and Transport	1	0	1
11	National Bank of Cambodia	1	0	1
12	Ministry of Social Affairs, Veterans and Youth Rehabilitation	1	0	1
13	Ministry of Mine and Energy	1	0	1
14	Ministry of Post and Telecommunication	1	0	1
15	Ministry of Economy and Finance	1	0	1
16	Ministry of Land Management, Urban Planning and Construction	1	0	1
	Total	**48**	**76**	**124**

Source: Education Congress Report, 23-24-25 March, 2019, https://www.moeys.gov.kh

1.1.5.1. The Statistics of Cambodian Graduated Student with Bachelor, Master, and PhD Degree

Statistics of students were studying and graduated bachelor's degree from the universities. And the statistics of graduated master and doctoral degrees.

Table 1.4 Statistics of Higher Education Institutions, Lecturers, Pursuing and Graduated Students From academic year 1995-1996 to Academic year 2018-2019

Academic Year	Higher Education Institutions		Lecturers		Students are Pursuing (All Levels)		Graduated Students (All levels)	
	Public	Private	Total	Female	Total	Female	Total	Female
1995-1996	15	0	1,247	206	13,465	2,140	2,479	564
1996-1997	15	0	1,328	234	11,283	1,629	3,341	762
1997-1998	16	1	1,476	245	10,467	1,695	1,562	321
1998-1999	17	2	1,558	265	14,778	3,843	1,705	523
1999-2000	19	2	1,894	398	25,684	6,539	2,183	652
2000-2001	19	4	2,397	421	28,080	8,851	2,908	729
2001-2002	20	5	2,636	469	31,759	9,151	4,727	1,366
2002-2003	21	14	2,879	498	41,702	12,486	7,501	1,906
2003-2004	22	20	3,285	502	46,322	14,237	8,779	2,171
2004-2005	23	23	4,253	537	49,794	15,548	9,742	2,591
2005-2006	25	24	4,821	564	94,708	30,019	17,018	4,725
2006-2007	29	30	5,930	575	117,420	38,465	21,280	6,181
2007-2008	36	37	6,636	626	137,490	46,449	25,803	7,790
2008-2009	37	46	7,854	897	168,003	60,160	34,443	11,805
2009-2010	39	50	10,263	1,197	195,402	72,468	41,618	14,765
2010-2011	38	59	10,711	1,262	223,221	84,023	47,550	17,868
2011-2012	39	62	10,758	1,290	246,849	94,266	50,801	19,534
2012-2013	39	66	11,171	1,519	257,470	97,574	47,216	18,904
2013-2014	43	67	11,566	1,667	249,092	103,417	56,035	23,019
2014-2015	47	72	12,256	1,918	226,824	100,179	58,849	26,458
2015-2016	48	73	13,502	2,310	217,840	95,717	58,988	26,920
2016-2017	48	73	14,960	2,788	207,423	94,243	54,529	24,883
2017-2018	48	77	16,167	3,308	211,484	98,630	46,794	22,147
2018-2019	48	76	16,525	3,439	222,879	106,952	51,352	25,785

Source: Education Congress Report, 19-20-21 March, 2019, https://www.moeys.gov.kh

There were around 4,633 post-graduates, with an increase of 20.43%, 26.33% of them were female, with an increase of 20.43%. There were 4,613 master's degree graduates, with an increase of 20.38%, 27.21% were female, with an increase of 28.72% (214 students wrote thesis to complete their degrees, with an increase of 8.08%, including 28.04% of female, with an increase of 25%). In public institutions, there were 183 students, with an increase of 8.93%, 31.69% were female; and in private institutions, there were 31 students, with an increase of 3.33%, and 6.45% were female, with a decrease of 87.50%. There were 20 PhD students, with an increase of 33.33%, 5% of female, with a decrease of 50% (Education Congress Report in Cambodia, 2020).

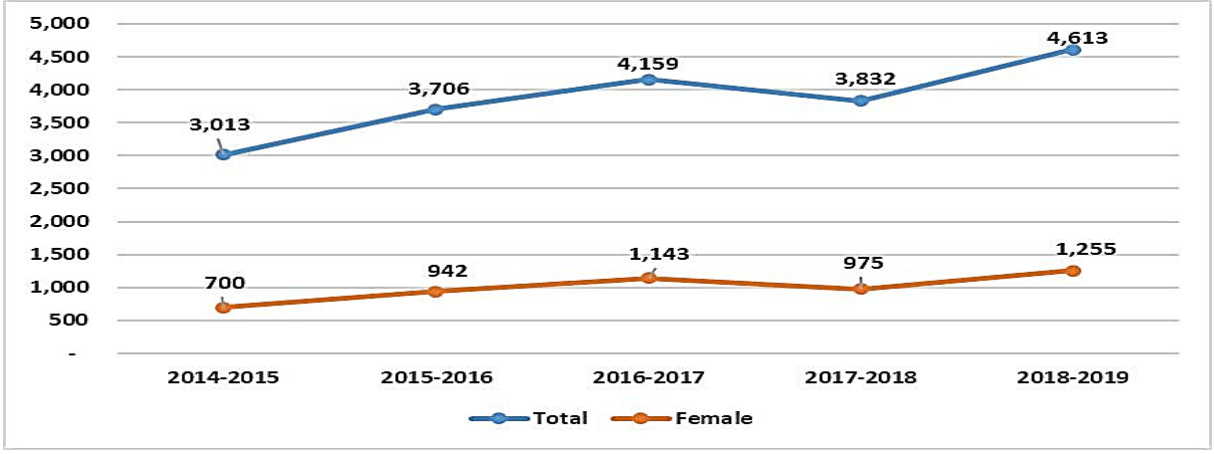


Figure 1.1 Number of Students Graduated with Master's Degree in between 2014-15 and 2018-19

Source: Education Congress Report, 23-24-25 March, 2019, https://www.moeys.gov.kh

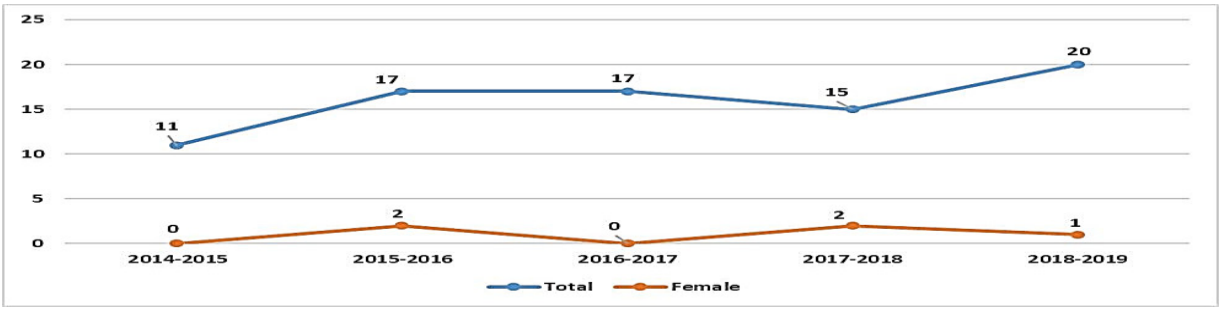


Figure 1.2 Number of Students Graduated with Ph.D. between 2014-15 and 2018-19

Source: Education Congress Report (2019), https://www.moeys.gov.kh

Our education aims at investigating factors which could enhance the quality of post-secondary education in Cambodia. This study was expected to assist the Ministry of Education, Youth and Sport to identify the potential prospects and limitations of post-secondary education in Cambodia. Afterwards, the researchers could take appropriate steps to enhance and expand post-secondary education quality. Furthermore, the researchers also hoped that the study would help develop a higher education system in Cambodia. For Cambodia's education system to operate according to world standards, the definition of quality of education must first be defined in this study.

1.1.5.2. Cambodian Graduated Student of bachelor's Degree by sector in academic 2018-2019

For bachelor's degrees, approximately 71% of undergraduate students were studying social sciences, including 41% in business skills, 8% in law, 11% in foreign languages, 2% in tourism, and 9% in social sciences and art. 29% of STEAM included 5% basic science, 9% information technology, 8% engineering, 3% agriculture, and 4% in health.

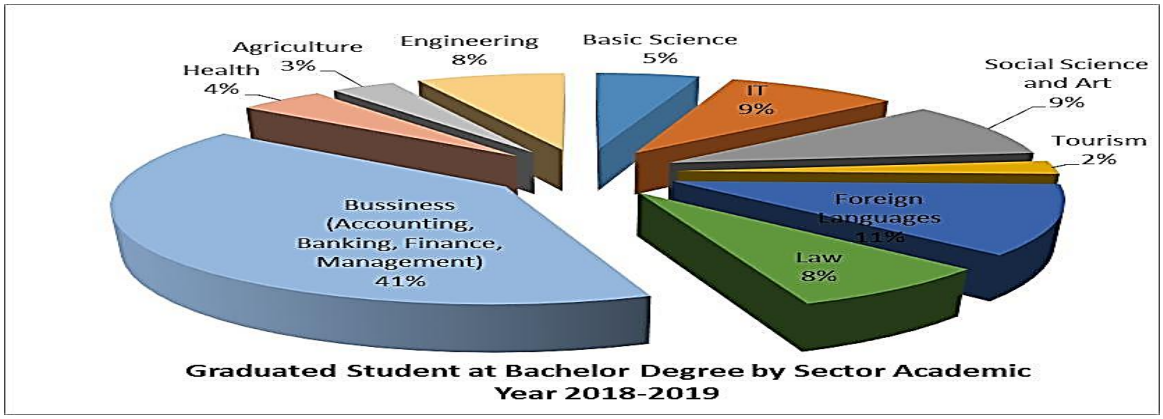


Figure 1.3 Cambodian graduated student of bachelor's degree by sector in academic 2018-2019

Source: Education Congress Report, 19-20-21 March (pp.73-74), 2019,

https://www.moeys.gov.kh

1.1.5.3. Cambodian Graduated Student of master's degrees by sector in academic year 2018-2019

Only 1% of MBA graduates are engaged in engineering and technology, whereas 6% of real and natural science, 2% in Agricultural Science. 10% of Humanities, Arts and Languages and the rest in Social Sciences. As a result, Cambodia is still facing a technological gap at the master level and the government needs to invest more in SME engineering. 100% of PhD majored in Social Sciences.

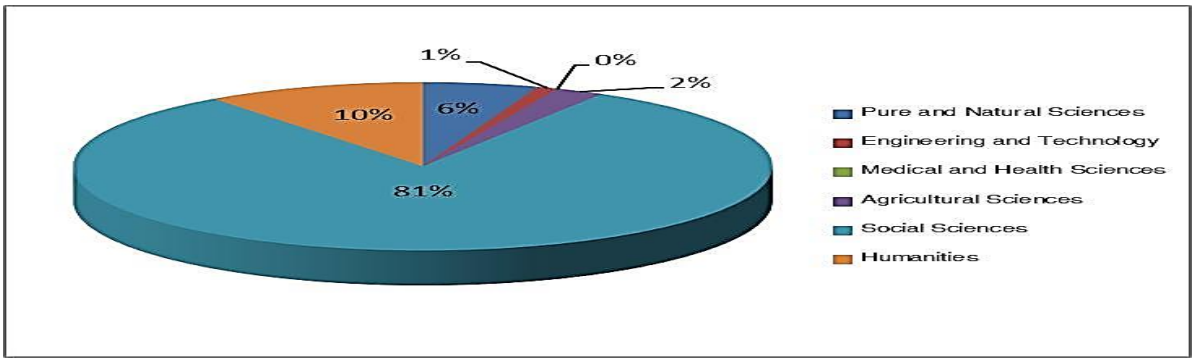


Figure 1.4 Cambodian graduated student of master's degrees by sector in academic year 2018 -2019

Source: Education Congress Report, 19-20-21 March, 2019, https://www.moeys.gov.kh

1.1.5.4. Cambodian Higher Education Reform

The Ministry of Education, Youth and Sport was undergoing more effective higher education reforms nationally as well as in the ASEAN region (Education Congress Report, Cambodia, 2020). Few of the initiatives are stated below.

- Strengthening governance in Cambodian higher education.
- Developing a curriculum for higher education institutions according to Cambodia's national qualifications framework.
- Enhancing Cambodia's higher education institutions quality through education and learning reform. It enhances academic qualifications, scholarships pursuing Master and Doctoral programs.
- Encouraging research to link Cambodian higher education institutions with industry, build research and innovation infrastructure, organize annual research forums, and promote dissemination of research results based on data analysis, data collection and publication of research results.
- Encouraging the autonomy of Cambodian public higher education institutions in financial management and human resources.
- Developing a master plan for human resource development.
- Establishing Cambodia National Qualifications System Review Committee.
- Cambodia's research information management system and graduate program updates.
- Developing detailed requirements guidelines and standards for master training.
- Drafting guidelines for establishing centers of excellence for higher education institutions.
- Developing roles and responsibilities and codes of conduct for quality assessors of Cambodian higher education institutions.

- Developing criteria and procedures for selecting higher education institutions and higher education institutions for evaluation and certification.
- Drafting concept notes on building an internal quality assurance system for Cambodian higher education institutions.
- Writing monitoring tools for internal quality assurance of graduate and graduate programs.

1.2. Research Objectives

The main objective of this study was to explain the causes and consequences of student and college satisfaction that can be explained by student loyalty in a good quality of education management in Cambodia, that includes teaching methods, infrastructure facilities, learning material, academic aspects, transformative service quality, and university image, which has been incorporated to explain that individual difference can execute different result. The expectation of this research was that we wanted to know what the students want and what the board needs to examine and solve for the students as well as to enable the institution to survive. Therefore, this study should aim:

1. To examine the relationship between teaching methods and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions.
2. To examine the relationship between infrastructure facilities and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions.
3. To examine the relationship between learning material and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions.
4. To examine the relationship between academic aspects and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions.

5. To examine the relationship between transformative service quality and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions.
6. To examine the relationship between transformative service quality and university image to evaluate a good quality of education management in Cambodian Higher Institutions.
7. To examine the relationship between university image and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions.
8. To examine the relationship between university image and student loyalty to evaluate a good quality of education management in Cambodian Higher Institutions.
9. To examine the relationship between student satisfaction and student loyalty to evaluate a good quality of education management in Cambodian Higher Institutions.

1.3. Research Questions

The research questions in this study focused on questions that help develop testable hypotheses in quantitative research and referred to relationships between a small numbers of variables. The researchers applied the results of this study using a number of questions:

1- Is there relationship between teaching methods and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions?
2- Is there relationship between infrastructure facilities and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions?
3- Is there relationship between learning material and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions?

4- Is there relationship between academic aspects and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions?
5- Is there relationship between transformative service quality and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions?
6- Is there relationship between transformative service quality and university image to evaluate a good quality of education management in Cambodian Higher Institutions?
7- Is there relationship between university image and student satisfaction to evaluate a good quality of education management in Cambodian Higher Institutions?
8- Is there relationship between student satisfaction and university image to evaluate a good quality of education management in Cambodian Higher Institutions?
9- Is there relationship between university image and student loyalty to evaluate a good quality of education management in Cambodian Higher Institutions?
10- Is there relationship between student satisfaction and student loyalty to evaluate a good quality of education management in Cambodian Higher Institutions?

1.4. Statement of Problems

Since late 1990s, Cambodia has the demand for tertiary education that was increased as the number of graduates with general education increases. Basic policy initiatives were based on the principles of civil cooperation that were introduced to meet these needs for citizens. According to Brehm (2019), in 1997, the first private higher education institution was founded. From this principle, a shocking mismatch between education and employment was identified. In some reports, research sites that were popular among Cambodian university students were related to social science and business majors. Few students studied science, engineering and

agriculture. The education sector was considered an important skill in promoting Cambodian economic growth. Still, there has been a concern about the quality of higher education across the country (Un & Sok, 2016). Another empirical research revealed that studying in Cambodia from primary to tertiary did not equip students with the knowledge, skills and attitudes which a middle-income country greatly required. This was especially problematic because the Cambodian government aimed to join the class by 2030. A recent review of the link between curriculum content and college and work education in the high school curriculum revealed that a high-quality high school curriculum was weakly linked to higher education (Chealy *et al.*, 2014).

Furthermore, according to the Policy-on-Higher-Education-2030 in Cambodia, the analysis depicted that the challenge of Cambodian Higher Education such as HEIs would ensure critical thinking of all program development, analytical and leadership skills. And HEIs would ensure curriculum development of all departments, including practical applications related to market demands. After graduating from university, some students came to pursue master's degree followed by Ph.D. There were few factors that made students return, like quality of teaching, learning, facilities and university image needs from the programs as well as other characteristics of Cambodia higher education system (Education Congress Report in Cambodia, 2020). Moreover, the student loyalty was one of challenges of Cambodian Higher Education Institution (HEIs). HEIs were faced with an increasingly competitive environment. Firstly, the Higher Education Institution had to design a good and interesting program for students. Secondly, the Higher Education Institution had to generate revenue/resources to support the development of quality education. Therefore, innovative management provides Cambodian Higher Education Institution a possibility to gain student satisfaction. Similarly, the Higher Education Institution gains expectation (Image) (Dom, 2019).

1.5. Scope of the Research

The study was undertaken by studying and using many literature reviews. From previous studies, a study model was obtained and consisted of eight in part of independent variables, mediators and dependent variables. There are six independent variable such as teaching methods, infrastructure facilities, learning material, academic environment, transformative service quality, and university image. Moreover, one mediator was used in the model, which is student satisfaction. Finally, only one dependent variable on the model was student loyalty. The research emphasized on the relationship of each variable to conduct the research, the three Cambodian Higher Institutions which have used in this research. 500 students was selected in this contains that conducted between September and November in 2020.

1.6. **Significance of the Study**

Although the number of public and private universities were increasing in Cambodia, the quality of leadership of education seemed to be low, compared to other countries in the ASEAN region. Three areas of need in this study are: firstly, students received a better quality of education by evaluating the management of educational institutions, institutional branding, and value. Secondly, it was important that the educational institutions in Cambodia must be reformed soon to improve productivity, reduce costs, and attract students as well as becoming more resilient in the future, especially in the highly competitive private sector. Thirdly, it was a contribution to the younger generation of students who want to learn more about innovative management of higher education institutions in Cambodia before enrolling in a degree program.

1.7. **Definition of each variables**

Below is the definition of each variable used widely in this research.

Teaching Methods firstly, refers to the teacher resources, and reduced resources were important for teaching methods because teacher costs composites of a high percentage of the total cost. Secondly, the development of technology for communication and dissemination of information were very important activity in communication and dissemination of information had a great influence that can occur with teaching. Thirdly, as interest in education quality indicators and education methods were increased (Bourner, 1997).

Infrastructure Facilities refers to the resources had already in place that could be expanded, used, or modified to match the unique challenges of the growing student population (Longtin, 2014). Based on a study conducted by Asogwa *et al.* (2015), the Internet had a dramatic effect on functions of libraries and had effectively transferred the mood of information, and the infrastructure of services. Equipment was needed to attract new students and provide an education situation (Weerasinghe & Fernando, 2018).

Learning Material refers to professional learners and ontology such as manuals, videos, podcasts, presentations, exercises, etc. (Valaski *et al*., 2017). Furthermore, Kolb and Kolb (2005) combined with more traditional teaching design methods of learning materials such as educational events. These learning materials were evaluated in terms of learner responses and preferences so that they learned and responded to their needs and learning style, and material design demanded a lot more for these needs (McLoughlin & Catherine, 1999).

Academic Environment refers to the nature of the system, it was important to change the nature of support in different contexts and its impact on socio-emotional and academic achievement and contributed to student experience (Gopalan *et al*., 2019). In the identical period, students became more independent and saw themselves as the legitimate consumer in terms of the services/education they expected from the learners (Byrne *et al.*, 2013).

Transformative Quality refers to the practical aspects of service standard (Teeroovengadum *et al*., 2019). The anticipated results for the impact of these changes were

well defined and promoted well-being (Previte & Robertson, 2019). Instead, changing the vision of quality implied that technical quality (output) must function in line with the generally accepted definition of quality that of "quality change" provided by Teeroovengadum *et al*. (2016).

University Image refers to the general impression of an organization that anyone who was known as it remains in their attentions (Barich & Kotler, 1991). The service quality and university's image were two important factors that contributed to student satisfaction (Clemes *et al*., 2013). Student satisfaction was a key driver of future feedback and engagement, and so on, even though the direct effect of value on satisfaction was not significant. But the effect of filtration seen as valuable on relationships, quality, service, and satisfaction was confirmed in this study (Clemes *et al.*, 2013).

Student Satisfaction refers to the staff had shown great interest in demand and students' progress (Rogers & Smith, 2011). By adding up-to-date information, measuring student satisfaction with facilities offered by the institution, including individuals, understanding the strengths, and identify areas for improvement (Oke *et al*., 2017).

Student Loyalty refers to the development of students' attitudes and behaviors which benefit the university as a whole (Navarro *et al*., 2005). Meanwhile, the attitudinal loyalty was defined by the willingness of the student to give positive comments and advice about the university to their homes, colleagues, managers, and workplace whenever they could do (Mohamad & Awang, 2009).

CHAPTER TWO

LITERATURE REVIEW

The goal of this chapter was to study the variables that significantly impact loyalty such as teaching methods, infrastructure facilities, learning material, academic environment, transformative service quality, image, and satisfaction. Lastly, this chapter reviews the theories serving as the foundation for the study. The review of literature and previous studies are elaborated below.

2.1 Theories

2.1.1 Behaviorism Theory

Behaviorism was related to human behavior that could be perceived and evaluated. Behavioral learning theory emphasized behavioral change in respect to stimulus-response associations to learner stimuli. A behavior driven by stimulation each person chose one response instead of another due to previous coordination and emotional motivations presented when decision was made (Parkay & Hass, 2000).

Primarily, behaviorism was related to observable and measurable human behavior aspects (Zhou & Brown, 2015). Behaviorist learning theories emphasized behavior changes caused stimulus-response relations made by the students (Weegar & Pacis, 2012). Behavior was directed by stimuli. According to past conditioning and emotional drove existing at the moment of the action, an individual selected one response on behalf of the consequences (Scriven, 1956).

If human behavior was learned, activists believed that all behavior could not be learned and replaced by new behavior. For instance, an unacceptable behavior could be replaced by an acceptable behavior (Vollmer *et al*., 2007). An important component of this learning theory

was the awards derived from the answer. The desired answer must be rewarded for prior learning (Lefrancois, 2019).

For this study, behavior facilitation successfully used reward systems and punishment in the classroom by rewarding desired behavior and punishing attacks. Prizes vary, but in some ways, it should be important to students. As an example, when a teacher wanted to alter the activities of those who were sitting down in class, the reward for a successful student for going to the library to check the teacher's mailbox, work errands, or do homework at the end of each class. The success of any teaching method usually depend on each student's motivation and reaction and each student's relationship (Bos & Vaughn, 2002).

Table 2.1. Reinforcement and Punishment Comparison

	REINFORCEMENT (Behavioral Increases)	**REINFORCEMENT (Behavioral Increases)**
POSITIVE (Something is added.)	Positive reinforcement Several were added to increase the desired behavior. **Example:** Laugh and admire student on good performance	Positive penalty There are some additions to reduce unwanted behavior. **Example:** If students do not follow, let them control level rule
NEGATIVE (Something is removed.)	Negative reinforcement Some items are deleted to increase the desired behavior. **Example:** Provide homework freely through conversion for all assignments	Negative punishment Some items have been removed to reduce unwanted behavior. **Example:** Make students miss breaks by not following class rules

Source: Constructed by author (based on Zhou, Molly and Brown, David, "Educational Learning Theories: 2nd Edition" (2015). Education Open Textbooks. 1. https://oer.galileo.usg.edu/education-textbooks/1)

2.1.2 Theory of Teaching and Learning

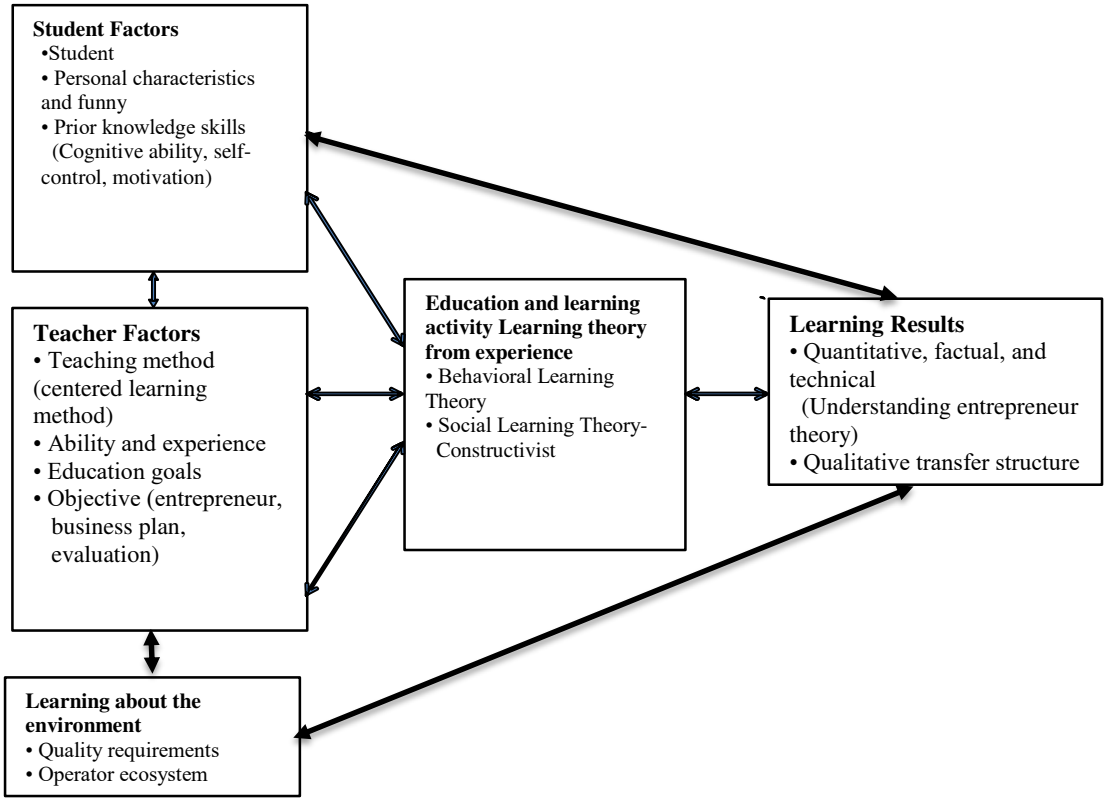


Figure 2.1 The Theory of Teaching and Learning

Sources: Constructed by author (based on Academy of Management Learning and Education, The 4(1):22-43 DOI:10.5465/AMLE.2005.16132536)

The teaching theory was created by the author (Verzat *et al*., 2017). The theoretical education of teaching and learning and user's learning through teaching and learning activities. A user's learning activities were determined by three structures: student factor, teacher factor, and learning environment. In addition, learning outcomes are determined by three structures: student factors, learning environment and teaching and learning activities. If students needed to prepare for lifelong learning, they should be given the opportunity to develop their ability to control the learning as they progressed through the higher education process (Nicol *et al*., 2006). The structure of self-control indicated the level at which students could define their views on anticipating, stimulation, and behavior in the process of learning (Pintrich *et al.*,

2002). In fact, self-control was specified in the observing and overseeing different learning processes: for example, determination and direction of learning goals. The student's motivation to learn something new was critical to make the teaching process more effective. The motivation was a condition of driving with motivation. Motivation encouraged an individual to act in some way, in reference to the meaning that the action was a goal (Matlay *et al*., 2010).

2.1.3 Theory of Service Quality in Education

Numerous studies of service quality had strengthened the field of service marketing over the past 30 years (Berry & Parasuraman, 2004). Most of these studies focused on the dimension of service quality in cultural industries and enterprises (Lewis & Mitchell, 1990). These studies had developed specific measures or scales to measure quality. Among the most widely used metrics was SERVQUAL, which had formulated the concept of the expectation-disruption paradigm (EDP) (Jiang *et al*., 2002). The dimension of service quality was by industry (Lee *et al*., 2013), by service type (Nadiri *et al.*, 2009), by culture (Sultan & Wong, 2010), and by service providers or companies from the same industry. Since low retention rates had affected institutional funds (Rowley, 2003), student recruitment and retention had moved to the top of most college agendas due to the desire to increase the student number in link with the government goals. Therefore, student satisfaction was a very important issue for universities and administration (Douglas *et al*., 2008).

Maintaining customer satisfaction, or even total satisfaction, increases customer loyalty. Customer loyalty was apparent in many forms of customer behavior. Douglas *et al*. (2008) classified methods of measuring loyalty into three main categories.

1. Intention to repurchase;
2. Core behavior-real customer repeat purchase behavior was new frequency, storage capacity and lifetime; and
3. Secondary actions-such as referrals, endorsements and publicity words.

2.2 Definitions of Terms

2.2.1 Teaching Methods

In reference to the above groups, the third one referred to the methods of instruction employed by the lecturers to provide lessons and it was closely linked to the important services given by the university – teaching and learning - which was seen it could determine as student satisfaction (Navarro *et al.*, 2005). According to Shea and Parayitam (2019), responsibility for change had shown that it was a great teaching method that helped students encourage learning by challenging preconceived ideas and positioning themselves in situations they thought were the answers, agents, and authors.

In addition, traditional forms of teaching regarding the face-to-face conference was usually complemented by computer education (Das *et al.*, 2019). Moreover, teaching methods are diverse including teaching students to work in the classroom, case studies, emulation studies, work-study and volunteer work, and student clubs (Tandika & Ndijuye, 2019). For undergraduates and teachers who outnumbered senior programmers, the traditional management of large conferences; however, seemed to be the dominant teaching method (Piercy *et al.*, 2012).

As described in the introduction had noted different requirements for the e-learning environment, teaching methods, etc. (Kratochvil, 2014). Finding effective and better teaching had become difficult because of the growing trend of publishing in high-impact journals, large classes, and the rapid discovery of new knowledge (Kashif & Ting, 2014).

According to Neely (2005), previous studies had shown that this kind of evaluation and training approach could help to correct the negative image of OM (Organization Management) education by taking into account many realities and ideas. Aspects related to

education, media, teaching methods, or pedagogical behavior were needed to be taken seriously since the university acted as an expert for the student audience (Foreman *et al*., 2004).

This analysis introduced the following groups such as theory and practice, documentation, subjects, extent, and distribution (Duque & Weeks, 2010).

2.2.1.1 Theory and Practice

Theories focused on a subject and language for addressing teaching and learning were also challenging and could discuss teachers' assumptions about learning and teaching (Runesson & Thorsten, 2015).

Involving management theory and practice is one of the most active steps to develop bright management practitioners equipped with complex management issues and dealing with uncertain circumstances (Hoidn & Olbert-Bock, 2016). Therefore, to train graduates' creativity, faculty members need to review and re-evaluate existing training programs and integrate theory and practice to make further improvements (Chen *et al*., 2019).

Previous studies had recognized several areas of education practice (e.g., opinion formation, conversation, facilitation) in which EPSP may conflict with values presented in teacher grounding (Sherry *et al*., 2018). In this regard, the preparation of teachers to acquire new pedagogical skills, including teaching theory and practice of critical pedagogical theory, was introduced in the college, however, teaching practice in real-life theory learned within the boundaries of college classes that occur in school (Sherry *et al.*, 2018).

2.2.1.2 Documentation

For existing science libraries and new subjects of information science "documentation", developing system and methods to retrieve journals are challenging (Miksa, 2017). It was necessary to link its online learning platform and online courses with libraries in

course documents (Shea & Parayitam, 2019). An investigation of the agency's organizational and permitted arrangements was the first step towards the development of basic documentation and archiving software to design quality system (Külcü, 2009).

Schell *et al.* (2009) suggested different ways so that relevant file could be extended, tactics could be used from the beginning that the document and activities were agreed upon, and then new cases were introduced by analogy, similarly, and resemblance (Kosciejew, 2016).

However, the researchers trusted that the documentation could be an integral part of an agency in teacher collaboration, assuming that knowledge supports the ability to act in different situations (Martensson & Hansson, 2018).

2.2.1.3 Subjects

Since the teacher's opinion of view, ICTs were considered as a subject and ignored the use of technology to promote meaningful learning in all subjects and limit the understanding of the concept (Tandika & Ndijuye, 2019). The concept showed that students should be presented to entrepreneurship training as soon as possible, to make students more entrepreneurial in different fields and at all ages (Morselli, 2018).

After an ICT teacher's point of view, IT was a subject and ignored the use of technology that was used to promote expressive education on all topics (Tandika & Ndijuye, 2019). The initial time course focused on a summary valuation and commercial software program that was widely used by students with limited self-sufficiency, and last year students conducted case studies (but were not integrated with other topics) (Murphy & de Jongh, 2011). Students in the seminary faculty group indicated that unlike students in the traditional college group, they tends to maintain a positive attitude towards accounting issues (Baird & Munir, 2015).

Furthermore, teachers and trainers should communicate theory and marketing concepts to non-business topics to demonstrate the relevance of the topic to students with limited business knowledge (Crick, 2018). Amidst the most common views of subjects on non-information Technology (IT) focuses on confidentiality, moral and allowed attentions rather than planned organizational skills (Ahmad *et al*., 2019).

2.2.1.4 Extent and Distribution

Once the course satisfied lecture's social issues, student leadership provides answers and conflicting views, many say the course has nothing to do with social leadership, others say the course study is indirect, but previous researchers perceived to be connected. This Western typology is universal and universally accepted (ElKaleh, 2019).

The exponential dispersal was often applied to consistency and lifecycle assessments (Bascand & Jowett, 1982). The application of ethanol fermentation as a product or urea produced in a generation was discussed. These education settings did not offer a detailed explanation for using standardized distributions, and there was no emerging literature on the possibility of spreading role for revenue deliveries (Boccanfuso *et al*., 2008).

The environmental impact of deployment was also noticeable. In Europe, for example, this distribution covered about a quarter of EU conservatory gas releases (Grasas & Ramalhinho, 2016).

2.2.2 Infrastructure Facilities

It also highlighted areas where university officials should focus on IS tools that played a vital role in increasing student enrollment, addressing infrastructure issues, and improving the quality of results (Aldholay *et al.*, 2019).

Based on a study conducted by Asogwa *et al.* (2015), the Internet had a dramatic effect on functions of libraries and had effectively transferred the mood of information, and the infrastructure of services. Equipment was needed to attract new students and provide an education situation (Weerasinghe & Fernando, 2018).

Other public universities should have had basic infrastructure. They needed to provide additional capital support to the university to increase infrastructure development costs and improve infrastructure (Bhalla & Das, 2018). Faculty foundations and the management of these buildings played an important role in achieving college goals by providing students, and staff with an efficient infrastructure that was a faculty function (Hallward-Driemeier & Aterido, 2009).

Bhalla and Das (2018) also raised the concern as university facility, classroom facilities and waiting room facilities, which were positively affected by student satisfaction.

2.2.2.1 University Facility

Student accommodation was considered an integral part of the space offered by higher education institutions to help students develop their intellectual abilities (Babatunde & Perera, 2017).

It was diverse and affected by a variety of factors, and university facilities were at the top of the list and facilities that claimed to be well known for management and value-added in recent years (Weerasinghe & Fernando, 2018). Standardized and high-quality tools were known to significantly influence the students' choice of the Institute, its student performance, and the overall perception of the institution that made it different from competitors and universities (Muhsin *et al*., 2020).

These campus locations and the management of these buildings played an important role in achieving university's goals and provided students and staff with an efficient infrastructure that underpinned their academic function (Hanssen & Solvoll, 2015).

The majority of the unit's assets were classified into two parts of it such as physical and non-physical, including buildings, land, utilities, equipment and these represented the majority of the facilities (Abdullahi & Yusoff, 2019).

Satisfaction was affected by alternative factors such as perceived value, university image, university environment (e.g., newly wide-open spaces), university amenities (e.g., elevators, cafeteria, gym, classrooms and parking, etc.), opportunities internationalization (such as language learning support, exchange program etc.), perceived value, services such as financial assistance, academic and administrative support (searching job opportunities, academic affairs, and administrative matters) (Appuhamilage & Torii, 2019).

2.2.2.2 Classrooms

The effect of a portable classroom on student achievement, behavior and behavior, and further examining the effect of a portable classroom on student achievement, and examining whether a classroom were appropriate or not on instructor confidence (Chan, 2009).

Most mobile classrooms with narrow configurations had visually been described as a main barrier to learning environment (Chan, 2009). However, the reverse classroom must have teacher’s coordination, and interaction, which helped students quickly gain knowledge (Das *et al.*, 2019).

The debate on the implementation of the transition from leadership to classroom accommodation in a place where the classroom could be seen as an active organization was now widely accepted in research on the effects, with the impact of identity, leadership, teacher, and student identity (Pounder, 2014).

Getting to know students' enjoyable and unwanted interactions between students and teachers could help teachers improve their classroom experience, for example by changing curriculum principles or developing personal skills or simply raising awareness (Voss, 2009).

By way of the writer inscribed during the initial evaluation of the pilot project in the first few weeks (Jazaieri, 2018). University building principles, including strategy necessities, create classes that met the minimum standards in the environmental measures of these buttons (Mason *et al*., 2003).

2.2.2.3 Waiting Rooms

Proper care plans reduced delays and improved service quality, therefore maintenance was an important indicator of technical support services. It was very important for school (Leung *et al*., 2005). Some online businesses had developed lead time indicators to ensure that customers' needs were met in a timely manner to expand client satisfaction (Hunt et al., 2004). In fact, the actual waiting time was what happened before the conscious awareness of the waiting, the satisfaction (Pruyn & Smidts, 1998).

The factors that determined waiting time satisfactory and observed a refereeing role of the last variables between these factors and service satisfactory. The researchers also studied the effects of customer satisfactory and loyalty of waiting time (Bielen & Demoulin, 2007).

2.2.3 Learning Material

The financial management at the college had a significant effect on student satisfaction, followed by academic facilities, college administration, learning material, and additional learning activities (Bhalla & Das, 2018).

In overall performance of the blend of necessities, related factors of the quality of teaching such as the effectiveness of learning and teacher keenness were increasingly appreciated (Chien & Young, 2007). For the first time in this step, teachers must present the

evaluation standards when the courses commence. Secondly, the methods of assessment should provide learners with latest materials in order to streamline their learning in a timely manner (Rodríguez *et al.*, 2019).

Additionally, learning material is in terms of availability such as up-to-date laboratories, latest technological equipment, teaching and research innovations (Bhalla & Das, 2018). Furthermore, Kolb and Kolb (2005) combined with more traditional teaching design methods of learning materials such as educational events. These learning materials were evaluated in terms of learner responses and preferences so that they learned and responded to their needs and learning style, and material design demanded a lot more for these needs (McLoughlin & Catherine, 1999).

2.2.3.1 Modern Laboratories

Laboratory conditions in educational institutions and research institutions needed to be sure to produce the best possible results, safety and well-being for researchers, and, also, the laboratory environment should provide opportunities to promote integration and teamwork, establish sustainability (Hassanain *et al*., 2019).

The consistency of the interview method depended on the experience of the lab designer as well as the recommendations of the user in the existing lab and the limited sample size (Feorino *et al.*, 2000).

Every lab must have Standard Operating Procedure (SOP), a set of documents that determine practices that must be followed verbally and mentally by all employees, tight and devoid of space (Isack *et al*., 2018).

The recent trend in laboratory design is the transfer of documents from traditional "closed", fixed and isolated labs to flexible, and collaborative "open" laboratories where scientists share space, equipment, and staff. This new support and idea were intended to enhance collaboration between scientific subjects (Hebert, 2012).

2.2.3.2 Equipment of Up-to-date Technology

The usage of material technology for university library services also had implications for society and finance. Libraries do not only get funding from the university, but also receive support from the government. If university libraries did not have the resources for first-class users, for example, as books were offered at university libraries in developed countries, consumers could choose somewhere to go and the university would lose income and confidence (Patrickson Stewart & Newman, 2017).

According to Babalhavaeji *et al*. (2010) cited that "the rapid development of information technology is transforming library service at a spectacular rate", this can change to the rapid growth of information technology, causing library services to change rapidly. Moreover, they had the opportunity to put their business online using a technology-based platform. "Software is a service" because it did not have to install software on computer (Stokić *et al*., 2019).

Therefore, general information was still developing, and the final definition may be where technology and education libraries are integrated to improve research, knowledge, and facilitate learning. According to Seal (2015), the study included that the IC (Integrated Circuit) potentially offers a 'continuum of service' that can help the student moved through and beyond the established regime of information access and recovery, through the processes of interpretation, processing, and manipulation, and on to the development, packaging, and presentation of new knowledge.

2.2.3.3 Innovation in Teaching and Research

Based on the innovative education could emerge as a new teaching theory, teaching methodology, teaching tool, learning process, or institutional structure that, when used, would result in significant changes in teaching. Furthermore, learning leads to better learning for

students, so educational innovation aims to increase the effectiveness and effectiveness of learning and / or improve academic quality (Serdyukov, 2017).

According to Chien and Young (2007), the features were studied from different angles; from a teacher's perspective, some argued that the following five behaviors could be used to measure teacher performance as the following:

1. Conference clarity
2. Viability of educational materials
3. Teacher's enthusiasm
4. Preparation of course methodology
5. Willingness to assist students in personal study and development

2.2.4 Academic Environment

The study landscape was primarily determined by factors related to academic staff quality, program quality, and university reputation. It should be noted that the reputation of the university was an important factor that differentiates students' perceptions of the issue, respectively, by the quality of the academic staff and the quality of the program (Gamage *et al.*, 2008).

As a temporary employee, students worked only a few hours per week. However, a sense of belongingness to the company and perceptions of teamwork were important to them and they may face social issues that were raised, based on the disadvantages of unemployment (Hunt *et al*., 2004).

In relation to education, students considered the quality of staff, study quality, program and reputation of the university as affecting the perceived quality of service; in a non-academic environment, financial and tuition assistance, counseling and support services, recruitment services and protest procedures contributed to students' understanding of quality and in terms of equipment, students needed to consider the location, and equipment of libraries

and computers and student organizations as important factors in understanding service quality (Gamage & Zajda, 2009).

Because of the nature of the system, it was important to change the nature of support in different contexts and its impact on socio-emotional and academic achievement and contributed to student experience (Gopalan *et al*., 2019). In the identical period, students became more independent and saw themselves as the legitimate consumer in terms of the services/education they expected from the learners (Byrne *et al.*, 2013). Managers considered the education and course quality as the key products of academic achievement (Ali *et al*., 2016).

These scopes, including the design, organization and evaluation of unrecognized internships, representation of students, educational chances and the size of the group, and college-based instructional expertise, and student interaction, could be applied (Ali *et al.*, 2016).

2.2.4.1 Instructors with Teaching

Consequently, the determination of this study was to demonstrate the use of the reverse grading method in academic teaching and that students acknowledge the learning outcomes compared to videos of pre-class (Das *et al*., 2019).

Overall, the related factors for quality teaching including teacher-learner effectiveness and enjoyment are increasingly appreciated. The quality of teaching was positively related to course satisfaction, and teacher satisfaction. Thus, improving learning satisfaction had become imperative for both teaching and support staff (Chien & Young, 2007). Though, an analysis of the performance of the educational process may indicate the possibility of a simple operational transition from direct contact, which may enhance the efficiency of the process by allowing continuous processing and mechanization (Finne, 2018).

From the teacher's point of view, five behaviors were used to measure the performance of teaching staff (Chien & Young, 2007).

1. Conference clarity
2. Availability of study materials
3. Teacher's enthusiasm
4. Preparation of course methods
5. Willingness to assist students in personal study and development

Even with the above challenges, businesspeople expect to get good knowledge from students in addition to completing all courses, and business educators should receive teaching and materials skills to be recognized and widely accepted (Kashif & Ting, 2014).

The findings showed that the main reason teachers wanted to use multimedia in future was that they were less aware of the benefits they knew about these multimedia files, the useful ease, and quality of multimedia education. The previous experiences with technology and self-efficacy did not predict the intentions of consumers and mentors for the use of this multimedia educational material (Armenteros *et al*., 2019).

2.2.4.2 Instructors with Documentations

The availability of other detailed documents might depend on the material the depositor might choose to provide. The most repositories were needed to support depositors, so it was unlikely that there would be suggestions to prevent this, such as proper documentation (Warwick *et al.*, 2009). University historians consider papers written in libraries and archives "better than evidence of archeological and archaeological observations, relics, and oral traditions." (Grenersen *et al*., 2016).

In the part of Japan, together workforces and engineers believed that the quality characteristics of design documents such as precision, compromise, and accuracy are at least integrated into the design files (Akampurira & Windapo, 2019).

Thus, it can be supposed that an experienced document was a tool that helps organizations, especially from projects, to improve the actions and policies necessary to face similar problems and limitations (Navidi *et al.*, 2017).

2.2.5 Transformative Quality

The changing quality of services of higher education, such as quality of service, student satisfaction, institutional image and student loyalty that were not included in the university's tactical plan, also became essential elements of survival (Teeroovengadum *et al.*, 2019). However, these services could be improved and intended for high-quality exchanges (Previte & Robertson, 2019). Distribution of service quality added value because the technical quality and quality of work might result in different service outcomes (De Keyser & Lariviere, 2014).

The anticipated results for the impact of these changes were well defined and promoted well-being (Previte & Robertson, 2019). Instead, changing the vision of quality implied that technical quality (output) must function in line with the generally accepted definition of quality that of “quality change” provided by Teeroovengadum *et al*. (2016).

In addition, exchanging and gambling services were central to two areas of research: promoting health and well-being through service delivery and using gambling to encourage behavior (Tanouri *et al*., 2019).

By means of HESQUAL, this study showed the quality of higher education in terms of both service function and service quality (change) (Teeroovengadum *et al*., 2019).

This similarly emphasized the right of who claimed that higher education quality was enhanced as quality changes and supports the need to incorporate technical dimensions such as the HESQUAL measure. Furthermore, the quality of service changes was based on the university to improve student knowledge, self-assurance, and problem-solving skills (Teeroovengadum *et al.*, 2019).

2.2.5.1 University Improve the Students' Knowledge

Asare-Nuamah (2017) stated that the Grade 5 was described as "always", "frequently", "rarely", "never", and "uncertain" and was used to measure student satisfaction with the quality of education and learning, disseminating expertise in education, delivery and communication, educational resources, textbook selection, homework and student matters (Hashmi *et al*., 2020).

The results showed that most students were satisfied with their classroom and quality of education and knowledge (Hashmi *et al*., 2020). Even those students were considered as clients, a college professor must meet or exceed expectations to promote new knowledge (Tetteh, 2015).

By way of an online educational stage, popular and open online courses were extremely popular. This course provided students with the opportunity to exchange knowledge in discussions (Liu *et al.*, 2020). Undergraduate students studied their own books without the intervention of their teachers and gained access to the necessary knowledge in a variety of subjects. The authors of the study were one of them, could students gain new knowledge without the intervention of teachers? (Tetteh, 2015).

Improving university's curriculum requires a thorough understanding of the phenomena and the interactions between situations, so designing a special university course was the best option (Finne, 2018).

According to Tetteh (2015) decided that the survey conducted by the authors in a similar way in three different courses to prepare an average of 50 students to acquire new knowledge:

- 10% cannot and will not
- 40% are not capable but willing
- 15% are capable but unwilling
- 35% can and will

2.2.5.2 University Improve the Students' Self-confidence

The researcher determined the contribution of internal and external factors to the job search model. Therefore, students' self-esteem gained paramount importance, followed by the general skills and perceptions of the job market with their field of study. They were followed by similar contributions by personal circumstances and relationships, and ultimately in this sequence, university teaching staff, student learning outcomes, and teaching staff (Alvarez-Gonzalez *et al*., 2017).

Undergraduate students used critical thinking to stimulate conversation, try new things, feel confident, and take responsibility for future learning and choices. End the conflict by negotiating, knowing how to listen and making it clear about that judgment (Pashiardis *et al*., 2011). Universities in which teachers perceived students as socially skilled in adopting a holistic approach to their learning were confident enough to try new things, negotiate, listen, and speak were more likely to succeed (Pashiardis *et al*., 2011).

Students used critical methods to stimulate conversations, try new things, felt confident among themselves, and took responsibility for future learning and choices (Mulford *et al.*, 2011). Uncertainty team memberships were confident and aware of their ability to overcome obstacles and obstacles, they would have a positive and proactive approach to team goals that led to better teamwork (Black *et al.*, 2019).

Therefore, who wanted to succeed in school and improved the school continuously, the challenge was to make an overall impact. Concentration of specific effects that occurred with others at the same time, although the direction may change due to the use of responses (Mulford *et al*., 2011).

2.2.5.3 University Improve Students' Problem Solving

Based on this study, the 4-area solution was designed to help identify the true nature of the solution and explore the impact of previous research on solving the current problem, and the importance of knowing the problem. The importance of having enough time doing so included identifying and defining, the researchers classified problems and the need for complex emotional work (Katz-Buonincontro & Hektner, 2014).

An important feature that the researchers agreed on was the importance of asking questions before solving problems and allowing students to think about how to solve problems that might be outside of their comfort zone (Bradshaw & Hazell, 2017). Tsai and Tang (2017) concluded that working discussions between problem solving activities were automated and provided useful references in future.

Usually, each new math idea in a textbook had a problem-solving lesson or lesson plan to illustrate it (Lee *et al.*, 2013). Even those who conducted research, very few studies had examined leaders' experiences, feelings, and perceptions as they dealt daily in leadership roles (Katz-Buonincontro & Hektner, 2014).

For practical learning-focused courses, problem-solving (problem solving) and problem training helped students achieve their goals; for example, the results of the outcomes curriculum assessment, using PBL (Project-Based Learning) guidance for IT professionals, provided reasonable outcomes (Zhang *et al*., 2019).

2.2.6 University Image

In part of higher education, many researchers emphasize the influence of university image on student satisfaction significantly (Clemes *et al*., 2013). The distinctive brand image can have a shocking effect on them, which can greatly affect university students (Panda *et al.*, 2019).

With a good reputation, a university would benefit a lot including improving rankings, increasing student enrollment, subsidy chances, hiring by top employers, and graduates contributions (Alwi *et al*., 2019).

The service quality and university's image were two important factors that contributed to student satisfaction (Clemes *et al*., 2013). Student satisfaction was a key driver of future feedback and engagement, and so on, even though the direct effect of value on satisfaction was not significant. But the effect of filtration seen as valuable on relationships, quality, service, and satisfaction was confirmed in this study (Clemes *et al.*, 2013).

As stated purposes above, universities were increasing their investment to increase their "quality" image to stay ahead of the competition, and third-level quality control approvals were only modern. Universities weakened by the practice of outstanding academic and cultural freedom are protected by self-sufficient segregation (Abdullah *et al.*, 2015).

When competition in higher education was fierce, concepts such as quality of service, student satisfaction, institutional image, and student loyalty were not immediately incorporated into the university's strategic plan. Academic reputation, brand image, achievements, college level, qualifications and prestigious universities were key elements of survival (Teeroovengadum *et al*., 2019).

2.2.6.1 University Academic Reputation

To better measure and manage your academic reputation, you should create an one-dimensional questionnaire as well as specific stakeholder group from specific organizations

(Verčič *et al*., 2016). Universities needed to improve the quality-of-service quality. Senior officials should ensure that the primary goal of educational institutions and programs was to facilitate the transition of students who are capable of becoming academically prepared students (Teeroovengadum *et al*., 2019).

The grouping of a good reputation and brand image enhanced student satisfaction, turning into positive words and brand loyalty. In this course, the university would create a margin that would provide competition (Panda *et al*., 2019). In some situations, strategic alliances were also a useful tool to improve the status and reputation in the university community through collaborative research and development (Jurše & Mulej, 2011), especially when a local business school was looking for a partner with a global reputation to join in teamwork session.

When building a reputation, media was very important because "they provide a forum where organizations and stakeholders debate what constitutes a good organization and which organizations have good reputations" (Vogler, 2020).

2.2.6.2 University Brand Image

The college logo was recognized as one of the important factors that influenced the decisions of students who were likely to enter college (Casidy, 2013). The university's image encourages clients to buy a product or brand. It was not because of features, functions, and results, as well as feelings of the agent involved (Panda *et al.*, 2019).

Though the positioning is needed based on the company's brand image, some researchers focused on the company's brand image tertiarily on a behavioral response model for students and customers (Alwi *et al*., 2019).

Due to other characteristics (abstraction, sentiment, etc.) brands claimed that the brand played a key role in any service industry in building a strong image (Momen *et al*., 2019).

In university image research, Pinar *et al.* (2011) stated that the competitive advantage in an increasingly competitive global marketplace, higher education institutions were encouraged to develop or maintain an outstanding image.

About academic expansion, brand awareness of social progress of students and brand associations for social development can mostly create a brand of progress. Public interest may lead to the recognition of social brands in some universities (Eldegwy *et al.*, 2018).

These practices had been approved by higher education institutions to create or improve a brand image like a for-profit organization in an educational institution and are a "university investor" (Gupta & Acharya, 2018).

2.2.6.3 University Quality Output

Uncertain institutions wanted better results (student quality and their performance), by providing a favorable atmosphere (Ahmed *et al.*, 2014). To meet human needs, some countries recognized programs related to changes in financial and regulatory forms, quality assurance, learning, and technological innovation (Bingab *et al*., 2018).

Change in institution-teacher relationship and teachers and students would help the institution to achieve good production goals (strong students in education) (Ahmed *et al.*, 2014). Firstly, previous studies had considered the enjoyment and quality of production as one-dimensional, although studies had shown that these structures were diverse (Pe-Than *et al.*, 2015).

Results could not guarantee (Graduate) high-quality, well-designed programs may not produce good results if colleges were not be able to rent or hire professionals with qualifications, experience, and careers to train the coursework (Alam, 2019). The quality evaluation of universities had become an important issue among academics and policymakers, and this may be due to the focus on increasing the university's business participation rate, and globalization (Berbegal-Mirabent & Ribeiro-Soriano, 2015).

2.2.6.4 Qualification and Prestigious University

The field of professional learning and job-based learning was based on the simple idea that when people worked, they learned that this learning could be advanced and could be officially recognized to earn a university degree (Bravenboer, 2018). An emerging paradigm in all areas involved in the collaboration between employers (or employer groups), universities, and professional bodies that allowed for the development of career pathways led to both higher education. Also, a qualification in the profession or registration in a regulated profession (Bravenboer & Lester, 2016).

As it prepared new management challenges and assignments, it had become the most popular management feature for current managers and potential candidates (Temtime & Mmereki, 2011).

Darmadi (2013) demonstrated that education qualifications can indicate intelligence that smart managers were better than peers. Several of our ministers felt comfortable with these pastors because that they had become images of strength, dignity, and social honor familiar to our ethos (Roszkowski & Berna, 2012).

2.2.7 Student Satisfaction

Student satisfaction was a significant indicator of the standard of education and can be seen as a measure in factual outcome (Munteanu *et al*., 2010). The effectiveness and reliability of the instrument to measure student satisfaction with education raised questions on the literature (Rogers & Smith, 2011). Some tools were highly efficient and reliable (Wilson *et al*., 1997).

Understanding the features that expected student satisfaction would help colleges attract and retain students. However, developed strategies supported this information should promote learning and education (Rogers & Smith, 2011).

The student satisfaction list developed by Bryant (2006) evaluated the subsequent 11 dimensions of importance and satisfaction.

1. The effectiveness of educational advice.
2. Branch environment.
3. Life on campus.
4. On-campus support services.
5. Concerns for people.
6. The effectiveness of education;
7. The selection and effectiveness of monetary assistance.
8. Effectiveness of registration.
9. The security and security of the campus.
10. Service quality.
11. Student concentration (Elliott & Shin, 2002)

Prior studies had shown that student satisfaction trusted many service involvements (Osman & Saputra, 2019). Furthermore, Satisfaction was reflected within the most effective, as a serious behavior, as a heavy predictor success of the transaction (Gomez-Ospina *et al.*, 2019). By adding up-to-date information, measuring student satisfaction with facilities offered by the institution, including individuals, understanding the strengths, and identify areas for improvement (Oke *et al*., 2017). Besides, student satisfaction namely was human skills and project management, university support, and labor market need (Shamroukh, 2019).

2.2.7.1 Human Skill and Project Management

The university's top-of-the-line programs developed skills such as writing and oral communication, problem solving and decision making, time management and cost management (Rengel Jara *et al.*, 2019). According to Endicott (2019), as market dynamics evolved, organizations were increasingly interested in the innovation, its processes and

management, and considering the context of the organization, they innovated in response to changes in demand and how. The lives of consumers that take advantage of opportunities arose from technology and market development.

Furthermost employers expected employees to show a wide range of skills, including interpersonal management skills and project knowledge and leadership skills that were supported by project management training (Olaleye, 2019). Karlsen *et al.* (2020) emphasized that the challenges that fit into the role of the project manager while recognizing the power and flexibility that project management offered to any particular organization.

Studying these complex relations in the plan, Sankaran *et al.* (2019) indicated that the role of the project manager was much broader than that of managing a project.

Successfully managing a project, therefore, required general skills, including individual skills, technical and cognitive skills, as well as the ability to understand the situation and people and then incorporate appropriate leadership behavior (Boon & Skaik, 2019). It should be highlighted that the role of the project manager was related to strategy and understanding of 50% of dynamic volume, 40% of management and technical performance of only 10%; the importance of general skills has been confirmed by many researchers (Hebert, 2012). Operative communication skills and innovative leadership were widely recognized as important for management development (Shamroukh, 2019).

The project manager's human skills had the least impact on project management practices and technical skills (Chen *et al.*, 2019). There are people who do projects in knowledgeable and creative ways without using simple skills or materials. One of the biggest challenges for project managers was managing people who needed management skills and communication (Oliveira & Rabechini, 2019). They included effective communication, leadership preparation, team spirit problem solving, flexibility and innovation (Alvarenga *et al.*, 2019).

2.2.7.2 University Supports

This goal could be achieved by measuring students' perceptions of the education they were receiving and assigning them a specific type of education (Mustafa *et al.*, 2016).

Shi *et al.* (2019) designated three types of specific college supports. This goal could be achieved by measuring students' perceptions of a given command. First of all, the study attempted to investigate two concepts that were not previously considered part of the model such as active personality (PP) and perceived academic support (Shi *et al.*, 2019).

In addition to entrepreneurship programs, universities could also provide other support to promote and enhance student and entrepreneurial interests (Bazan *et al*., 2019). The kind of support the university could offer can be greatly influenced by cultural and institutional differences (Bazan *et al*., 2019). With respect to the Malaysian context, Zahari and Saiboon (2019) and Ahmad *et al.* (2019) profound that the university did not design or operate as an appropriate career option. In addition to educational support, ideas, and business development support, recent research findings are also important for EI support (Siddiqui *et al.*, 2019).

This hypothesis was supported by numerous studies showing a positive relationship between PP (Personal Performance), and IE (Emotional Intelligence) (Kumar & Shukla, 2019). In addition to educational programs, academic institutions can encourage individual EIs by providing a supportive business situation (Yordanova, 2020).

2.2.7.3 Labor Market Need

Recognized educational support represented the degree to which a university provides undergraduates with the information, services, internships, and networking opportunities they needed to start an innovative commercial (Saeed & Ghazali, 2019). This idea was supported by a variety of studies that had a positive relationship between PP (Personal Performance) and students' EI; for instance (Eid *et al.,* 2019) and other students showed what various EI

(Emotional Intelligence) students would explain in their personal performance, such as labor market needs, as stated by Kumar and Shukla (2019).

Generally, the government intervenes in the labor market through setting up regulations, as employees could mistreat workers, resulting in injustice and ineffective outcomes for workers, such as unfair dismissal, unfair minimum wages, and economic reasons (Terence, 2009).

Strict labor market restrictions were expected to seriously interfere with business operations and economic growth, and many publications concluded that strict labor regulations would lead to reduced labor market participation. According to Nash *et al.* (2007), the study revealed that preventing the effect of the labor market, lead to lost productivity (Fakih & Ghazalian, 2015).

Allen and Van Der Velden (2005) provided that severe labor shortages could limit job creation and economic growth and negatively impact financial performance and effort marketplace results. According to the company and its international characteristics and business sector, many studies showed a systematic difference in the company's perception of the labor market barrier (Fakih & Ghazalian, 2015).

Hallward-Driemeier and Aterido (2009) found that Government-owned businesses are less likely to view labor shortages as a business impediment. Previous study conducted on firms located in South Africa, Kift *et al*. (2010) found that large companies and exporters were more likely to be vulnerable to labor shortages, which was a major trade barrier. Likewise, large corporations tend to perceive labor shortages as one of the barriers to business (Kaplan & Pathania, 2010).

2.2.8 Student Loyalty

According to Dehghan *et al*. (2014) it was concluded that student loyalty was associated with two factors: student satisfaction and college effectiveness. In instruction

facilities, student loyalty means a strong relationship with institutions that successfully provided a competitive edge over customers, increased student satisfaction, and provided a positive image for the company (Gallegos & Vasquez, 2019).

The study was also a complete and preliminary documentary that validated the history of student loyalty through intercultural analysis (Makki, 2018). Indeed, majority of the customers prefers socially responsible behavior, which increased their commitment to the organization and increased their loyalty (Liu & Zhou, 2009). This awareness led to better identification of employees.

One college that strived to improve the quality of their agendas had long-standing plans (Austin & Pervaiz, 2017); high-level students (Ali & Ahmed, 2018). Lastly Buttle and Burton (2002) cited that the relationship management between company and customer was positively affected by relationship marketing; and the concept loyalty was adequately affected by omission (Rojas-Méndez *et al*., 2009).

Furthermore, the concept of client constancy and student loyalty included behavioral elements (Annamdevula & Bellamkonda, 2016). The lesson value and the commitment of students to their facilities were important to undergraduate loyalty (Hennig-Thurau *et al*., 2001).

Exactly, more customers value social responsibility behavior, which led to an even greater commitment to the organization and loyalty (El-Kassar *et al.*, 2019). Customer loyalty appeared in various forms, including the obligation to repurchase or support the desired product or service (Wangenheim & Bayon, 2004).

Student loyalty had a short-term and long-term impact on the institutions. Honest students positively influence the quality of education through participation and diversity (Rodie & Kleine, 2000) having good advocates of introducing the institution to others. Furthermore,

many students updated their knowledge by going back to their higher education institutions (Navarro *et al.*, 2005).

Loyalty contained a procedure in which a person's awareness, affect, and behavior occurred (Yang & Peterson, 2004). We value loyalty, which included known intention, such as exchanging a brand or providing financial or non-financial support to a mother. In the field of education, loyalty should build closed relationships with students, which form the financial basis for future university activities (Kunanusorn & Puttawong, 2015).

In this context, student loyalty was an advantage of a competitive strategy because (1) finding new students were actually costlier than retaining existing students, and (2) assuming that student loyalty was payable in the future. By graduating as a graduate, students continued to apply not only to the university by word of mouth, but also by donating money to the institution and hiring recent graduates (Rojas-Méndez *et al.*, 2009). Two communication variables, trust, and commitment were significantly related to student loyalty (Erciş *et al*., 2012).

2.2.8.1 University Trust

From a resource standpoint, the company's long-term competitive advantage stemmed since its insubstantial abilities, such as reputation and the capacity to earn consumer trust (Heffernan *et al.*, 2018). Confidence was the belief that individuals, groups, or entities could be called upon to keep the promise. It played an important role in evolving customer loyalty (Newell *et al*., 2016).

According to Chen and Yu-Chuan (2017), trustworthiness could increase parent participation in universities. All the results indicated that dissimilar categories of belief have a straight and unintended conflict with parents' participation in selected schools. Such as parental confidence, student confidence could play a vital part in the university. Students who did not

trust teachers and schools were less educated; school was a social system and trust played an important role in student success (Limon-Romero *et al*., 2016).

For three decades, educational researchers and policymakers had focused on building the confidence of students in their schools. Therefore, the importance of the confidence of students in school was accepted (Chen & Yu-Chuan, 2017). There was also a positive and important relationship between confidence and student satisfaction (Kunanusorn & Puttawong, 2015).

Trust had a straight and confident connection with satisfaction. Satisfaction increased when students trust the school (Kunanusorn & Puttawong, 2015). Student satisfaction increases when students trust school. Trust had proven to be a key matter for positive associations between two or more gatherings. According to Rojas-Méndez *et al.* (2009), trust was necessary to develop loyalty to retailers; Sultan and Wong (2010) defined trust as the backbone of a successful strategic partnership; and Kuusik (2007) considered trust as a keystone of planned establishments.

Consequently, it was not amazing that credibility was used as a predictive factor for future intentions. From the study, students' confidence could be seen as the confidence of students in the integrity and credibility of the university (Akbar & Parvez, 2009). For the students, confidence was built on own knowledge with organized workforces. Trust the relationship if the institution wants to build long-term relationships with its components. Low self-confidence can negatively affect long-term relationships (Andaleeb, 1996). Prior studies had revealed that participation in intensive partnerships such as educational cooperation could be greatly reduced without trust (Doney *et al*., 1998).

2.2.8.2 University Commitment

Strauss and Volkwein (2004) described connections with educational institutions This was the “institutional dedication” and was influenced by the connection between the

student's appreciation and the university's core values, mission, and commitment to pursue the institution's strategic direction (Azila-Gbettor *et al.*, 2020).

The proposed organizational commitment had three components: standard commitment, continuous commitment, and affective commitment (Hackett *et al*., 1994). Participation reproduces a sense of self-reliance, loyalty and desire to stay in the organization to attain its goals (Beraldin *et al*., 2019) .

Likewise, research showed that participation is an important variable in the context of higher education, such as student loyalty (Love, 2013) and the willingness to graduate (Sanchez *et al.*, 2006). Studies on organizational performance, roles, and complementary roles showed that organizational and professional engagement was linked to efficiency. On the contrary, participation remained a core value held by the organization, and its employees (Herscovitch & Meyer, 2002).

Corporate involvement was designed differently and included one of the most important aspects of employee interaction with an organization (Sloan *et al.*, 2017) workforces felt connected and loyal to their organization or employer (Nobaza, 2015).

Corporate involvement was an important factor in the development of volunteerism and long-term commitment, there are few areas that require support (Cerdá Suárez *et al*., 2020). Likewise, with the introduction of trust in the marketing arena, engagement had recently gained attention as a mediator between customer satisfaction, and behavior (Rojas-Méndez *et al.*, 2009).

Student commitment was based on the level of academic integration (social participation and university committee) and society (friendship and acquaintances). Commitment stated to the sufficiency of students' skills, abilities and values, and the expectations, needs, and values of the university (Rojas-Méndez *et al.*, 2009).

2.3 Related Literature Review

2.3.1 Teaching Methods and Student Satisfaction

Faculty members should seek effective teaching methods and self-assessments, including appropriate lesson plans, to ensure that students were learning more effectively and interacting with satisfied students to learn (Klug *et al.*, 2013).

This study-built students' trust in the school's skills and abilities with business-oriented teaching methods in business schools. At the same time, the continuous interaction between the faculty and the student made it possible to grasp the students' potential skills and abilities, making the learning process clearer, and the faculty was no longer simply disseminating information to students (Shea & Parayitam, 2019). Students' emotional commitment to quality of education and institutions was important to student loyalty (Butt & Ur Rehman, 2010). According to Annamdevula and Bellamkonda (2016), the studies showed that teacher, pedagogical, and curriculum management were important factors in achieving student satisfaction followed by loyalty. Woodland and Mazur (2019) discussed high teacher withholding rates and increased job satisfaction because of continued engagement among teachers. Community courses were important in creating a competitive advantage, but the education teacher network still failed to speak talk about teacher occupation fulfillment (Kianto *et al.*, 2016).

2.3.2 Infrastructure Facilities and Satisfaction

Ford *et al.* (1999) decided that Infrastructure facilities related to the physical characteristics of the institution. Many articles in infrastructure facilities were referred to as tangible assets (Bhalla & Das, 2018). Studies conducted by Bhalla and Das (2018) showed that infrastructure facilities had an encouraging and significant impact on student satisfaction, and physical infrastructure should not be overlooked when trying to improve student satisfaction

and learning opportunities. examined that as one of the elements of higher education institution selection, the researchers reviewed elements of higher education institution student selection and admission opportunities. Gruber *et al.* (2010) reviewed the composition of higher education institution student selection and admissions opportunities as one of the components of higher education institution selection.

2.3.3 Learning Materials and Students' Satisfaction

The learning material was related to the availability of modern laboratories, equipment and others and up to date technology introduced innovation in education and research. Kaur and Singla (2019) also claimed that classroom facility and these facilities, which had a positive relationship with student satisfaction. The expected impact between satisfaction with classroom material and classroom effort had slightly diminished (Santini *et al.*, 2017).

Butt and Ur Rehman (2010) also claimed to be a classroom facility, which had a positive relationship with student satisfaction. Satisfaction with training materials and facilities had a positive impact on efforts. The researcher expected textbooks having a confident influence on forms of effort (books were also used for homework).

Satisfaction with school facilities was high in uncertainty, and school facilities were expected to have a positive impact on classroom activities with little clarity, and buildings would affect efforts rather than school conditions (Hopland & Nyhus, 2016). A student's perception of learning process had the most important effect on satisfaction and ongoing decisions (Chow & Shi, 2014).

2.3.4 Academic Environment and Students' Satisfaction

Teeroovengadum *et al.* (2019) reviewed the use of HESQUAL level and suggested the use of composition of higher education institution selection and admissions opportunities as one of the components of higher education institution selection.

One of the components of higher education institution selection is a review of the components of higher education institution selection and admissions opportunities (Annamdevula & Bellamkonda, 2016). Grady *et al.* (2005) observed that the main drivers of student satisfaction from the context of higher education institutions were academic and non-academic achievements, program-related issues, accessibility, and reputation.

The academic skills and teaching skills of student interaction increased student satisfaction (Spreng & Mackoy, 1996). The study demonstrated that important academic environment, including support and other peripheral services, played an important role in student satisfaction, and loyalty (Annamdevula & Bellamkonda, 2016). On the other hand, Rowley (1996) stated that in educational institutions, student self-development opportunities, accommodations, facilities, and other features of the program affect student satisfaction.

2.3.5 Transformative Quality and Students' Satisfaction

The primary constraint of traditional education was that the concept of quality of service was neglected in most studies of quality of service and student satisfaction assessments and the loyalty model of higher education institutions (Teeroovengadum *et al.*, 2019).

The important goals of higher education institutions was to transform learners through education (Leibowitz *et al.*, 2015). University-driven initiatives had positive results, such as increased market share. Improving financial performance focuses on financial profits.

This was why researchers focused on the need for higher education institutions to focus on the concepts of quality, service and change (Nash *et al.*, 2007). Researchers expected the dimension of change in higher education service quality to be assessed as part of quality assessment practices. Another important lesson learned from this study was that the quality of service could not predict student satisfaction.

However, the quality of the technical service, which was considered a change in quality, could predict the satisfaction well (Teeroovengadum *et al.*, 2019). Harvey and Knight (1996)

claimed that the quality of higher education was best seen as the quality of change and supports the technical dimension and the necessity of including HESQUAL when assessing the class of developed schooling facilities.

2.3.6 Transformative Quality and University Image

Firstly, the awareness of service quality was improved, and changes could lead to increased awareness of student image and satisfaction and increased perceived value for institutions (Teeroovengadum *et al.*, 2019). The importance of the relationship seemed to be an industry characteristic. However, in the situation of developed schooling, quality of facility, change (technical) was a good image predictor (Teeroovengadum *et al.*, 2019). Physical quality is related to the nature of the service. Interaction with service providers (including automation services) by creating quality components and the quality of company interactions represents the image provided by service providers to current and target customers. For Kenworthy (1984), In most cases, users will see companies, suppliers, and resources that emphasized the importance of the company image while interacting. Oliver and Richard (1980) stated that reputation and image play an important part in determining customer prospects. However, the agency was having trouble establishing a relationship between image and quality of service, and the components were wealth, social welfare, and human development (Sultan & Wong, 2010).

The empirical results obtained in various service environments supported the positive relationship between image and service quality (Jayasiri *et al*., 2015). The differentiated size, functionality, and technology of service quality and test the impact on images. In other words, at educational institutions, students perceived that image and quality of service are closely related (Shurair & Pokharel, 2019).

2.3.7 University Image and Student Satisfaction

Research in this area was generally heavily influenced by the marketing literature focusing on the quality of Higher Education Services (HESQUAL) and related concepts such as student satisfaction, perceptions, values, and visualization (Teeroovengadum *et al.*, 2019). Thus, competition might be fierce due to institutional attempts to build images in higher education systems (Stimac & Simic, 2012). Faculty also affected student satisfaction, and student loyalty (Doña-Toledo *et al.*, 2017). Unfortunately, little research was conducted to determine the relationship between university service and faculty quality, satisfaction, and loyalty (Chandra *et al*., 2019). It also identified factors that influence student satisfaction at the higher education level. In addition, it was found that image had the greatest impact on student satisfaction (Azoury *et al.*, 2013).

Once again, the results represented that the picture had a huge impact on student loyalty (Chang & Chen, 2008). Additionally, research showed that student satisfaction at the higher education level was influenced by perceived values (DeShields *et al*., 2005). The influence of variable detection values has been shown to be one of the most important factors after visual effects (Karimi *et al*., 2016).

2.3.8 University Image and Student Loyalty

The effect of the image on the stability of the image was also tested (Chandra *et al*., 2019). According to four researchers, images had a huge impact on loyalty (Kandampully & Suhartanto, 2000). Furthermore, satisfaction, image and perception values positively impacted loyalty to each higher education institution (Teeroovengadum *et al*., 2019). The university imagery affected satisfaction, and loyalty (Doña-Toledo *et al*., 2017). Unfortunately, only a minority of educations was shown to confirm the relationship between quality of service, image of the university, satisfaction, and loyalty (Chandra *et al.*, 2019).

It was clear that the agency's image greatly influences customer loyalty and retention (Dick & Basu, 1994). Bloemer and De Ruyter (1998) stated that there was no direct effect on customer loyalty images. Eskildsen and Kristensen (2008) found that variable images have significant impact on loyalty of higher education students.

2.3.9 Student Satisfaction and Student Loyalty

Ismanova (2019) found a confident impact of satisfaction on the loyalty. However, the positive and important impact on student satisfaction on student loyalty (Chandra *et al*., 2019). Another study conducted by Alotaibi *et al*. (2016) showed a positive and significant impact of quality of service on student satisfaction in developing student loyalty. Raposo *et al.* (2009) also pointed out that undergraduate allegiance was important to the satisfaction.

The important thing was that if any school did not have a student, it did not need an educational institution. Therefore, understanding the relationship between student satisfaction, and loyalty would help colleges develop good operational strategies (Appuhamilage & Torii, 2019). Thomas (2011) examined on satisfaction and reputation of students at major universities on student loyalty. Muhammad *et al.* (2018) stated that the study of relationship between service quality and satisfaction, service quality and loyalty, satisfaction and loyalty, respectively.

The research results had shown that service quality has a positive effect on student satisfaction, and student satisfaction has a positive effect on student loyalty (Martha-Martha & Priyono, 2018). It also did not have a significant impact on student loyalty (Mohamad & Awang, 2009). Duarte *et al.* (2012) showed that studies of the factors influencing higher education services.

Likewise, there was a strong correlation between student satisfaction and student loyalty (Schreiner, 2009). Wan and Chan (2013) determined that whether student satisfaction, quality of service, and university reputation affected customer loyalty. Moreover, the studies

had shown that all independent variables had a positive and significant impact on loyalty (Kunanusorn & Puttawong, 2015).

2.4 Previous Studies

In this section, the researcher explained ten (10) relevant previous studies that were applied to support this study. The first previous study was conducted by Navarro *et al*. (2005), who investigated a new administration component for university in terms of offered course satisfaction. The second previous study was conducted by Bhalla and Das (2018), who studied on the perspectives of effectiveness determinants in public higher education students. The third previous study was conducted by Ali *et al.* (2016), who studied on student statisfaction, image and loyalty affected on the quality of higher education service. The fourth study was conducted by (Teeroovengadum *et al*., 2019), who studies on "Higher education service quality, student satisfaction and loyalty". The fifth study was conducted by Helgesen and Nesset (2007), who studies on "The influence of university image on student behavior". The sixth study was examined by Annamdevula and Bellamkonda (2016), who studied on "The effects of service quality on student loyalty: the mediating role of student satisfaction". The seventh study was done by Chandra *et al.* (2019), who studied on "The influence of service quality, university image on student satisfaction and student loyalty". The eighth study was undertaken by (Appuhamilage & Torii, 2019), who studied on "The impact of loyalty on student satisfaction in higher education". The ninth study was completed by Osman and Saputra (2019), who studied on "A pragmatic model of student satisfaction: a viewpoint of private higher education". The tenth study was pursued by Subrahmanyam (2017), who studied on the "Relationship between service quality, satisfaction, motivation and loyalty".

Navarro *et al*. (2005) investigated a new management component for satisfaction with the presented process in Spain. The researchers were positively influenced by five areas in which they studied student loyalty and student satisfaction: teaching methods, course

management, tutoring staff, enrollment, and infrastructure. A survey questionnaire was used in this study. Researchers surveyed the people who have worked during the course. The analyzed data were derived from information obtained from surveys by students about courses identified in the 2003 school year after completing the registered courses. Although the number of respondents to the survey was 442, the number of questionnaires that fit to the purpose of this study was 369, representing a response rate of 83.5%. The results showed three dimensions that determined student satisfaction in this course. Using the statistically significant results for this satisfaction, teacher education and course management, and lecture satisfaction were also found that it was a good fit for human communication and good for customers. Loyalty was measured by the willingness to return to other courses offered by the same institution.

Bhalla and Das (2018) concentrated on the "determinants of viability in open advanced education understudy's' perspective" in India. Scientists considered eight parts of fulfillment (decidedly influenced by offices, foundation, scholarly climate, arrangement of learning materials, college organization, understudy uphold administrations, extracurricular exercises, and monetary administration). Moreover, in a very much framed survey utilized for information assortment, the analysts analyzed the distinction in generally understudy fulfillment with college effectiveness as per populace factors at Punjab (India) colleges. An aggregate of 402 polls were disseminated and 369 were discovered to be helpful for investigation. The aftereffects of the SEM study showed that school accounts altogether affected understudy fulfillment, trailed by offices, foundation, learning materials, school organization, scholarly settings, and extracurricular exercises.

Ali *et al.* (2016) concentrated on an exploration named as "does advanced education administration quality influence understudy fulfillment, picture and dedication?", from the setting of Malaysia. Specialists examined five degrees of fulfillment among decidedly affected understudies: scholarly, non-scholastic, program issues, notoriety, and availability. The

investigation showed that worldwide understudies at state funded colleges in Malaysia are happy with the nature of administration in different controls. Three Malaysian state colleges in Kuala Lumpur utilized advantageous inspecting procedures to appropriate 400 surveys to unfamiliar understudies, and 241 were viewed as reasonable for the investigation. With 60% reaction rate, the investigation of the gathered information, assessed models, and model least-squares halfway underlying conditions used to test the speculations. There were not many constraints to this examination. Initially, these outcomes depended on the information from three global understudies from Malaysian State College. Besides, this investigation zeroed in on a moderately little example of worldwide understudies. Nonetheless, this examination utilized HEdPERF to survey the nature of advanced education administrations, which may preclude certain components that may influence worldwide understudy fulfillment.

Teeroovengadum et al. (2019) concentrated on "advanced education administration quality, understudy fulfillment and unwaveringness" from the setting of Finland. The analyst reviewed understudy fulfillment influenced by four measurements: perceptual worth (3 things), administration quality change (6 things), administration quality by work (9 things), and picture (5 things). One of the objectives of an understudy's college establishment. In view of the suggestions gave in the enduring writing, the analysts took an example of 500 respondents to figure out which reactions were delivered unusable because of missing information and irregular inquiry handling of 520. The full rundown of 501 amended the appropriate responses stays subsequent to screening for missing and anomalies. Due to the impression of administration quality, elements and positive effects of administration quality, understudy fulfillment was discovered to be influenced by administration quality, abilities, picture and view of significant worth. Nonetheless, it was because of the nature of past help. Key discoveries of the examination recommended that understudy fulfillment was impacted by

nature of administration, abilities, picture and view of significant worth. In any case, this was not because of the nature of administration.

Alves and Raposo (2010) studied on “The influence of university image on student behavior” in Portugal. This review highlighted the higher education student satisfaction process, showing how images could affect student satisfaction and loyalty. A visual-centric model of student satisfaction and loyalty was used to achieve the proposed goals. The model was tested using structural equations and a final sample of 2,687 students, and it was measured and understood by university's image with high importance due to student satisfaction and loyalty-building process. If higher education institutions competed with the image, the next step was to measure the university's image of the students. The second step was to check the state of the generated image, and how to fix it to moral replicate the proposed image. In this way, the study deepened the knowledge of the university image and contributes to increasing the importance of higher education institutions in retaining enrolled students and attracting freshmen.

Annamdevula and Bellamkonda (2016) concentrated on "The impacts of administration quality on understudy dependability: the interceding part of understudy fulfillment" in India. The training zeroed in on understudy fulfillment, where nature of administration was a first concern. Distinguishing factors, as opposed to nature of administration was critical to in general understudy fulfillment. Moreover, it recognized different factors like worth, picture, or institutional standing that could straightforwardly influence administration faithfulness. In view of the verbal exchange of the last up-and-comer, the understudy's criticism would be thought about based the understudy's assessment, and the examination would be more exact after the course was finished. Long haul examines gathered prescient boundaries and measures when the course would be vastly improved. The examination utilized an overview study plan and gathered information from three of the most established state funded colleges in Andhra

Pradesh, India to decide the connection between nature of administration, understudy fulfillment, and understudy devotion in the area. Advanced education utilized underlying condition models. This investigation tried the introduced research style and showed the job of an arbiter in understudy fulfillment between nature of administration and understudy devotion. Nature of administration was a vital factor in guaranteeing understudy fulfillment. Examination results showed that colleges had no reason for contrasts in age and sexual orientation structures however assumed a critical part in characterizing understudies' various impression of the construction being researched. The training zeroed in on understudy fulfillment, where nature of administration was fundamental. Already, recognizing factors as opposed to nature of administration was essential to by and large understudy fulfillment. Similarly, it is additionally essential to distinguish different factors like an establishment's worth, picture, or notoriety, which can straightforwardly affect administration reliability.

Chandra *et al.* (2019) examined on "The impact of administration quality, college picture on understudy fulfillment and understudy unwaveringness" in Australia. This investigation utilized an overview device received in past examinations. The nature of-administration construct comprises of 12 measurements, one of which was planned by the analyst and the rest changed by the other. There were 5 pointers for college representation, the rest was planned by scientists. There were six pointers of understudy fulfillment, and the leftover three were planned by analysts. At long last, understudy dedication comprises of five markers, three of which was planned by analysts. The general construction utilized a 7-point Likert score, going from 1 Emphatically Differ to 7 Firmly Concur. The aftereffects of this investigation were as followed: there was a positive and basic impact of administration quality on understudy fulfillment, and understudy fulfillment had a positive and basic impact on understudy faithfulness, positive or huge effect of nature of administration on understudy

dedication, and college's picture altogether affected both understudy fulfillment and understudy unwaveringness.

Appuhamilage and Torii (2019) concentrated on "The effect of reliability on the understudy fulfillment in advanced education" in Japan. In this examination, the specialists dissected the information utilizing the Underlying Condition Model (SEM), investigating the connection among things and designs utilizing the distinguishing proof factor examination, and afterward researched the connections that existed between the constructions utilizing the R program. An organized survey comprised of 52 inquiries and 10 organized models was utilized, and a sum of 257 understudies from Meijo College (private) finished the recently evolved poll utilizing the 7 Likert scales. The investigation showed the understudy fulfillment and devotion to school. Studies had shown that fulfillment decidedly affected college's administration conveyance and monetary guide. Besides, unwaveringness immensely affected understudy fulfillment. Then again, fulfillment straightforwardly affected steadfastness. It likewise in a roundabout way influenced picture, administration, and dedication insight. All the upsides of Fit File were inside the satisfactory levels. Along these lines, understudy fulfillment gave off an impression of being to some degree reflected in the above construction, administration picture, monetary help, and saw esteem.

Osman and Saputra (2019) examined "A down to earth model of understudy fulfillment: a perspective of private advanced education" in Malaysia. This record was planned to examine the connection between administration quality, program quality, institutional picture and understudy fulfillment from the setting of advanced education. This investigation likewise tried to clarify the intervening impact of institutional picture between administration quality, program quality, and understudy fulfillment. Underlying condition demonstrating was utilized to examine the presence of factors in mediations and theory testing. The examination subjects were fourth grade business understudies going to 9 "Level 1" private colleges in Bangladesh.

Information (n = 310) was gathered from understudies learning at a few private colleges in Bangladesh. Exploration had shown that picture assumed a part in interceding administration quality and understudy fulfillment. It was additionally discovered that the immediate way to nature of administration and understudy fulfillment was not genuinely critical. This intriguing data was indispensable for scholarly pioneers to continuously imagine that understudies expected some different option from the nature of administration. This implies that improving the nature of administration didn't really expand understudy fulfillment if different factors, for example, program quality and picture were undermined. The investigation likewise found that understudy fulfillment was not influenced by sexual orientation. Another fascinating thing that had sense was that the effect between the individuals who delighted in low funds/grants and the individuals who were not supported by low funds/last awards. There was no distinction between GPA in understudy fulfillment and family pay.

Subrahmanyam (2017) studied on the “Relationship between service quality, satisfaction, motivation and loyalty” in India. This study used a survey design on student attitude towards service quality and satisfaction, motivation and student loyalty. All 1,439 valid questionnaires were collected from 4 public universities in Andhra Pradesh, India, and the correlation between the 4 variables was tested using SEM. Structural models with direct or indirect relationships between structures had proven to be the best among competing models. These results supported the direct impact of student perceptions of service quality on student satisfaction and motivation. Furthermore, it had an indirect effect on student loyalty and discussed implications and findings and provided directions for future research. The results suggested that it was worthwhile for the university administration to allocate resources appropriately to provide better educational services. It was believed that this study had an important ability to create more accurate applications related to quality of service, especially regarding student satisfaction, loyalty and motivation.

Table. 2.2 Summary of Empirical Previous Studies

Title	Constructs	Author (s)	Year
"A new management element for universities: satisfaction with the offered courses"	- Teaching methods - Course administration - Teaching staff - Enrolment - Infrastructure - Satisfaction - Loyalty	Marzo Navarro *et al.*	2005
"Determinants of effectiveness in public higher education-students' viewpoint"	- Infrastructure facilities - Academic Environment - Placement services - Learning material - College administration - Student support services - Extracurricular activities - Financial Administration -Overall Satisfaction of students	Kaur and Bhalla	2018
"Does higher education service quality effect student satisfaction, image and loyalty?"	- Academic aspects - Non-academic aspects - Access - Program issues - Reputation - Student satisfaction - Image - Student loyalty	Ali *et al.*	2016

"Higher education service quality, student satisfaction and loyalty"	- Functional service quality - Transformative quality - Image - Perceived value - Student satisfaction - Loyalty	Teeroovengadum *et al.*	2019
"The influence of university image on student behavior"	- Images - Student expectations - Technical quality perceived - Functional quality perceived - Perceived value - Student Satisfactions - Student Loyalty - Word of mouth actions	Helena, Alves, and Mario Raposo	2010
"The effects of service quality on student loyalty: the mediating role of student satisfaction"	- Service Quality - Student Satisfaction - Student Loyalty	Annamdevula and Bellamkonda	2016
"The influence of service quality, university image on student satisfaction and student loyalty"	- Service Quality - University Image - Student Satisfaction - Student Loyalty	Chandra *et al.*	2019

"The impact of loyalty on the student satisfaction in higher education"	- Image - Environment - Facility - Expectations - Internationalizations - Services - Financial Support - Perceived Value - Satisfaction - Loyalty	Mallika Appuhamilage and Torii	2019
"A pragmatic model of student satisfaction: a viewpoint of private higher education"	- Service Quality - Program Quality - Institutional Image - Student Satisfaction	Osman and Saputra	2019
"Relationship between service quality, satisfaction, motivation and loyalty"	- Perceived Service Quality - Student Motivation - Student Satisfaction - Student Loyalty	Subrahmanyam	2017

Source: Constructed by the author (Based on Marzo Navarro *et al., 2005;* Kaur and Bhalla, 2008; Ali *et al., 2016;* Teeroovengadum *et al., 2019;* Helena, Alves, and Mario Raposo, 2010; Annamdevula and Bellamkonda, 2016; Chandra *et al., 2019;* Mallika Appuhamilage and Torii, 2019; Osman and Saputra, 2019; Subrahmanyam, 2017)

CHAPTER THREE

RESEARCH FRAMEWORK

This chapter introduced the framework that the researchers used to identify the factors of student loyalty having an impact by student satisfaction for 2nd, 3rd, 4th-grade business students, at Cambodian universities such as Western University in Phnom Penh, National University of Management, and Western University Kampong Charm Branch. This section began with a discussion of the applied theoretical framework that moved on to a conceptual framework to see how students are satisfied with the innovative management of the university. There were four parts in this chapter. The first part is a theoretical framework that presents four types of research used to develop conceptual frameworks. The second part is a conceptual task whose goal was to outline dependent and independent variables. The following is the research hypothesis, and the last part is the operation of variables accurately representing the meaning of the variables.

3.1 Theories and Theoretical Frameworks

In this study, the researcher modified the theoretical framework based on four core theories and four major previous research studies. The theory was developed from first principles and was compared to the formula that had appeared previously in the literature (Meinhart & Wereley, 2003). Modern anti-racism lacked a clear statement of the principles and theories at risk of turning the wheel with each new study. It continued to decrease until the slogan was meaningless. Allocations was at risk within the "can do" reform perspective dominated by politically effective language (Gillborn, 2006). The theory of services marketing (TSM), Theory of education leadership (TEL), Psychometric Theory (PT), and Equity Theory (ET) were applied as the core theories to develop a conceptual framework to explain user's innovative management (Bell & Martin, 2012).

Theory of Services Marketing (TSM)

Eiglier *et al.* (1997) model of company customer resources and demonstrated planning tools provided the typical marketing services that companies used to develop customer-oriented services and perform successful interactive marketing functions. In application of these tools related to buyer/seller interaction resource planning, there were five significant variables to be considered including service concept, service access, communication with employees/customers, value-added services and consumer impact. These variables were competitive means relating to the interactive marketing capabilities of the central service provider as shown in below figure (Grönroos, 1982). It was also considered as a marketing activity including the production and consumption of components of the service that consumers receive and evaluate, promotional activities, and interfaces between SPs, prices, and more. In this context, these elements of the model were not discussed in detail instead of description on the way of competition of interactive marketing in services works. In this marketing model variable, there were a message of traditional personal sales and non-interactive communication (Grönroos, 1982).

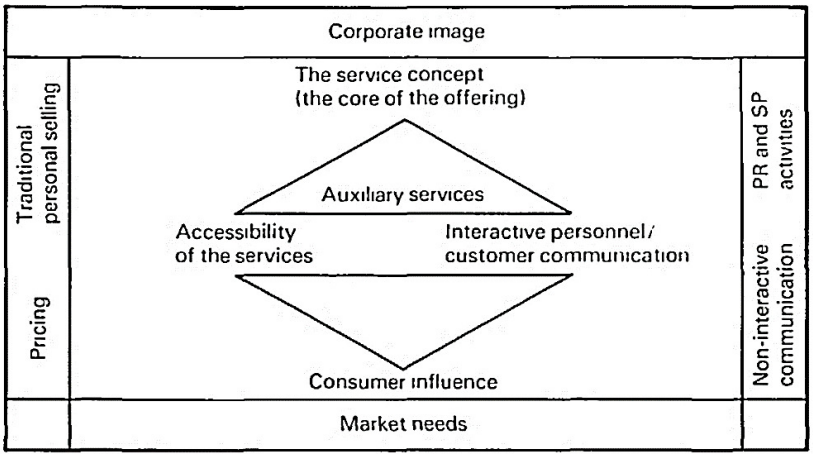


Figure 3.1 Marketing Service Theory

Source: Grönroos, C. (1982). An Applied Service Marketing Theory. *European Journal of Marketing*, 16(*7*), 36-37. https://doi.org/10.1108/EUM0000000004859

Theory of Education Leadership (TEL)

The education was a unique platform to work and learn by reconciliation of other theories in the field, which it was proved by the advantage of educational administration community. The popularity education in leadership theory changed in management was unable to understand changes beyond the current education policy environment, and then focused on restructuring change to meet educational needs in the 21st century (Hallinger & Leithwood, 1994). This thesis showed the state of leadership theory in the part of schooling management (Bamberger *et al*., 1989). The theoretical evaluation criteria were as follows (ability to prove science), Benefits (such as explanatory and predictive benefits) and fit (Capacity to connection gaps between existing theories or change understanding). Other scholars considered the idea of separating the dimension of teaching and learning because the theory and education were less relevant. However, this step must be differentiated from other educational leadership models (Berkovich, 2016).

Psychometric Theory (PT)

The edited measurements were called inventory theory. ToMI (Mind Inventory Theory) was to evaluate two different populations in two different studies (Hutchins *et al.*, 2012). The first study (the second study described later) examined the psychological characteristics. It was evaluated for two different populations in two different studies in students of ASD (Autism Spectrum Disorder). Secondly, the researchers tested the reliability of ToMI's iterative test, because the VMA (Voids in the Mineral Aggregate) was involved in predicting ToMI's ability in students with ASD.

The strength of the correlation between the ToMI score and the Verbal Mental Age (VMA) score was provided. Assessment to determine the accuracy of the components of the indicators (Frith & Happé, 1994). In addition, ToMI's accurate index was expected to provide

a score related to the student's performance on the battery, and eventually, ToMI determined component size by measuring component analysis, surveying principles (Hutchins *et al.*, 2012).

Equity Theory (ET)

Equity theory is a type of management theory, practiced at a fair price (Bell & Martin, 2012). It had been suggested that consumers who felt more about their purchases and past market behaviors tend to spend in the market, while consumers who felt they received more were more likely to spend less. This white paper combined the resources and relationships of the stock exchange and market exchange theory of equal cost and profit theory, which explained that each consumer recognized their profits and losses. Furthermore, Dorsch *et al.* (2017) determinized market fairness, personal perception of drive consumption.

This allowed the work to propose and test whether the portfolio's consumer experience, consumption behavior, and acceptance changes, especially to other market stakeholders, were accepted and reduced. The strength of the relationship between the ToMI score and the verbal mental age (VMA) score was provided. Huseman *et al.* (1987) measured sensitivity to consumers' profits and loss in exchange for marketing based on two studies, this index categorized consumers and market managers equally to determine perceptions of equality or inequality in the balance of their profits and common interests (Creyer & Ross, 1996).

This was the first time that a study of social consumption in terms of capital theory had helped to create a new way of dividing social and social consumer groups (Ross & Kapitan, 2018).

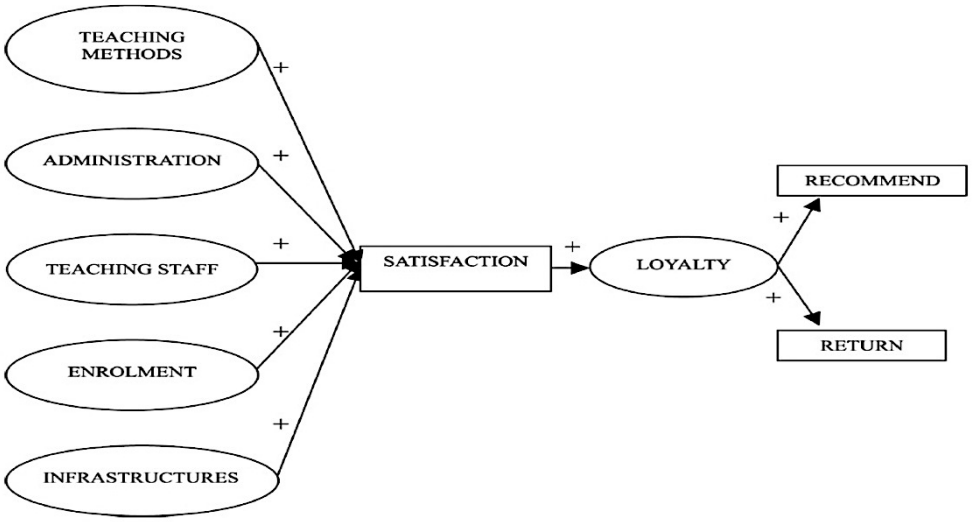


Figure 3.2 Theoretical Framework of "The new management elements of the university: I am satisfied with the courses offered"

Source: Marzo Navarro, Mercedes Pedraja Iglesias, Marta Rivera Torres, Pilar (2005). A new management element for universities: satisfaction with the offered courses. International Journal of Educational Management, 19(6), 505-526. https://doi.org/10.1108/09513540510617454

Navarro *et al.* (2005) found that the study of student loyalty and student satisfaction were positively influenced by five aspects: teaching methods, faculty management, enrollment, and infrastructure. The researchers developed the concept in Theory of Service Marketing (TSM) with five sub-variants of student satisfaction: teaching method, teaching administration, teaching, and infrastructure. Student loyalty was one of the main goals of educational institutions. Therefore, the main motivation for the university was to analyze student loyalty and the advantages this loyalty gave to the university. To study the relationship between these variables, researchers suggest eight hypotheses.

Researchers also used blending methods in their studies. Researchers developed the proposed framework and research tools based on previous literature reviews and implemented student-centered research and research techniques in the Faculty of Economics and

Management of the Language Research Institute at Spanish university. Consequently, the questionnaires consisted of 18 items; 5 items for teaching methods, 3 items for course administration, 3 items for teaching staff, 3 items for enrolment, 1 item for infrastructure development, 1 item for satisfaction, and 2 items for loyalty.

The analyzed data were derived from information obtained from surveys by students on the courses identified in the 2003 school year after completing the courses. Although the number of respondents to the survey was 442, the number of questionnaires that fit to the purpose of this study was 369, representing a response rate of 83.5%.

In this study, investigators used exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA) and a measurement model to verify the accuracy and reliability of the data. Research results showed three dimensions that determine student satisfaction with these courses because they used a statistical sign method that did not affect satisfaction.

In addition, the satisfaction of this course had a positive impact on customer loyalty as measured by good interpersonal communication and a willingness to return to the course provided by the same institution.

It could be concluded that this study applies to certain universities and was worth expanding to other higher education institutions. The results showed three dimensions that determined student satisfaction in this course: education, instructor and curriculum management-using statistically significant results for this satisfaction, it has also been confirmed that lecture satisfaction was good for human communication and had a positive effect on customer loyalty as measured by the willingness to return to other lectures offered by the same institution.

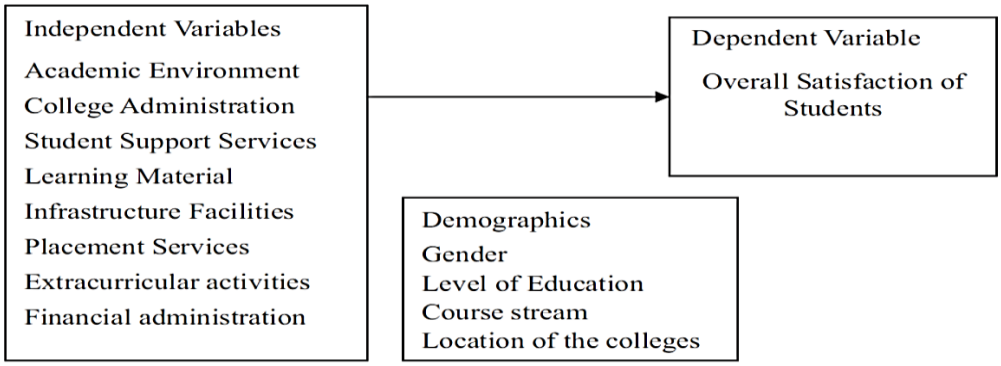


Figure 3.3 Determinants of effectiveness in public higher education-students' viewpoint

Source: Kaur & Bhalla, (2018). Determinants of effectiveness in public higher education-students' viewpoint. *International Journal of Educational Management*. 32(*6*), 1135-1155. https://doi.org/10.1108/IJEM-09-2016-0188

Kaur and Bhalla (2018) included that overall satisfaction was in eight dimensions (positively influenced by facilities, infrastructure, academic environment, placement services, study materials, university administration, student support services, educational activities, and financial management). Further research investigated differences in overall student satisfaction with university efficiency based on demographic variables at Punjab State University (India), and the researchers developed the concept in Educational Leadership Theory (TEL)), and Psychological Theory (PT).

Well-formed questionnaires were used to collect data. In general, experts recommended a group of 55 items related to various aspects of college education for the eight factors of college effectiveness such as Academic environment (13 items), University administration (5 items), Student support services (4 items), Learning materials (6 items), Infrastructure facilities (14 items), Placement services (5 items), Extracurricular activities (4 items), Financial management (4 items), One dimension related to the overall satisfaction of students (6 items)

with the efficiency of the university. Overall student satisfaction consists of six statements related to the university's overall expectations and experience. A total of 402 questionnaires were distributed and 369 were found to be useful for analysis. According to the respondents' demographics, 40.1% of the respondents were male and 59.9% were female. By age, under 19 years old 14.9%, 19-22 years old, 36.3% (48.8%), 22 students were higher, and by academic background, 61.5% and 38.5% were undergraduate. According to the level of education, 30.9% of students were in the arts, 24.1% in the commercial world, 21.4% in the science world, and 23.6% in the computer world. According to university location, 57.2% of the respondents came from urban areas and 42.8% came from rural areas. The SEM model found that infrastructure facilities, academic environment, learning materials, university administration, extracurricular activities and financial management had a positive and significant impact on student satisfaction. This article examined the effective components of Punjab State College (India) from a student's perspective and investigated whether these factors affected student satisfaction.

Further studies looked at differences in overall student satisfaction with college grades based on demographic variables. Exploratory Factor Analysis (EFA) was used to investigate government factors, and Structural Equation Model (SEM) was used to analyze the effects of these factors. For student satisfaction, t-Test and ANOVA were used to identify differences in student satisfaction based on demographic variables.

In conclusion, to study on student satisfaction linked with college efficiency, the researchers built a comprehensive survey framework that covers all eight aspects of college efficiency. Average scores indicated that students were unsatisfied with placement services, transportation facilities, fully equipped classrooms, waiting rooms, playgrounds, library services, audiovisual equipment, and the university's IT facilities. Most students were satisfied with the university's academic environment, financial management, and extracurricular

activities. The results of the SEM study indicated that college finance had a significant impact on student satisfaction, followed by facilities, infrastructure, learning materials, college administration, academic settings, and extracurricular activities.

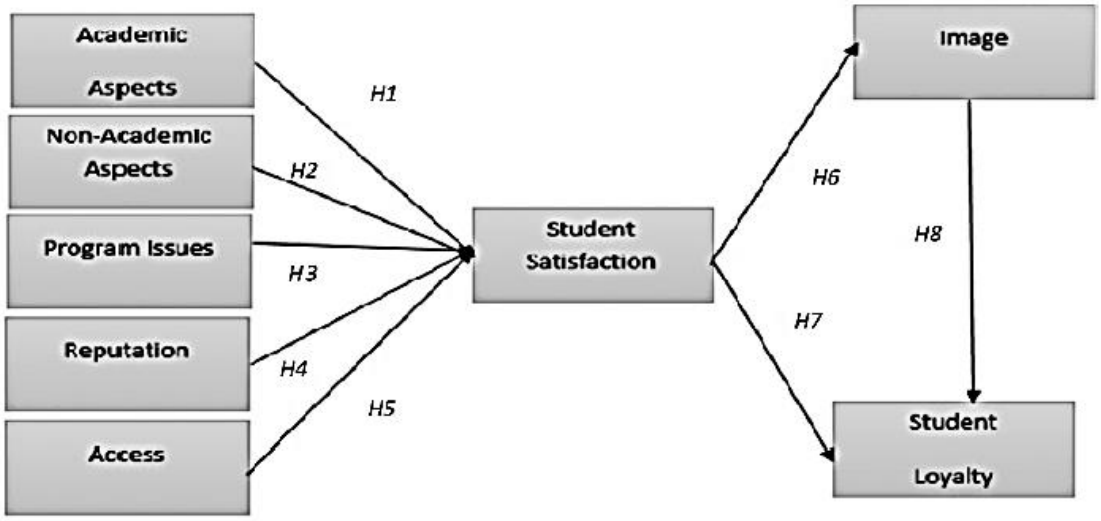


Figure 3.4 Does higher education service quality effect student satisfaction, image and loyalty?

Source: Ali, Faizan Zhou, Yuan Hussain, Kashif Nair, Pradeep Kumar Ragavan, Neethiahnanthan Ari (2016). Does higher education service quality effect student satisfaction, image and loyalty? *Quality Assurance in Education*, *24*(1), 70-94. https://doi.org/10.1108/QAE-02-2014-0008

Ali *et al.* (2016) concluded that the levels of student satisfaction were positively affected in five areas: academic, non-academic, program issues, reputation, and accessibility. This study showed that international students at public universities in Malaysia were satisfied with the quality of service in other disciplines and that psychometric theory (PT) has been developed accordingly.

The study aimed to study the impact of quality of service at Malaysian universities on international student satisfaction, institutional image, and loyalty. Three Malaysian state universities in Kuala Lumpur used convenient sampling techniques to distribute 400 questionnaires to foreign students, and 241 were considered suitable for analysis. The analysis report had 60% Response Rate after analyzing the collected data, evaluate models, and model least-squares partial structural equations used to test the hypotheses.

There were some limitations to this study. Firstly, these results were based on data from three international students from Malaysian State University. Secondly, this study focused on a relatively small sample of international students. Additionally, the study used HEdPERF (Higher Education PERFormance) to assess the quality of higher education services, which may rule out certain factors that may affect international student satisfaction.

Furthermore, the study emphasized on the importance of university administration in Malaysia and verified HEdPERF (Higher Education Outcome) levels in the context of Malaysian State University for international student recognition. The study also expanded the HEdPERF range and examined its impact on student satisfaction, institutional image, and loyalty.

In turn, the study emphasized on the importance of university administration in Malaysia. This study examined the HEdPERF levels (higher education outcomes) from the context of Malaysian state universities for international student acceptance. The study also expanded HEdPERF and examined its impact on student satisfaction, institutional image, and loyalty.

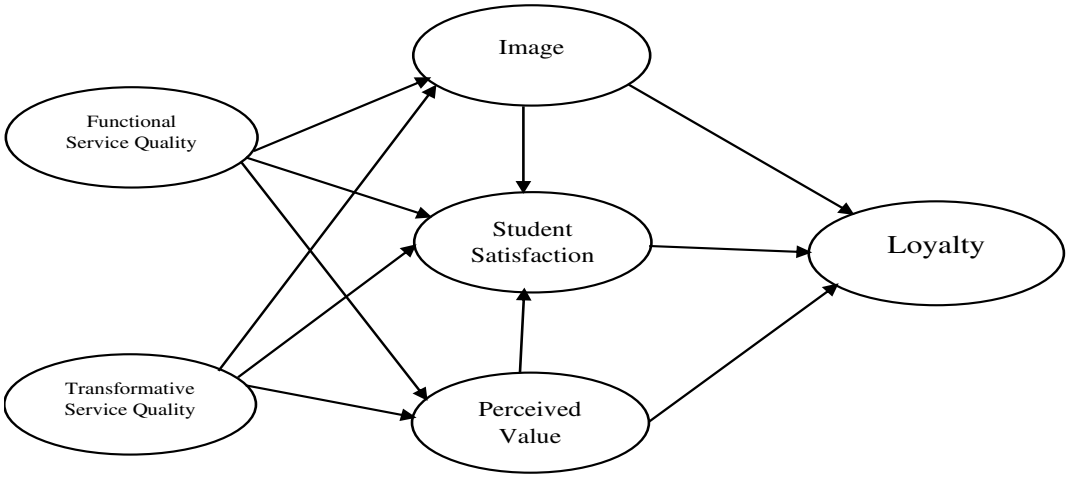


Figure 3.5 Higher education service quality, student satisfaction and loyalty

Source: Teeroovengadum, Viraiyan Nunkoo, Robin Gronroos, Christian Kamalanabhan, T. J. Seebaluck, Ashley Keshwar (2019). Higher education service quality, student satisfaction and loyalty. *Quality Assurance in Education*, 27(*4*), 427-445. https://doi.org/10.1108/QAE-01-2019-0003

In this study, the satisfaction level of students was affected by the four dimensions, for instance perceived value (3 items), service quality change (6 items), service quality by function (9 items), and image (5 items). Student loyalty had become one of the goals of university institutions.

The researchers developed the concept in the Equity Theory, and, according to Kline (2011), sample sizes were chosen to meet the requirements for using a suitable structural equation model, where there must be at least 200 respondents in case of missing data. Therefore, the researcher outlined to recommend a sample audience of 520 respondents for 500 participants. The study will be valid if 501 was retained due to missing values and borders were set. Because of perceptions of service quality, dynamics, and positive impact on service quality, student satisfaction was found to be influenced by service quality, skill, and image and value perception in spite of the quality of the previous service.

The quality of service on both sides was an important factor in predicting and appreciating the image. This study suggested that a comprehensive quality of service measure should be considered a higher model-based quality of service, and it was worthwhile to clearly distinguish between business quality and technology.

The duties and skills played an important role in shaping students' perspectives and behavior. Firstly, in the existing literature, quality of service was not considered a second factor model in structural models such as student satisfaction, loyalty, lack of accuracy or inequality. Secondly, previous research tests, such as predictive models, greatly neglected the quality of the 3rd order change.

In conclusion, this study aimed to investigate the level of Higher Education Quality of Service (HESQUAL) through the identification and testing of an improved structural model that predicts student loyalty through image, value, perception, satisfaction, and quality of service. In addition to validating the HESQUAL scale using the validation method, the document had two main limitations. Important findings showed that student satisfaction is influenced by service quality, skills, image and value perception. However, it was not because of the quality of service, and functional service quality was how to serve customers the manifestations of service (example: politeness, attentiveness, promptness) are quite objective and easy to measure. However, problems arise when trying to assess the quality of work.

3.2 Conceptual Framework

The conceptual framework allowed managers to think about problems (Hunt & Madhavaram, 2006). It referred to the description of consequent concepts or in grid, helping organize to solve problems, namely marketing (Rossiter, 2001). The literature on marketing and business strategy had created several conceptual frameworks. Examples included the BCG growth-share matrix, marketing audit process, marketing mix selection phase, and marketing plan development process. Porter's framework, SWOT framework, and the whole value chain

concept could be considered as a framework that helped managers think about problems. Moreover, around investigators, Brashear *et al*. (2012) had developed and introduced the conceptual framework based on other concepts such as marketing plan and marketing audit. Biggadike (1981) designated marketing mixes, advertising strategies, and inspections as conceptual frameworks that could facilitate marketing operations (Hunt & Madhavaram, 2006). Porter's five force model was clearly defined, and the BCG Growth-Share Matrix and Marketing Plan were conceptualized under frameworks that facilitated management operations. All the frameworks mentioned in the previous paragraph were useful for task management, but in space constraints, the most popular framework, SWOT analysis, should be described in detail. Strengths, Weaknesses, Opportunities, and Threats (SWOT) began working at Harvard Business School's Business Policy Academy (Madsen, 2016).

A clear conceptual framework was answering these questions and participation in the previous evaluation (Wolf *et al.*, 2013). Most of the vulnerabilities resulted in intensive conceptual work, including glossary (Parry & Reynolds, 2007), an important frame *(Turner et al*., 2003), and the classification of various methods for evaluation (Füssel, 2007). Therefore, the conceptual framework of this study was developed based on existing theories and previous empirical studies, as presented in Figure 3.6.

These were because this study aimed to study on the user's behavioral intention in implementation, Reyes-Menendez *et al.* (2018) of using innovative management via higher education in Cambodia. The researcher applied four major theories (TSM, TEL, PT, and ET) and four major previous research frameworks to support and develop the conceptual framework of this study. The four major theories provided a study of student satisfaction and loyalty. For the previous research framework, the first previous research framework was conducted by (Navarro *et al.*, 2005). It provided the study of student loyalty, and student satisfaction in terms of infrastructure development, enrolment, teaching staff, administration, and teaching methods.

The second previous research framework was conducted by (Kaur & Bhalla, 2018). It provided the study of student satisfaction in terms of infrastructure facilities, academic environment, placement services, learning material, college administration, student support services, extra curriculum activities, and financial administration. The third previous research framework was conducted by (Ali *et al.*, 2016). It provided the study of image and loyalty in terms of student satisfaction, and student satisfaction in terms of academic aspects, non-academic aspects, program issues, reputation, and access. The four previous research framework was conducted by (Teeroovengadum *et al*., 2019). It provided research on loyalty to image, student satisfaction and value perception, student satisfaction on image quality, service quality change and function-based service quality, and student image value perception. The value recognition in terms of service quality change, function-based quality, and changing service quality.

The conceptual framework of this study was developed based on eight variables. There were three types of variables in this study; independent, mediator, and dependent variable. Due to the possibility of duality between the independent variables, a stepwise multivariate regression analysis was performed to evaluate the degree to which each independent variable helped explain the variance of the dependent variables (Guimaraes, 2011). The independent variable in this study was student satisfaction. (In terms of the education method, facilities, infrastructure, academic learning media, service quality, university change, and image) and university image (in terms of service quality, change, and student satisfaction). Understanding the role of mediators in terms of mediation and the effects of such behavior on settlements, relationships, and other outcomes were not a new question in education, mediation, or the real world (Borton & Paul, 2018). In addition, factors such as conflict intensity, situational constrains, cooperative vs competitive disputant relations, overt vs covert issues and processes are appropriate and vary for value of mediator practices (Coleman *et al.,* 2017). There was only one mediator in this study and rank transformation applied to all variables. Lang and Lundholm

(1993), which were suitable, as the dependent variable depended on the mass measurement and the properties of the independent variable were mixed (some are continuous, some of the variable finite elements were continuous) (Castellano *et al*., 2019). The only variable based on this study was student loyalty, which was central to this study because it reviewed innovative loyalty management for higher education students in Cambodia.

Regarding the conceptual framework, the researcher aimed to investigate ten relationships between these variables. The first relationship was between teaching methods and student satisfaction; teaching methods were an exogenous variable and student satisfaction was an endogenous variable. The second relationship was infrastructure facilities and student satisfaction; in which infrastructure facilities were an exogenous variable and student satisfaction was an endogenous variable. The third relationship was learning material and student satisfaction; learning material was an exogenous variable and student satisfaction was endogenous variable. The fourth relationship was academic aspects and student satisfaction; academic aspects were an exogenous variable and student satisfaction was an endogenous variable. The fifth relationship was changing quality of service and student satisfaction, in which service quality turned into exogenous and student satisfaction turned into exogenous variable. The sixth relationship was quality, changing service, and the image of the university. The quality of service changed externally, and the image of the university changed externally also.

The seventh relationship was university image and student satisfaction; university image was an exogenous variable and student satisfaction was an endogenous variable. The eighth relationship was student satisfaction and university image; student satisfaction was an exogenous variable and university image was an endogenous variable. The ninth relationship was university image and student loyalty; university image was an exogenous variable and student loyalty was an endogenous variable. The last relationship was student satisfaction and

student loyalty; student satisfaction was an exogenous variable and student loyalty was an endogenous variable. Moreover, this study applied first-order and second-order construct analyzed technique. The student satisfaction considered as second-order construct by teaching methods, infrastructure facilities, learning material, academic aspects, transformative service quality and university image as first-order construct. Includes university image as second-order construct by transformative service quality and student satisfaction as first-order construct. In this research used eight variables and nine hypotheses via answering 54 questions from three higher education institutions in Cambodia.

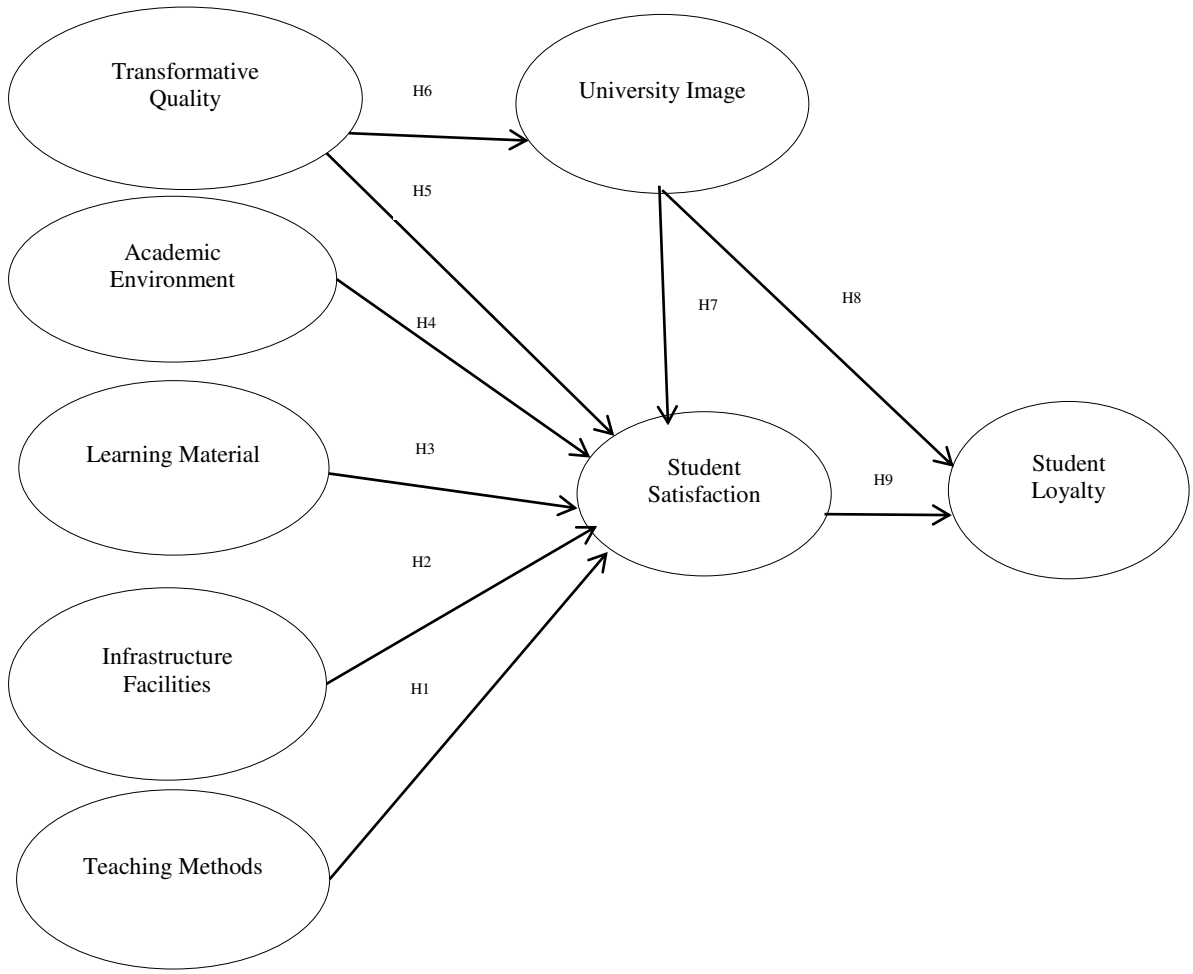


Figure 3.6 The conceptual Framework of "Determinants of Business Education on Student Satisfaction in Higher Education: A Case Study in Cambodia"

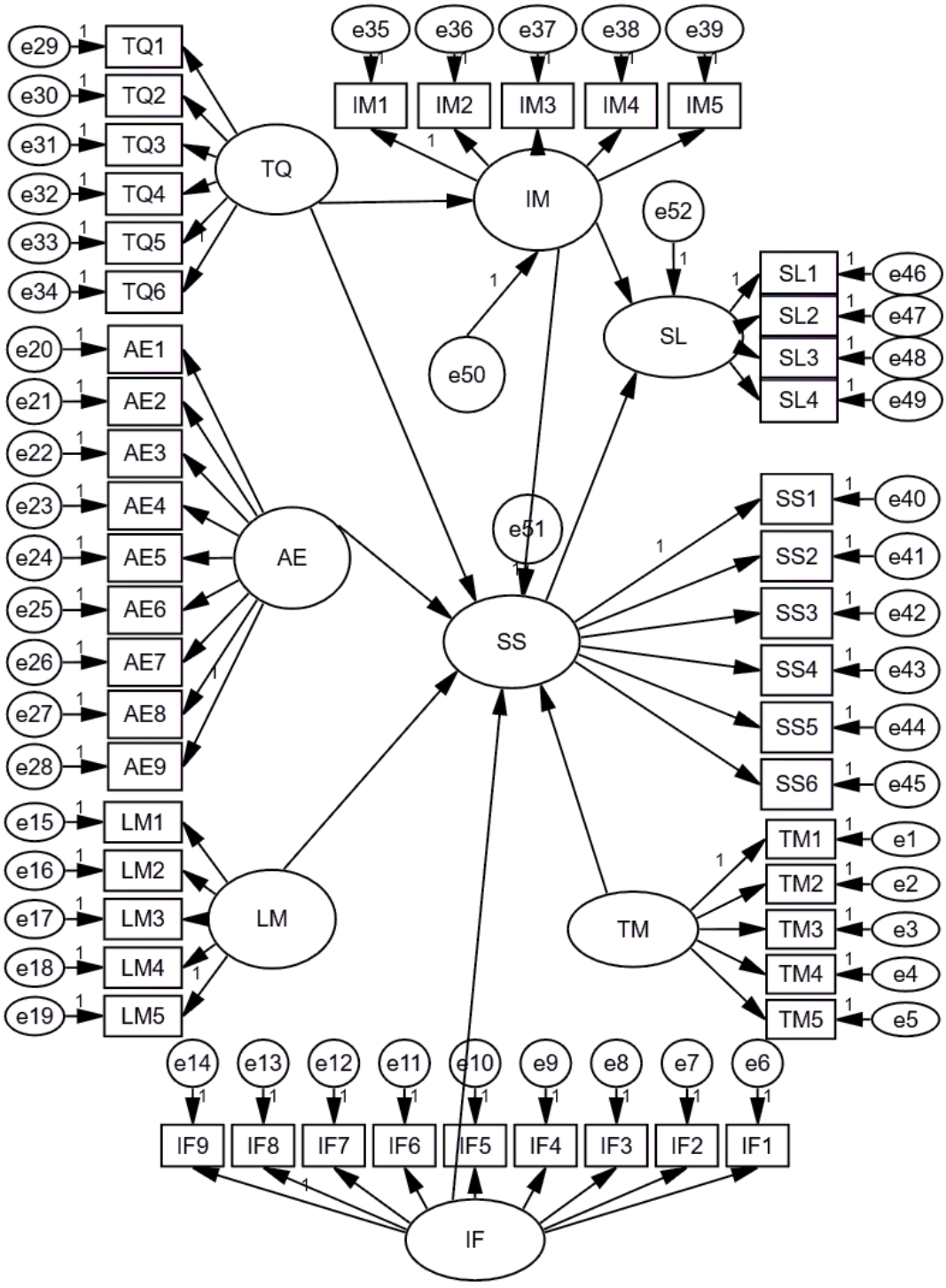


Figure 3.7 Graphic output simulation of the conceptual framework of this study by the statistic software package

3.3. Statistical Hypothesis

These assumptions were considered unproven due to the accumulation of the data, leading to re-induction problems, and the only possible verification was the false hypothesis or the impossibility of the problem theory (Retolaza & San-Jose, 2017). Similarly, the alternative hypothesis was "a statistical statement that the parameter was not a parameter specified by the null hypothesis" (Mohammed *et al.,* 2019). In this research we focus only on students in illustrating the statistical hypothesis.

Hypothesis 1

H1o: There is no significant relationship between teaching methods and student satisfaction.

H1a: There is a significant relationship between teaching methods and student satisfaction.

Hypothesis 2

H2o: There is no significant relationship between infrastructure facilities and student satisfaction.

H2a: There is a significant relationship between infrastructure facilities and student satisfaction.

Hypothesis 3

H3o: There is no significant relationship between learning materials and student satisfaction.

H3a: There is a significant relationship between learning materials and student satisfaction.

Hypothesis 4

H4o: There is no significant relationship between academic aspects and student satisfaction.

H4a: There is a significant relationship between academic aspects and student satisfaction.

Hypothesis 5

H5o: There in no significant relationship between transformative service quality and student satisfaction.

H5a: There is a significant relationship between transformative service quality and student satisfaction.

Hypothesis 6

H6o: There is no significant relationship between transformative service quality and university image.

H6a: There is a significant relationship between transformative service quality and university image.

Hypothesis 7

H7o: There is no significant relationship between university image and student satisfaction.

H7a: There is a significant relationship between university image and student satisfaction.

Hypothesis 8

H8o: There is no significant relationship between university image and student loyalty.

H8a: There is a significant relationship between university image and student loyalty.

Hypothesis 9

H9o: There is no significant relationship between student satisfaction and student loyalty.

H9a: There is a significant relationship between student satisfaction and student loyalty.

3.4 Operationalization of Variables

The operational definition was considered good enough and encompassed all aspects of the dimension or expresses a competitive advantage. This operational definition could be used as an accurate measure of competitive advantage in empirical research. More specifically, as described in operational definition, observable properties could be used to list and measure competitive advantage variables (Sigalas *et al.*, 2013). However, scholars must provide a clear definition and come up with comprehensive guidelines for competitive advantage before developing a reliable and accurate measure of competitive advantage (Sigalas *et al.*, 2013). Therefore, the researcher developed the concept of all variables in the conceptual framework

of this study. In this section, researchers described the independent, control, and dependent variables in this study. Indicating the reliability of the independent variable was a little inconvenient at the beginning and the quality of the experimental data could be greatly improved (Peterson *et al*., 1982).

Therefore, the researcher had made arguments that supported the investigation of personal variables on the relationship between identity threats and antisocial behavior. However, data for screening variables and dependent variables were collected on two separate administrative days (Aquino & Douglas, 2003). In addition, the observation technique focused on the dependent variable. But all the text about observing variables depend on observing independent variables (Peterson *et al.*, 1982). The researcher's objective was to investigate the relationship between the independent and control variables and the dependent variable of student loyalty. The conceptual definition of each variable and operating element are as follows:

Table 3.1 Operationalization of Variables

Construct	Conceptual of Variable	Operational Component	Measurement Scale
Student Satisfaction	The study focuses on satisfaction Consumption, satisfaction studies were revised to Elliot and Shin (2002, p. 198) as “the favorability of a student’s subjective evaluation of the	• Using human skill and project management to apply with student loyalty. • Using university supports to apply with student loyalty. • A proper use of labor market, which is needed to apply with student loyalty.	Interval

(continued)

	various outcomes and experiences associated with education, and being shaped continually by experiences with campus life." Furthermore, student satisfaction could be described as short-term attitudes gained through assessment of experience and performance in educational services (Elliott & Healy, 2001). There were 6 sub variables: Teaching methods, Infrastructure facilities, Learning material, Academic Aspects, Transformative Quality, and university image.		

(continued)

Teaching Methods	In this study, In general, the most successful aspect of teaching research methods was for students to apply the knowledge they have learned in college and in practice (Morris, 2006).	• Using theory and practice to apply with student satisfaction. • Using documentation to apply with student satisfaction. • The subjects were important for student satisfaction. • Using the extent and distribution to apply with student satisfaction.	Interval
Infrastructure facilities	This study indirectly promoted O&M progress and required complex organization of structures, conveniences and setup *(Mahazir et al.*, 2013)	• Using university facilities to apply with student satisfaction. • Using classrooms to apply with student satisfaction. • Using waiting rooms to apply with student satisfaction.	Interval
Learning Material	In this study, learning materials were used within the training seminar, and second, the faculty explained how they could do it through design and architecture. (Nicholls, 2002).	• Using modern laboratories to apply with student satisfaction. • Using equipment of up to date technology to apply with student satisfaction. • Using innovation in teaching and research	Interval

Academic Environment	In this study, some business analysts considered the university the norm in a sense. Symbolically integrated common promises and common ideals. Dominates other aspects of corporate life (Harman, 1989).	• Using instructors with teaching to apply with student satisfaction. • Using instructors with documentations to apply with student satisfaction.	Interval
Transformative Quality	In this study, in an advanced magazine, the researcher suggested that "They are, though, inadequate operationalizations, often dealing only with marginal aspects of transformative quality and failing to encapsulate the dialectical process" (Harvey & Knight, 1996).	• Using knowledge to apply with university image and student satisfaction. • Using self-confident to apply with university image and student satisfaction. • Using problem solving to apply with university image and student satisfaction.	Interval
University Image	In this study, Alves and Raposo (2010) who studied on	• Using Academic reputation to apply with student satisfaction and loyalty.	Interval

(continued)

	university image, emphasizing that the university's image as the recognition of the services provided by the university, that was, communication and awareness.	• Using brand image to apply with student satisfaction and loyalty. • Using quality output to apply with student satisfaction and loyalty. • Using qualification and prestigious to apply with student satisfaction and loyalty.	
Student Loyalty	In this study, hereinafter referred to as student and student loyalty means student loyalty during and after college (Amegbe *et al.*, 2019).	• Using trust to evaluate innovative management. • Using commitment to evaluate innovative management.	Interval

Source: Constructed by author

CHAPTER FOUR

RESEARCH METHODOLOGY

This chapter concluded the research hypotheses and conceptual framework presented in Chapter three, alongside with research methodology. The chapter is divided into eight parts. The first part described the research method used in this study to explore factors related to student loyalty to innovation management through Cambodian higher education institutions. The second part described the respondents of this study (target population, sampling technique, and sample size). The third part identified the research tools of this study that described the different parts of the questionnaire. The fourth section described the validity, internal consistency, and reliability of the research device. The fifth section categorized the pilot tests. The sixth section described the data collection process. The seventh part was statistical data maintenance. Descriptive analysis was applied to the analysis of respondents' demographic factors, and inference analysis was applied to test the hypothesis by modeling structural equations that are statistically maintained. The final part of this chapter was the summary of the statistical tools used in hypotheses testing.

4.1 Research Method Used

This study is based on a quantitative approach using survey questionnaires as a data collection tool. The participants had to individually fill out a questionnaire. All participants accessed online and the questionnaire was presented through Google forms survey due to Covid-19 pandemic restrictions (Abu-Ayfah, 2020). This questionnaire was created as an online questionnaire through Google forms survey to facilitate and accelerate data collection (Al-Hujran *et al*., 2014). For reliability, a pilot study was administered, and a questionnaire was distributed through a Google forms survey to business students from three higher education institutions. The data were collected through the Google forms survey, which was layer saved

in Excel format, and finally converted to SPSS data presented using the frequency and percentage of participants' responses to all survey messages. The survey contained a lot of questions about common usage patterns for the Telegram apps (Abu-Ayfah, 2020).

Similarly, Gokul (2014) stated that the self-response survey method is a time-saving and cost-effective way to collect data. Dunn (2013) defined self-managed questionnaires as surveys that respondents must fill out at their own responsibility. Moreover, Osseo-Asare *et al.* (2007) stated that the manual questionnaire was a technique used to collect data from respondents, and respondents must read and fill out the questionnaire by themselves. Besides, before investigators distributed questionnaires to target populations, researchers indexed object-objective consistency (IOC) for content consistency in the research tool. The researchers also used a pilot test to verify the reliability of each structure using a modified research tool. After collecting quantitative data, the researchers analyzed all the data using the accuracy of the structure of Convergence straightness, discriminant accuracy and structural equation modeling, in which the structural modeling (measurement and modeling) was the statistical treatment of this study.

4.2 Respondents and Sampling Procedure

Sreejesh *et al.* (2014) stated that sampling was the process of using a small number of components of the target population to conclude the entire population, and the population must be determined before choosing a sampling technique. Indeed, since structural equation modeling was a statistical treatment in this study, it was also important to determine suitable sample size for this study. Therefore, this section described the target population, sampling unit, sample size, and sampling procedure for this study.

4.2.1 Target population

Clark-Carter (2010) concluded that the target population made up of people who share actions on certain factors. Ali *et al.* (2016) mentioned that the target population was a complete group of relevant components involved in the test because it had information on researcher designed to collect. Also, Rawung (2013) specified that the target population was the person, records, or events that were the main focus of the study. Lillah *et al.* (2013) specified that the target population was defined as an entire group of elements with a common set of properties. Taherdoost (2016) indicated that the target population was a group of people whom the researcher was interested in researching.

The populace for this examination comprises of business understudies from three Cambodian Colleges, who are 18 years of age or more in their second, third, and fourth years in those advanced education organizations, living in Cambodia and learning in piece of undergrad understudy with business schooling. The scientist has utilized deduced Test Size Number cruncher for Primary Condition Models (SEM) from Danielsoper's site to allude the suggested least example size (Soper, n.d.). There were 8 idle factors and 49 noticed factors with a likelihood level of 0.05. The base example size as suggested is 444 respondents. Subsequent to screening all the reactions, the certified respondents for the examination were concluded at 500. In this research used probability and non-probability simpling technique to apply in data collections.

4.2.2 Sampling Technique

A multi-stage sampling technique was employed: purposive sampling methods were utilized to select two private universities (Western University based in Phnom Penh City and Western University based in Kampong Cham Province) and one public university in Cambodia for the survey, conducted between September and November 2020. The two private

universities involved in the study have been in business since 2003, thus their structures might have been well formed and their experience. The oldest public university (National University of Management) was selected because it was the first business-age university, and popular in business studies in Cambodia.

A stratified sampling method was used in the second stage to select key stakeholders as data sources. The questionnaires were requested to the university administration to create the student Telegram groups with the three higher education institutions (National University of Management, Western University Phnom Penh, and Western University Kampong Cham Branch), and then link of the Google forms survey was copied and sent into student Telegram groups. Foundation year students were not included in the sample due to lack of experience because college satisfaction and loyalty were not evaluated (Azoury *et al*., 2013).

Then, non-probability sampling was applied as a sampling procedure to find the relevant sampling units.

Therefore, in this study, researchers used sampling impossible as a sampling technique for qualitative and quantitative sampling procedures. Rather than non-probability statistics, it refers to choosing the composition of the sample based on the researcher's personal experience, expert judgment, and convenience (Darroch & Jenny, 2003). Similarly, Balakrishnan et al. (2007) proposed that impossible sampling was a sampling technique that selected elements based on the researcher's judgment of the entire population. According to (Daud & Ahmad, 2011), there were four cases of impossible sampling: convenient sampling, judgmental sampling, quota sampling, and snowball sampling. Regarding the fact, judgment sampling, convenience sampling, and snowball sampling was applied with satisfaction, and loyalty in the field of the business department in Cambodian higher education institutions.

Case 1. Judgment Sampling

Judgmental sampling, also known as autocratic sampling or specific sampling, was a sampling technique in which the members of the sample were not chosen alone for judgment by intellectuals and examiners (Greener, 2008). This sampling strategy was more common in qualitative studies. However, when it was used for quantitative research, a certain number of people in the most suitable position would be selected to provide the information necessary for the investigation (Davies & Hughes, 2014).

The process of selecting samples used judgmental sampling involved the researcher carefully selected and chose individuals as part of the sample. Because the members of the sample were not randomly selected, the knowledge of the researcher during the sampling process was important (Berk et al., 2003). Jasso and Guillermina (2006) stated that judgment sampling was a sampling technique that used the researcher's judgment when selecting respondents. Fink (2003) concluded that judgment samples were selected based on the opinions of researchers, and the sample contents were well managed. Also, Fellows et al. (2015) stated that judgment sampling techniques allowed investigators to narrow down the factors that provided the phenomenon of the best represent research interest. Etikan et al. (2016) stated that Judged sampling was popular because it was inexpensive and it took very little time to collect the data. Besides, in this study, the researcher distributed the questionnaire to business students who have had studies in year 2, year3, and year 4.

Case 2. Convenience Sampling

Thiagarajan (2012) stated that convenient sampling (also referred to as accidental sampling or grab sampling) was an area that combined easily accessible people. as an example, people can be studied in:

- workplace
- school
- the club within which you were a member
- local store

Also, convenience sampling was a rare variety of sampling that did not involve random selection of participants (Etikan et al., 2016)**.** Another was a probability sample, where participants were randomly selected, and every person was likely to be chosen equally (Fricker & Ronald, 2008).

Convenience sampling was especially useful if the duration of the study was short or was on a decent budget (Morse & Janice, 2010). It was also the only way to use when there was no listing of all members of the population (Fink, 2003). Moreover, Ritchie et al. (2003) stated that a convenience sample allowed investigators to pick out the foremost readily available participant who could provide the knowledge required for the study. Similarly, Brewis and Joanna (2014) stated that convenience sampling involved selecting participants that the researcher relatively had access to. In the wake of the Covid-19 outbreak, the Ministry of Education, Youth and Sport had urged all schools in Cambodia to provide online teaching and learning. At the same time, the three universities mentioned in the research employed the Zoom application and Telegrams system in teaching and learning. The students in these three universities had a Telegrams group already. So, it was easy to communicate with them by requesting the university administration to allow us to join that group with them. Therefore, the convenient respondents were invited in the Telegram groups to complete the questionnaire by Google forms link at each university like National University of Management (NUM), Western University Phnom Penh (WU-PP), and Western University Kampong Cham Branch (WU-KC).

Case 3. Snowball Sampling

According to Browne and Kath (2005), snowball sampling was a useful method for qualitative and descriptive surveys, especially in studies (hard to involve population or hard to reach) that had few in respondents or require a high level of trust to initiate the contact. Often this technique involved the study of vulnerable or stigmatized groups who were reluctant to participate in research using traditional research methods.

In theory, seeds started from snowball sampling were theoretically randomized. Rather than, it was a doctrine that should be practiced and chosen as a convenient sampling method. Magnani et al. (2005) pointed out that the sample configuration was the default seed selected. Hence, these samples were likely to be biased against individuals who cooperated or used large private networks based on the constraints that could be observed in conventional snowball methods. Preliminary ethnographic evaluation to identify networks that might exist in a given population.

The subgroups were then treated as groups of samples and the coverage bias was reduced, increasing the representation. To improve the external accuracy of possible samples, two methods of approaching possible samples had been developed. The time channel sampling tended to identify the right subject at certain types of locations. Researchers categorized probabilistic examples of meeting times and places, and collected data from all members or samples within that site. Geographic conditions can change over time, so there was a potential sampling bias, so the sampling framework needs to be updated, which increased the cost.

It was also important to take into account that hidden populations might not be accessible in certain geographic situations. Therefore, the most advanced theory applied recently was respondent-led sampling (Heckathorn & Douglas, 1997). This method combined chain recommendation sampling allows with a social network-based recruitment process that approved for probability calculations. Seeding in this approach was the broker. It offered a

limited number of coupons and a monetary incentive to participate in this study. Additionally, each respondent cited to act as an intermediary until the desired sample size was reached.

The main advantage was controlled hiring bias in terms of respondents oversampling with large social networks. Many authors pointed out that snowball samples had many properties (Johnston et al., 2010).

Table 4.1 Population and Sample Size by Cambodian Universities

Universities	**Approximate Population Size**	**Percentage (%)**	**Proportionate Sample Size**
National University of Management	11,845	77%	386
Western University Phnom Penh	1,755	12%	58
Western University Kampong Cham Branch	1,725	11%	56
Total	**15,325**	**100%**	**500**

Source: Constructed by author (Based on Education Congress Report, March, Phnom Penh, Cambodia, 2019)

Based on the table 4.1 showed that the researcher selected the three universities in Cambodia such as National University of Management, Western University in Phnom Penh, and Western University in Kampong Cham Branch in the academic year 2019-2020. Furthermore, National University of Management was amount 11,845 students, the researcher selected 386 students. At Western University in Phnom Penh concluded 1,755 students, the researcher selected 58 students, and Western University Kampong Cham Branch amounted 1,725 students, and the researcher selected 56 students.

Purposive inspecting was utilized at the final stage to choose business understudies from three Cambodian Colleges to comprise the example size equitably in every business understudies. Also, the scientist chose to address as the objective populace were Cambodian understudies who had been learning in year 2, year 3, and year 4 in the field of business division from three advanced education establishments in Cambodia. Purposive testing in this case empowered us to pick individuals whose perspectives are applicable to the examination subject (Jankowicz, 1995). The key witness strategy of purposive examining was likewise used to choose individuals with specific information about the issues being referred to for talking (Tongco, 2007).

4.2.3 Sample Size

Sample size questions were frequently asked for qualitative studies based on individual investigator questions (Trotter ii, 2012), but often not mentioned in the literature (Onwuegbuzie & Leech, 2005). Few studies came close to this problem, and not many qualitative studies have been involved in building a statistical overview. Qualitative researchers reported that sample size is not an issue in oriented studies of quality (Onwuegbuzie & Leech, 2005). Additionally, qualitative studies have been criticized for being slightly rigorous or not providing justification for the sample sizes used in recent studies (Marshall *et al*., 2013).

Besides, Malhotra *et al.* (2017) stated that the sample size represented a specific population of the study. Furthermore, Reynolds *et al.* (2003) mentioned that the information of collected data should be adequate and analyzable; appropriate sample size was necessarily determined. Indeed, the study used structural equation modeling (SEM) as a statistical technique to analyze research data.

Therefore, in this study, the appropriate sampling size was determined according to the structural equation model construction criteria (Ullman & Bentler, 2003). Kerkhoff (2017) concluded that determining a sufficient sample size for a study, and it depended on the

statistical technique used by the researcher in the study because each technique had a certain minimum.

Moreover, Wolf *et al.* (2013) determined that the optimal sample size is required to model structural equations was a difficult process. The concept of data saturation in which no new data or patterns were observed in the data of an interview or additional case *(Marshall et al.*, 2013). The concept of saturation was very good at the conceptual level. However, it gave very little guidance to estimate the actual sample size before crawling (Marshall *et al*., 2013). Similarly, Sahoo (2019) specified that the sample size played several roles in the SEM and was too small to be used for SEM problems.

Furthermore, Ainur *et al*. (2017) indicated that the partial fit index was affected by the sample size. Herzog and Boomsma (2009) assumed that the minimum sample size requirement for modeling the structural equation used 100 or 200. Besides, Kline and Bowdish (2016) specified that the minimum sample size required for the SEM was 375. Anderson and Gerbing (1984) stated that the minimum sample should be 200 cases. Moreover, Williams *et al.* (2010) concluded that the minimum sample size for complex models was 500 cases. The more complex model indicated that larger sample size was required (Perera, 2013).

Ainur *et al.* (2017) indicated that the GoF measurement improved as the sample size increases. The large sample sizes were not exactly, and the exact number of samples was not suitable for the entire study (Mattisson *et al.*, 2013).

Dorsch *et al.* (2001) stated that the model sample size should be in between 400-800 characters to fit in the model. However, the concept of saturation, although the conceptual level gave you some hints for estimating the actual sample size before the data collection process (Guest *et al*., 2017).

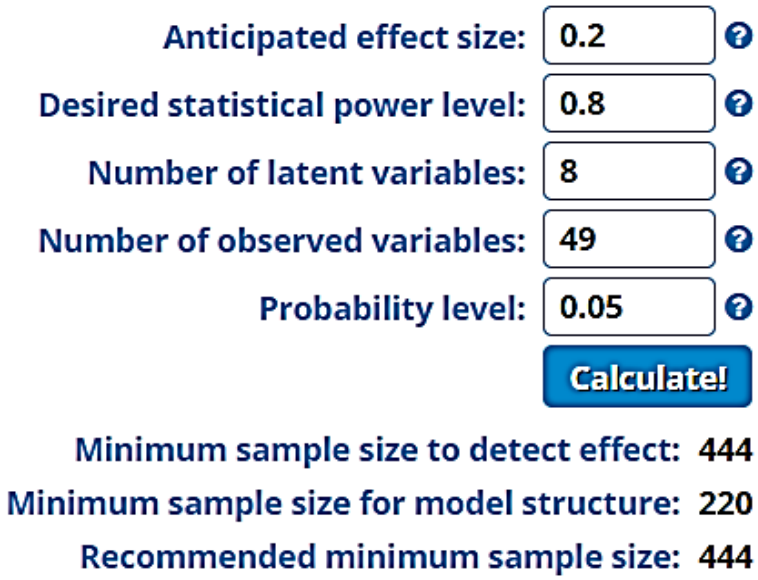


Figure 4.1 Sample Size Calculator for Modeling Structural equations

Source: https://www.danielsoper.com/statcalc/calculator.aspx?id=89

After the researcher had entered all the necessary information into the calculator, the expected result size aimed at 0.2, the desired level of statistical power at 0.8, the number of latent variables at 8, the number of observed variables at 49, the probability scale at 0.05, the calculator had a low sample size. The maximum detectable result was 444, the minimum sample size of the model structure was 220, and the recommended minimum sample size was 440.

Moreover, Israel (1992) stated that a good size sample such as 200-500 was needed for multiple regression, covariance analysis, and analysis of loglinear. Analysis could be performed for further rigorous main impact assessment. Therefore, the researcher aimed at collecting 500 samples for three higher education institutions in Cambodia for better statistical result.

In conclusion, the researcher had to determine the most appropriate sample size for this study. The researcher considered the sample size of this study to be 500 cases for each

university. For this study, 500 sample size was appropriate and applicable for structural equation modeling statistical technique, and was accepted by minimum sample size requirement and preferable range (200-500) of sample size (Israel, 1992). Accordingly, the total amount of cases from three higher education institutions in Cambodia was equal to 500. Beginning grade students were not included in the sample due to lack of experience because college satisfaction and loyalty were not evaluated (Azoury *et al*., 2013).

4.3 Research Instruments/ Questionnaires

The questionnaire was used as a quantitative method of data collection. The questionnaire consists of a series of questions and a scale designed to generate raw data (Rocchi *et al*., 2017). Similarly, Gray (2019) explained that the questionnaire consists of a set of questions distributed to specific people to gather basic raw information. Therefore, this section described how to develop a questionnaire based on previous research. When developing a relevant research tool to investigate student satisfaction and loyalty to innovation management, this study first developed a questionnaire from previous studies and then used an index of objective consistency skills for research questionnaire checklist.

The questionnaire consisted four main parts. The first part was screening questions. The second part was measuring variables of independent variables: teaching method, infrastructure facilities, learning materials, academic aspects, transformative service quality, university image, and student satisfaction. The third part was the measurement of the dependent variable, which was student loyalty. The last part of the questionnaire was a demographic factor of the respondents.

Part I: Screening Questions

Dalati (2018) stated that screening questions allowed respondents to be screened regardless of whether the investigator had knowledge or experience of participating in the questionnaire. According to Faux (2010), screening questions helped researchers identify suitable ingredients for their study.

In addition, Hair *et al.* (2013) stated that screening was used in most questionnaires. The purpose of screening questions was to identify qualified respondents and prevent non-qualified respondents from being included in the study. Hence, the researcher designed the first part of the questionnaire to be a screening question – to screen the respondents if they were qualified for this study. As this study focused on students who have had known about the educational management in Cambodian higher institutions in Cambodia, the screening question was "Which university are you studying?". A single answer multiple choice balance was used to the screening questions (Bennett, 1991). Williams (2014) specified that a single response scale is used if there were multiple choices for respondents to select one optimal. Followed by, Hair *et al.* (2013) stated that a single-response scale or single-item scale offers multiple choices for respondents to select one that most matches with the respondents. If the respondents answer "Yes", the respondents must continue the questionnaire, which it concludes that those respondents would appear as the qualified respondents for this study. On the opposite, if the respondents answer "No", the respondents must withdraw the questionnaire.

Part II: Factors Related to Student Loyalty

This part investigated the factors that had a relationship with student loyalty. The factors were teaching methods, infrastructure facilities, learning materials, academic aspects, transformative service value, college image, and undergraduate satisfaction. Part II of the questionnaire consisted of 48 questions/items. Questions numbered 1 to 5 represented teaching

methods, questions numbered 6 to 14 represented infrastructure facilities, questions numbered 15 to 19 represented learning materials, questions numbered 20 to 28 represent academic aspects, questions number 29 to 33 represent transformative service quality, questions number 34 to 38 represent university image, questions number 39 to 44 represented student satisfaction, and questions numbered 45 to 48 represented student loyalty.

In this study, researchers used a five-point Likert scale to examine the factors related to student loyalty. Davis *et al*. (2005) stated that the Likert scale was a widely adopted and accepted technique. By using the Likert scale, researchers were able to identify respondents' attitudes through a statement contributed by Weathington and Bechtel (2012) indicated that the Likert scale was most often used for closed respondent-style questions. Moreover, Saunders *et al.* (2009) stated the Likert scale was an attitude measure that allowed respondents to assess whether they strongly agree or disagree on a particular statement or a topic.

The authors also continued that the Likert scale rating was from positive to negative. Similarly, Marnburg and Luo (2014) concluded that the Likert scale contained of statements that can reflect positive or adverse attitudes towards a particular target.

Each response was scored with a number that reflects an unfavorable or favorable attitude. The statistic levels were as followed:

1 = Strongly disagree

2 = Disagree

3 = Neither agree nor disagree

4 = Agree

5 = Strongly agree

Teaching Methods

The estimation of this develop contains 5 things like 1) The extent among hypothesis and practice was sufficient, 2) The catalog, documentation, and so forth, given were satisfactory, 3) The encouraging strategies were proper, 4)- The level at which these subjects were examined was fitting, and 5)- The degree and appropriation of the subjects were right. Every one of these things were coordinated by Navarro *et al.* (2005).

Infrastructure Facilities

This structure had 9 measures: 1) Enough playground, 2) Enough college parking lot, 3) Enough toilets, 4) University dormitory facilities, 5) Providing fresh drinking water, 6) Facilities for builders at the university, 7) Transportation facilities provided by the university, 8) Well-equipped classrooms, and 9) Waiting rooms for student parents (Kaur & Bhalla, 2018).

Learning Material

The measurements of this structure are: 1) A complete and updated library containing subject matter-related materials 2) Providing students with information on library editing, regular updates 3) Proper laboratory 4) Video and audio aid in classroom instruction, and 5) Enough computers in our university. All these items were adapted from the research conducted by Kaur and Bhalla (2018).

Academic Environment

The scale of this structure consists of 9 items. 1) The instructor knows the answers to questions about the textbook. 2) The instructor handles it politely. 3) In the event of a problem, the instructor indicates the integrity. Interest in problem solving, 4) Teachers show students a positive attitude, 5) The instructor communicates well in the classroom, 6) The instructor gives me feedback on my progress, 7) The tutors are highly educated in the field, 8) The tutors were

treated appropriately, and 9) The instructor provided the appropriate documentation. All these items were adapted from Ali *et al.* (2016).

Transformative Quality

There are 9 scales for this structure 1) My college gives me more confidence 2) My college helps me think more critically 3) University gives me a chance to have higher level of self-awareness, 4) My university helps me develop problem solving skills in my studies 5) My university allows me to transcend my prejudices, and 6) My university helps me increase my knowledge and skills in general. All these items were adapted from Teeroovengadum *et al.* (2019).

University Image

There are 5 scales for this structure 1) Our university has a good academic reputation, 2) Compared to other universities, our university has a good image. 4) The qualifications received at our university are recognized as of external value, and 5) Our university was a reputable university. All these items were adapted from the study conducted by Teeroovengadum *et al.* (2019).

Student Satisfaction

There were six metrics in this structure: 1) Choosing to enroll in my university is a smart choice 2) This university is a prerequisite for higher education 3) I will work and modify my university 4) I am happy to enroll in the university 5) I enjoy studying at university 6) I enjoyed my experience as a student at the university. All these items were adapted from the study conducted by Teeroovengadum *et al.* (2019).

Part III: Student Loyalty

This part focused on student loyalty towards following innovative management in Cambodian higher education institutions. The questions were adapted to reflect the student satisfaction towards student loyalty in terms of continuance level of innovative management. There are 4 items to determine student loyalty. Therefore, questions numbered 45 to 48 represented student loyalty. In addition, this part also applied a five-point Likert scale. The statistical levels are as followed:

1 = Strongly disagree

2 = Disagree

3 = Neither agree nor disagree

4 = Agree

5 = Strongly agree

For student loyalty construct, the construct contains four items in a questionnaire to reflect the respondent's loyalty towards innovative management from Cambodian higher institutions. The four items of this construct were adapted from Teeroovengadum *et al.* (2019) such as 1) Recommend your university to friends and relatives, 2) Say favorable things about your university to others, 3) Choose the same university again if you could start all over, and 4) Attend the same university if you follow another course in future.

Table 4.2 Summary of Scale Items for Each Construct References

Construct	Item	Adapted from
Teaching Methods	ITEM1: The proportion between theory and practice was adequate	Navarro *et al.* (2005)
	ITEM2: The bibliography, documentation, etc., provided were adequate	Navarro *et al.* (2005)

	ITEM3: The teaching methods were appropriate	Navarro *et al.* (2005)
	ITEM4: The level at which these subjects were discussed was appropriate	Navarro *et al*. (2005)
	ITEM5: The extent and distribution of the subjects were correct	Navarro *et al.* (2005)
Infrastructure Facilities	ITEM6: Sufficient playgrounds are available	Kaur and Bhalla (2018)
	ITEM7: There is enough space for parking in the university	Kaur and Bhalla (2018)
	ITEM8: Adequate numbers of washrooms are available	Kaur and Bhalla (2018)
	ITEM9: Hostel facility is provided by the university	Kaur and Bhalla (2018)
	ITEM10: Fresh drinking water is available	Kaur and Bhalla (2018)
	ITEM11: Generator facility is provided by the university	Kaur and Bhalla (2018)
	ITEM12: Transport facility is provided by the university	Kaur and Bhalla (2018)
	ITEM13: classrooms are well equipped	Kaur and Bhalla (2018)
	ITEM14: Waiting rooms are available for parents of the students	Kaur and Bhalla (2018)
Learning Materials	ITEM15: Libraries are rich and updated with material related to subjects	Kaur and Bhalla (2018)

	ITEM16: Students are informed regularly about updated library collection	Kaur and Bhalla (2018)
	ITEM17: Adequate laboratories are available	Kaur and Bhalla (2018)
	ITEM18: Audio-visual aids are available for classroom teaching	Kaur and Bhalla (2018)
	ITEM19: Sufficient computers are available in my college	Kaur and Bhalla (2018)
Academic Environment	ITEM20: Instructors have the knowledge to answer my questions relating to the course content	Ali *et al.* (2016)
	ITEM21: Instructors deal in a courteous manner	Ali *et al.* (2016)
	ITEM22: When I have a problem, instructors show a sincere interest in solving it	Ali *et al.* (2016)
	ITEM23: Instructors show positive attitude toward The students	Ali *et al.* (2016)
	ITEM24: Instructors communicated well in the classroom	Ali *et al.* (2016)
	ITME25: Instructors provided feedback on my progress	Ali *et al.* (2016)

	ITEM26: Instructors are highly educated in their respective field	Ali *et al.* (2016)
	ITEM27: The hand-outs are provided adequately by the instructors	Ali *et al.* (2016)
	ITEM28: The documentations are provided adequately by the instructors	Ali *et al.* (2016)
Transformative Quality	ITEM29: My university has enabled me to be more self-confident	Teeroovengadum *et al.* (2019)
	ITEM30: My university has helped me to think more critically	Teeroovengadum *et al.* (2019)
	ITEM31: My university has enabled me to have a higher level of self-awareness	Teeroovengadum *et al.* (2019)
	ITEM32: My university has helped me to develop problem-solving skills with respect to my field of study	Teeroovengadum *et al.* (2019)
	ITEM33: My university has allowed me to transcend my prejudices	Teeroovengadum *et al.* (2019)
	ITEM34: My university has enabled me to increase my knowledge and skills in general	Teeroovengadum *et al.* (2019)

University Image	ITEM35: My university has a good academic reputation	Teeroovengadum *et al.* (2019)
	ITEM36: Compared to other universities my university has a good image	
	ITEM37: Research output from my university is highly rated	Teeroovengadum *et al.* (2019)
	ITEM38: Qualification gained from my university is externally perceived as being of value	Teeroovengadum *et al.* (2019)
	ITEM39: My university is a prestigious university	Teeroovengadum *et al.* (2019)
Student Satisfaction	ITEM40: My choice to enroll at my university was a wise decision	Teeroovengadum *et al*. (2019)
	ITEM41: This university is exactly what is needed for higher education studies	Teeroovengadum *et al*. (2019)
	ITEM42: I did the right thing by choosing my university	Teeroovengadum *et al.* (2019)
	ITEM43: I am pleased to be enrolled as a student at my university	Teeroovengadum *et al*. (2019)
	ITEM44: I am enjoying studying at my university	Teeroovengadum *et al.* (2019)

	ITEM45: I am happy with my experience as a student at my university	Teeroovengadum *et al*. (2019)
Student Loyalty	ITEM46: Recommend your university to friends and relatives	Teeroovengadum *et al*. (2019)
	ITEM47: Say favorable things about your university to others	Teeroovengadum et al. (2019)
	ITEM48: Choose the same university again if you could start all over	Teeroovengadum et al. (2019)
	ITEM49: Attend the same university if you follow another course in future	Teeroovengadum et al. (2019)

Source: Constructed by author

Part IV: Respondents' Demographic Profile

Lancaster (2007) mentioned that the questionnaire generally included respondents' demographic and lifestyle characteristics, so that respondents' attitudes, intentions, and so forth could be summarized under one frame. Frequently asked questions about the personal characteristics of respondents in the population were derived from the study conducted by Mertens and Lobanov (2015). Thus, the researchers developed questions about the demographics of the respondents. In addition, researchers used a categorical scale to collect population data from respondents in this study. Fasel and Luettin (2003) stated that the categorical scale was often used to measure respondents' attributes such as education level,

gender, and age. In this study, two categorical scales were used, for instance, simple categories and one response scale.

Dalati (2018) defined a simple category scale that gave respondents two options to choose from. Besides, the author expanded the single answer to a multiple-choice question. However, asking respondents to choose only one. The simple categorical scale was applied to ask respondents' gender and used a single response scale to ask respondents' age, education, and occupation.

Table 4.3 The Summary of Number of Questions in Questionnaire

Part	**Question/Construct**	**No. of Question (s)**
Part I	Screening Question	1
Part II	Teaching Methods	5
	Infrastructure Facilities	9
	Learning Material	5
	Academic Environment	9
	Transformative Quality	6
	University Image	5
	Student Satisfaction	6
Part III	Student Loyalty	4
Part IV	Demographic factors	4
	Total	54

Source: Constructed by author

4.4 Research Instrument Validity and Internal Consistency Reliability

Validity was defined as the degree to which a concept was accurately measured in quantitative research (Heale & Twycross, 2015). For example, a survey designed to examine depression but in fact, a survey that measured anxiety was inaccurate (Brown, 2003). In quantitative research, the second measure of quality was the reliability or accuracy of the

instrument (Mohajan, 2017). Reliability was related to the consistency of the measurements (Gaberson, 1997). The exact confidence value was calculated, and a reliability assessment was made using other measures (Raykov, 1997). Three reliability properties were described below (Ottenbacher et al., 1996).

Homogeneity (internal consistency) was evaluated using half a list of credit relationships, Kuder-Richardson coefficients, and Cronbach's alpha. In a halved reliability, the results of the test or instrument were split in half (Heale & Twycross, 2015). The correlation was calculated by comparing the two halves (Heale & Twycross, 2015). A strong relationship indicated a high level of confidence, and a weak relationship indicated a tool that was unreliable (Ursachi et al., 2015). In this process, the mean of all possible hemispheres was determined and a relationship between 0-1 is established (Heale & Twycross, 2015). This test was more accurate than the halves test, but this could only be done for questions that had two answers. (e.g. yes or no 0 or 1) (Streiner, 2003). The Cronbach's was the most commonly used test to verify a device's internal suitability. In this test, the average of all relationships was determined for all mixed halves (Cronbach, 1951). Cronbach's results were numbers between 0 and 1, acceptable confidence points were 0.7 or higher (Sijtsma, 2009).

Stability was tested using iterative and parallel stability tests or alternative patterns (Lemay et al., 2004). Repetition reliability tests were assessed by providing more than one tool at the same time to the same participant in similar situations (Heale & Twycross, 2015). Participants' test scores for each successive session were statistically compared (Demšar, 2006). The stability indicated the reliability of the instrument (Hinkin et al., 1997). Reliability (or other forms of reliability) was similar to the reliability of a retest, except that another traditional tool was provided to the subject at a later date (Gillespie & Chaboyer, 2013). The domain or idea under test was the same for both versions of the tool. But the phrases on the list were different, for tools that show stability, there should be a strong correlation between scores

every time a participant took a test (Mohajan, 2017). In general, a correlation coefficient of less than 0.3 indicated a weak correlation, 0.3–0.5 indicated moderate and greater than 0.5 indicated a strong correlation (Heale & Twycross, 2015).

Equality was assessed through credibility between appraisers (Ferreira et al., 2011). The test involved a process of determining the level of qualitative consensus between two or more observers. A good example of the process used to assess the reliability of the interrater was the score of the skate judge (Schwab, 2013). The degree of consistency of all judges in the score given to a skater was a measure of the confidence between the raters (De Grez et al., 2012). The consistency of the score was related to the confidence level among the appraisers of the instrument (Fricton & Schiffman, 1986). Determining how rigorous the credibility and validity issues were in a study was an important component of research criticism and was in deciding whether to apply the study to nursing practice (Morse et al., 2002). In quantitative research, rigidity was determined by assessing the validity and reliability of the tool or instrument used in the study (Golafshani, 2003).

4.4.1 Content Validity

The first validity used in this study was content validity. Zamanzadeh *et al.* (2015) explained that content validity was a prerequisite for all other validity, and it should be a paramount importance during the development of research tools. Clark-Carter (2010) defined content validity at the level where a measure/question encompasses all specific ability structures. The index of the item-objective congruence (IOC) approach used for research tool content validity in this study was supported by Sireci (1998), who identified the IOC as a useful guide from a compliant perspective. It provided the achieving content goals by presenting information. This approach was introduced by Hambleton and Cook (1977), and the purpose of this approach was to develop research tools with expert judgment. Besides, Tojib and Sugianto (2006) stated that the IOC approach required at least two experts. Consequently, the

researcher invited three experts to provide thoughtful insights into the research tools developed based on previous studies. Furthermore, Grant and Kinney (1992) stated that content expert selection criteria should consider. The specialist must have a philosophy of the doctor's qualifications or the doctor's candidate's philosophy and must conduct serious research or professional experience. In the process of approaching the IOC, experts must evaluate each item to rate items as 1, 0, -1, and if the expert gave it 1, it means that the item could measure its goal. If an expert rated item 0, it would have been measurable for its intended purpose. If an expert evaluated an item as -1, then the purpose was not measured. After 3 experts had evaluated all items, the rating of each item was inserted into the formula and calculated against the item's objective suitability index (Fink & Litwin, 1995).

In conclusion, the index of item-objective congruence rating form and the calculation part was illustrated in this term. The highest rating for 8 constructs with 54 items was equal to 1. The lowest rating was equal to 0.67. Therefore, all 54 items in this research were adequate for content validity, referring the results to Appendix A.

4.4.2 Cronbach's Alpha Reliability

Chan and Idris (2017) stated that the original criterion for internal consistency was the Cronbach Alpha, while Cronbach Alpha provides a confidential estimate based on the relationship between individual indicators in the same structure. Bardhoshi and Erford (2017) stated that Cronbach's Alpha was used when the item response model had multiple scores, such as the Likert scale, so Cronbach's Alpha method was the best tool to test reliability. This study was a measure of the study before the questionnaire was distributed on a sample basis, as the researchers used 5-point Likert scales to measure all items. Bolarinwa (2015) determined that reliability was important in the sheriff's questionnaire.

Besides, in this study, Cronbach's alpha reliability was applied in a pilot test to verify the reliability of each item's composition of teaching methods, infrastructure facilities, learning

materials, academic environment, transformative quality, university image, student satisfaction, and student loyalty. Shah and Al-Bargi (2013) stated that the Alpha coefficient of each structure must be greater than or equal to 0.60 and must be an acceptable value.

Furthermore, Chan and Idris (2017) stated that higher values were more reliable; however, lower values were unreliable. The range of Alpha coefficient and link strength were as followed:

Table 4.4 Rules of Thumb about Cronbach's Alpha Coefficient Size

Alpha Coefficient Range	Strength of Association
<0.6	Poor
0.6 to < 0.7	Moderate
0.7 to < 0.8	Good
0.8 to < 0.9	Very good
≥ 0.9	Excellent

Source: Hair, Money, Page, and Samouel, (2003). *Researcher Methods for Business*, p. 244

4.4.3 Construct Validity

Bolarinwa (2015) defined construct validity as the extent that a structural measuring instrument intended to measure it. Hill and Hood (1999) mentioned that construct validity was the degree to which a research tool truly measures the structure which it was trying to measure. Sreejesh *et al.* (2014) said that there were two statistical methods for analyzing construct validity. Peterson (1994) concluded that it was necessary to establish construct validity to assess the strength of the relationship between observable and latent variables. The explanation of convergent and discriminant validity methods was described below:

4.4.3.1 Convergent Validity

Ab Hamid *et al.* (2017) stated that convergence straightness determination was a technique that measures the correlation of multiple indicators in a single structure within the same phenomenon. Churchill Jr. and Peter (1984) concluded that the convergence validity was

to be a measurement of how well multiple identifiers were related in the same structure. Hair *et al.* (2014) stated that to establish convergence validity, we considered compound reliability (CR) and average withdrawal variance (AVE). Therefore, in this study, the convergence efficiency was evaluated using the compound reliability (CR) and the mean variance (AVE) was extracted. The value of composite reliability or CR varies between 0 and 1 (Hair *et al.*, 2014). The higher value indicated the more reliable degree. The authors also stated that a composite reliability value of 0.60 or higher was an acceptable value. For the average variance extracted (AVE), the value range of AVE fell between 0 to 1. The AVE value must exceed 0.50 to be sufficient for the convergent validity (Afthanorhan, 2013). Alkhadim *et al.* (2018) concluded that the AVE confirmed that the responses of other respondents to the indicator was sufficiently correlated with the associated latent variables.

4.4.3.2 Discriminant Validity

Ab Hamid *et al.* (2017) stated that the discriminant validity was important for researchers dealing with latent variables with multiple identifiers representing structures. If the hypothesis is tested without mentioning the validity chosen by the researcher, the full model interpretation may be misleading or useless. Moreover, Voorhees *et al.* (2016) mentioned that in a marketing context, since each structure was by definition intangible, the discriminant validity was important in research, as researchers needed evidence to prove it.

Every structure of the study is different, and it was not just an empirical reflection of each other. Therefore, this study was necessary to establish the accuracy of discrimination. Hair *et al.* (2014) determined the discriminant validity as validity that ensured structural measures which was characterized by an empirical character and reveals of interesting phenomena that other measures do not capture. There were several ways to check the accuracy of discrimination (Hair *et al.,* 2012).

The authors defined a quantity of documentation correctness by comparing the average variance extracted (AVE) for each of the two constructs (Koufteros, 1999). If the square correlation is smaller than the AVEs, then the discriminate validity is established (Farrell & Rudd, 2009).

4.5 Preliminary Data Analysis

More precisely, skewness was a measure of the symmetry of a statistical distribution. It could be positive, zero, or negative (Brys et al., 2004): Skewness> 0 → Right skewed distribution - most values was focused on the left side of the mean and extreme values were on the right. Skewness <0 → Left skewed distribution - most values were focused on the right; the mean and extreme values were to the left. Skewness = 0 → mean = median, the distribution was symmetric about the mean. Like the idea of skewness, kurtosis was the shape of a probability distribution (DeCarlo, 1997). Kurtosis was a statistical measure that determines how much a distribution's tail differed from a normal distribution's tail (Balanda & MacGillivray, 1988). In other words, kurtosis indicated whether the end of a given distribution was high. Asymmetry and kurtosis values between -2 and +2 were considered acceptable to prove a non-variable distribution (George & Mallery, 2012). Hair et al. (2013) argued that data was normal if skewness was between -2 and +2.

4.6 Pilot Testing

Marnburg and Luo (2014) stated that the pilot tests were administered to detect research tool errors (questionnaire) before distributing it to a target audience. Similarly, Clark-Carter (2010) stated that after researchers generated the measurements, the pilot studies needed to verify their validity.

The authors defined a pilot study as a test of a small sample before a large sample to investigate underlying issues such as questions, statements, and understanding of the question

design. Therefore, in this study, pilot testing was conducted after the research tools were fully modified and ready for final investigation before the questionnaire was distributed to all target populations. Memon *et al.* (2017) suggested that the pilot test size should be in between 25 and 100. The sample size for the pilot test should be about 25 to 100 respondents (Fink, 2003). (Hair *et al.*, 2014) stated that the sample size for the pilot test should be around 30, while investigators distributed a questionnaire to 60 respondents with similar traits to the target population. In this study, the questionnaire in Google forms was distributed among 500 students studying in the three Cambodian higher education institutions such as National University of Management, Western University Phnom Penh, and Western University Kampong Cham. Respondents participated in the pilot test were the students of 2nd year, 3rd year, and 4th year in the field of business, confirming that the questionnaire is suitable for handling a large number of respondents. Alternatively, the reliability of each variable was also tested.

The reliability was the constancy and steadiness of a score from a dimension measure (Davis *et al*., 2005). Hair *et al.* (2014) mentioned that the score was consistent and stable, which are two ways to determine reliability. Coefficient Alpha was also known as Cronbach's Alpha. Therefore, in this study, Cronbach's Alpha was used to confirm its reliability. A detailed explanation of Cronbach's Alpha was described in section 4.7.

Table 4.5 The Value of Reliability Analysis of Each Construct in this Study, referred the result to Appendix D

Variables	Cronbach's Alpha	Strength of Association
Teaching Methods	0.826	Very good
Infrastructure Facilities	0.870	Very good
Learning Material	0.799	Good
Academic Environment	0.935	Excellent
Transformative Quality	0.875	Very good
University Image	0.903	Excellent
Student Satisfaction	0.938	Excellent
Student Loyalty	0.816	Very good

Source: Constructed by author

Table 4.7 showed the reliability test results of each structure in this study as part of pilot test. Alpha tests on how to train are as followed: 0.826, which was a very strong suggestion. Alpha testing for infrastructure facilities was equal to 0.870, which was a very good link strength. The alpha test for the study material was the same at 0.799 was a good force to be reminded of suggestion. Alpha test for an equivalent academic environment was equal to 0.935, which was excellent for the suggestion. The alpha test for change quality was 0.875, which was a very good strength of suggestion. The alpha test for college images was 0.903, which was excellent of suggestion. The Alpha test for student satisfaction was equal to 0.938, which was excellent of suggestion. The Alpha test for student loyalty was equal to 0.816, which was a very good strength of suggestion. In conclusion, all the constructs in this study had an Alpha coefficient of above 0.8, which means that all constructs were reliable, and adequate to be used as the research instrument for this study.

4.7 Collection of Data/Gathering Procedures

Hair *et al.* (2014) highlighted that data collection was an important task in research, adding that researchers should collect information from appropriate sources. Similarly, Kumar (2018) stated that gathering or collecting data was a step-by-step process and depended on how the researcher had designed the data collection. The research process was usually expensive. There are two main sources of information: primary and secondary data (Kumar, 2018). Both primary and secondary data were manipulated in this study. Information generated from an original source, such as an experiment, interview, or researcher survey (Fraenkel *et al.*, 1993). Similarly, Hair Jr. *et al.* (2015) mentioned that primary data referred to information received directly by the researchers. In addition, Bowen (2009) classified that primary data was generated by researchers for specific purposes of the study. Primary data was information that researchers collected from individuals directly or through observation (Fraenkel *et al.*, 1993). Therefore, in this study, a self-managed questionnaire was used to collect primary data.

Riedel (2000) mentioned that secondary data was an interpretation of primary data, and it could be textbooks, magazines, and newspapers. Smith and Smith Jr. (2008) stated that the secondary data represented information obtained from various sources such as books, media, or company annual reports, that was collected by someone rather than the researchers themselves. Daas and Arends-Tóth (2012) stated that secondary data was the data gathered from existing sources such as databases, publications, and internal records. Therefore, secondary data was collected from several sources to support the study including academic articles (previous research, developed research tools, literature review, and sampling methods), e-books, online news, textbooks, journals, online databases, magazines, company reports, and Internet websites.

4.8 Statistic Treatment of Data

Silverman (2020) stated that after the data was collected, the researchers analyzed and summarized all the data, and after collecting the data, it applied a statistical package to ensure that all data could be read and understood (Gray, 2019). There were two statistical methods used to analyze all data in this study: descriptive and inferential statistical methods (Data, 1988). Descriptive statistical methods were used to analyze demographic factors and respondents' general information (Lazányi *et al*., 2017). For the inferential statistical method, researchers used structural equation modeling, including measurement models and structural models to analyze the proposed hypothesis and infer the characteristics of the target population (Byrne, 2013). The explanation of descriptive and inferential statistical was described as followed.

4.8.1 Descriptive Analysis

Zikmund *et al.* (2013) stated that explanatory analysis was a transformation of raw data to account for fundamental characteristics such as variability, distribution, and central tendency. Similarly, Blaikie (2003) mentioned that explanatory analysis was transforming raw data for easy understanding. Descriptive analyzes could also be presented in the form of charts, tables, and other graphic formats (Hinton *et al.*, 2014). Hence, the researchers used frequency, percentage, and percentage cross-tabulations to characterize the demographic characteristics of the population. Answering the questionnaire about nationality, gender, occupation, age, education, and income (Vartanian, 2010). Furthermore, Aczel and Sounderpandian (1999) stated that the core purpose of the frequency distribution was to display the frequency of each variable and the cumulative percentage of each variable.

4.8.2 Inferential Analysis

Kennedy *et al.* (2011) stated that the inferential statistic is one of the two major categories of statistical procedures. In addition, Wolverton (2009) mentioned that inferential statistics are groups of statistical methods and models that led to a conclusion of the target population based on the random sample. Supported by Fraenkel *et al.* (1993), inferential statistics helped researchers make a judgment about the target population by using the data from the sample. Therefore, the researcher applied inferential analysis to draw a conclusion of the target population by applying structural equation modeling as the statistic tool. All ten hypotheses in the study were examined by structural equation modeling. The details of structural equation modeling were as followed:

4.8.2.1 Structural Equation Modeling (SEM)

Cheung (2015) highlighted that structural equation modeling (SEM) also referred to structural analysis, covariance, and structural correlation analysis, and Moshagen (2012) mentioned that the study used a structural equation model (SEM). It is widely used in behavior to investigate the relationship between observable and latent variables. Moreover, Koufteros (1999) highlighted that structural equation modeling became an important statistical tool in many contexts to study relationships between latent constructs and observed indicators. Furthermore, Daud and Ahmad (2011) indicated that SEM was widely used in market research. Ainur *et al.* (2017) concluded that SEM was a statistical technique that combines elements of traditional multivariate models (factor analysis and regression analysis). Moreover, the purpose of SEM was to examine the model to test whether the presented model matched the data (Hair *et al.,* 2014). Ramlall (2016) stated that structural equation modeling had two components. Firstly, the measurement model examined the relationship between the latent construct and the observable indicators. Secondly, structural models captured the relationship between endogenous and exogenous variables. Hair *et al*. (2014) also stated that measurement models

were all needed for theoretically developed ideas or hypotheses testing (Confirmation factor analysis), and structural model. The statistical processing of the measurement model and the structural model were as followed.

4.8.2.2 Confirmatory Factor Analysis (Measurement Model)

Allen *et al.* (2011) stated that a measurement or confirmatory factor analysis (CFA) model is a procedure to identify the variance and covariance between sets of indicators. This concept was supported by Brown (2015), who identified CFA as a type of structural equation modeling associated with a specific measurement model to investigate the relationship between observed and latent variables. Most importantly, Brown (2015) highlighted CFA was viable for all latent variables from previous structural model studies, and Perry *et al.* (2015) added that the CFA's goal is to make a judgment whether the model was acceptable or not; in this regards, Stokes *et al.* (1991) proposed the mathematical equation of the measurement model as follows:

$$V_i = \lambda_i F_i + e_i$$

Where, V_i as a vector of observed variables, F_i was a vector of latent variables, λ_i was a vector of parameters, e_i was a vector of measurement errors.

4.8.2.3. Structural Model

Hair *et al.* (2014) stated that the structural model was similar to the measurement model. It also showed the relationship between structures. Similarly, the structural model incorporated the causal relationship between exogenous and endogenous (Ramlall, 2016). The finding proposed the equation of structural model as followed:

$$F_i^* = \beta_i M_i^* + \tau_i F_i + d_i$$

Where, β_i and τ_i was parameter vectors, F_i^* was endogenous variable, M_i^* was mediating variable, F_i was exogenous variables, d_i was residual terms.

4.8.3 Good-of-Fit Measurement

In SEM, it was necessary to arrange the model test, the measurement or analysis of the identification elements, and structural models. The Goodness of Fit (GoF) measurement was commonly used to verify the fit of the model (Henseler & Sarstedt, 2013). According to Hair *et al*. (2014), there were three types of GoF measurements: actual fit measurement, incremental fit measurement, and apartment fit measurement. The details and formula of each measure were explained below.

4.8.3.1 Absolute Fit Measures

Ainur *et al*. (2017) noted that the measurement of absolute fit determines how well the model is fit with the data. Ramlall (2016) stated that the measure of absolute fit assumes that the model's intrinsic covariance, which is not different from the variance. This means that the interpretation of the parameter estimates could be reliable and valid.

Chi-Square (x^2)

Hu and Bentler (1999) mentioned that the chi-square test was a traditional measure to assess the model fit. Hair *et al*. (2014) concluded that the chi-square test was the only statistical test of differences between matrices in structural equation modeling. The mathematical equation of chi-square is as followed:

$$X^2 = (N - 1)\ (S - \sum_k)$$

Where, N was the sample size, S was observed sample covariance matrix, and $\sum_k$ was total SEM estimated covariance matrix.

Goodness of Fit Index (GFI)

Based on Jöreskog and Sörbom (1993), GFI aimed to test how well this model fits against the null model. Blunch (2012) stated the value of GFI was between 0 and 1. West *et al.* (2012) had proposed the equation of GFI as follow:

$$GFI = 1 - \frac{F_t}{F_n} = 1 - \frac{X_t^{\ 2}}{X_n^{\ 2}}$$

Where, X_t^2 was the Chi-Square of the target model, X_n^2 was the Chi-Square of null model (baseline model), and F was the corresponding minimum fit function value.

Adjust Goodness of Fit Index (AGFI)

Iacobucci (2010) improved the goodness of the fit index to optimize the results for complex models by adjusting the number of observed variables with fewer parameters. Blunch (2012) mentioned that if the value of AGFI is negative, it means that the proposed model was worse than having no model. The AGFI as given below:

$$AGFI = 1 - \frac{df_n}{df_t}(1 - GFI) = 1 - \frac{\frac{X_t^{\ 2}}{df_t}}{\frac{X_n^{\ 2}}{df_n}}$$

Where, X_n^2 was the chi-square of null model (baseline model), X_t^2 was the chi-square of target model, df_n was the degree freedom of null model, and df_t was the degree freedom of target model.

Root Mean Square Residual (RMR)

Brown (2015) stated that the root represented a residual or RMR that reflects the average interval between the observed and predicted covariances. Moreover, the authors stated

that the SRMR ranged from 0.0 to 1.0, with 0.0 being a perfect fit (The smaller value indicated a better model fit). Blunch (2012) has proposed the equation of RMR as followed:

$$RMR = \sqrt{\frac{(sum)^2}{p(p+1)/2}} = \sqrt{\frac{2(sum)^2}{p(p+1)}}$$

Where *sum* represents the sum of all non-redundant elements in residual covariance matrix, and '*p'* was the number of observed variables.

4.8.3.2 Incremental Fit Measures

Relative fit indices, also known as incremental fit, contained factors that represent deviations from the null model. So the null model (also known as the baseline model), sometimes referred to as the comparison index, should always have the poor fit (very large chi-square) (Ching & Phoon, 2014). For the same level of inconsistency in the sample test statistical population, the sample was larger, with greater anomalies and a worse fit index, which needed to be corrected below (Brosseau-Liard & Savalei, 2012). These population fit indices were a function of the wrong model identification number and the degree of anomaly and were difficult to interpret. For this reason, additional fit indices were developed and introduced as additional measures of model fit (Bentler & Bonett, 1980). The increased fit indices (IFI) were one level of these fit indices. Target model goodness-of-fit comparison. The aim was to quantify the appropriate proportional improvement for the target model compared to the criterion null model. Most of the more common null models that were automatically used in structural equation modeling (SEM) computer programs were independent models that assume all observed variables were not related. However, in some cases, other null models should be used to ensure that the null model was nested within the target model (Widaman & Thompson, 2003).

Normal Fit Index (NFI)

Hooper *et al*. (2008) found that NFI compares the chi-square value of a model with the null model, and this index was sensitive to sample size (Bentler, 1990). The values for NFI range from 0 (not suitable) to 1 (exactly). Bentler and Bonett (1980) stated that the Normal Fit Index (NFI) was given by:

$$NFI = \frac{\left(X^2_{null} - X^2_{\mathrm{mod}el}\right)}{X^2_{null}}$$

Where, X^2 was Chi-square, null is an independent or a null model.

Tucker Lewis Index (TLI)/ Non-Normed Fit Index (NNFI)

Abrahim *et al.* (2019) stated that the Tucker Lewis Index (TLI) was also known as the Non-Normed Fit Index (NNFI). Ramlall (2016) mentioned that the purpose of the TLI or NNFI index was to compare alternative models or compare proposed models. A null TLI value ranged from 0 (not exactly) to 1 (exactly). TLI was calculated by using Chi-square statistic as followed:

$$TLI = \frac{\left[\left(\frac{X^2_{null}}{df_{null}}\right) - \left(\frac{X^2_{proposed}}{df_{proposed}}\right)\right]}{\left[\left(\frac{X^2_{null}}{df_{null}}\right) - 1\right]}$$

Where, X^2_{null} was the chi-square of null model (independence model), df_{null} was the degree of freedom of null model, $X^2_{proposed}$ was the chi-square of proposed model (default model), and $df_{proposed}$ was the degree freedom of proposed model (default model).

Comparative Fit Index (CFI)

Kline and Rex (2015) ranged from 0 to 1 for the Comparative Fitness Index (CFI), where 1 represents the best result. The purpose of the CFI Index was to compare the proposed model with an independent model. Bentler (1990) introduced the computation of CFI as follow:

$$CFI = \frac{\left(CMIN_{indp} - df_{indp}\right) - \left(CMIN_{deflt} - df_{deflt}\right)}{\left(CMIN_{indp} - df_{indp}\right)}$$

Where $CMIN_{indp}$ was the CMIN of independent model, df_{indp} was the degree of freedom of independent model, $CMIN_{deflt}$ was the CMIN of dependent model, and df_{deflt} was the degree of freedom of dependent model.

4.8.3.3 Parsimony Fit Measures

The third group of Goodness-of-fit index was parsimony fit measures. Ainur *et al.* (2017) stated that the optimal measurement of the apartment adjusted the mount of limitations of the projected typical. Similarly, Mulaik *et al.* (1989) stated that parsimony fit measures adjusted the complexity of the proposed model to produce a more appropriate fit index. Huh *et al.* (2009) classified parsimony fit measures into two domains, which are parsimony goodness of fit index (PGFI) and parsimony normed fit index (PNFI). Blunch (2012) stated that if the value of AGFI is negative, it means that the proposed model is worse than no model. Mulaik *et al.* (1989) developed the mathematic formula as followed:

$$PGFI = \left(\frac{df_t}{df_n}\right) \times GFI$$

Where df_n was the number of degree freedom of null model, df_t was the number of degree freedom of target model, and GFI was goodness of fit index?

Parsimony Normed Fit Index (PNFI)

Ramlall (2016) indicated that the PNFI (parsimony normed fit index) coordinated the NFI for model parsimony. The PNFI is computed as follow:

$$PNFI = \left(\frac{df_t}{df_n}\right) \times NFI$$

Where df_n was the number of degree freedom of null model, df_t was the number of degree freedom of target model, and NFI was the normed fit index?

Root Mean Square Error of Approximation (RMSEA)

Hooper *et al.* (2008) mentioned that the squared error of the root mean of the approximation indicated how well the proposed model represents. Furthermore, the authors stated that the value of RMSEA was between 0.05 and 0.10. Hermida *et al.* (2015) stated that RMSEA was the most basic index. This includes the chi-square of the model, degrees of freedom, and sample sizes given below:

$$RMSEA = \frac{\sqrt{\left(X^2 - df\right)}}{\sqrt{\left(df\right)\left(N-1\right)}}$$

Where, X^2 was chi-square, *df* is degree of freedom, and *N* was sample size.

Table 4.6 The Recommended Levels to be used to represent an Acceptable Model Fit for the Goodness-of-fit Measures

Index	Acceptable Value	Comments	Source
The ratio of the chi-square value to degree of freedom (CMIN/DF)	CMIN/DF<3	Value should be less than 3	Hair (2006)
Root-mean-square error of approximation (RMSEA)	RMSEA < 0.08	Range 0.05–0.1 is acceptable	MacCallum *et al.* (1996)
Goodness-of-fit Index (GFI)	GFI ≥ 0.80	Value greater or equal than 0.80 suggests a good fit	Filippini *et al.* (1998), Greenspoon and Saklofske (1998)

Adjusted Goodness-of-fit Index (AGFI)	AGFI ≥ 0.80	Value greater or equal than 0.80 suggests a good fit	Filippini *et al.* (1998)
Comparative Fit Index (CFI)	CFI > 0.90	Value greater than 0.90 suggests an acceptable fit	Byrne (1995), Hair *et al.* (2010)
Tucker–Lewis Index (TLI)	TLI > 0.90	Value greater than 0.90 suggests a good fit	Vandenberg and Scarpello (1994)
Normed Fit Index (NFI)	NFI >0.90	Value greater than 0.90 suggests a good fit	Arbuckle (1995)
Root Mean Square residual (RMR)	RMR<0.05	Value should be less than 0.05 suggests a good fit	Hair (2006)

Source: Constructed by author

Structural measurements and modeling should be tested in the commonly used Good-of-fit (GoF). SEM to determine whether the model fits the data were Chi-square X^2, which was the squared tolerance of values. The root mean of the estimate -RMSEA, the value of the good index -GFI, Adjusted fitness index -AGFI, benchmark suitability index -CFI, normative fitness index -NFI and tucker-lewis index -TLI. Also known as non-normative fit index -NNFI. Some GoF measurements were affected by the sample size as well as the distribution of data (Ainur *et al.*, 2017).

4.9 Summary the Use of Statistical Tools in Testing Hypotheses

Table 4.8 summarized the statistical tools used to test hypotheses in this study, and there were ten hypotheses in this study, all of which were verified by the structural equation modeling statistical tool.

Table 4.7 Summary of Statistical Tools Used in Testing Hypotheses

Null Hypothesis	Null Hypothesis Description	Statistical Tool
H1o	There is no significant relationship between teaching methods and student satisfaction.	Structural Equation Modeling
H2o	There is no significant relationship between infrastructure facilities and student satisfaction.	Structural Equation Modeling
H3o	There is no significant relationship between learning materials and student satisfaction.	Structural Equation Modeling
H4o	There is no significant relationship between academic aspects and student satisfaction.	Structural Equation Modeling
H5o	There is no significant relationship between transformative service quality and student satisfaction.	Structural Equation Modeling
H6o	There is no significant relationship between transformative service quality and university image.	Structural Equation Modeling
H7o	There is no significant relationship between university image and student satisfaction.	Structural Equation Modeling
H8o	There is no significant relationship between university image and student loyalty.	Structural Equation Modeling
H9o	There is no significant relationship between student satisfaction and student loyalty.	Structural Equation Modeling

Source: Constructed by author

CHAPTER FIVE

RESULTS AND ANALYSIS

This chapter provided a description of data analysis, including non-responsive testing, validity and reliability testing of measurement models, and results of structural equation modeling. All measurements were accessed to test the hypotheses.

5.1 Demographic Characteristics of the Respondents

In this study, the researchers distributed 534 questionnaires to students, but obtained 500 questionnaires from 3 universities. 34 unfinished questionnaires were included in the collection. A valid questionnaire returned constituting 29.40% and 70.60% from men and women. For the age of respondents, 95% were 18-25 years old, 5% were 26-33 years old (some students fail the high school).

In the second year, 22.20%, in the third year, 41.60%, and in the fourth year, 36.20% were undergraduate students. In addition, all students from three universities: 38.80% in accounting, 10.60% in marketing, 8.60% in business, 42% in finance and banking. Furthermore, 77% of students were collected from National University of Management, 12% of students were collected from Western University Phnom Penh, and 11% of students were collected from Western University Kampong Cham Branch. The demographic characteristics of the respondents are shown in table 5.1.

Table 5.1 Demographic Characteristics of Respondents

Demographic Variable	**Sample Size (n=500)**		
	Category	**Frequency**	**Percentage (%)**
Gender	Male	147	29.40
	Female	353	70.60
Age	18-25 years old	475	95

	26-33 years old	25	5
School Year	Year 2	111	22.20
	Year 3	208	41.60
	Year 4	181	36.20
Major	Accounting	194	38.80
	Marketing	53	10.60
	Management	43	8.60
	Finance and Banking	210	42
Name of the University	National University of Management	386	77
	Western University Phnom Penh	58	12
	Western University Kampong Cham Branch	57	11

Source: Constructed by Author

5.2 Descriptive Analysis of Measurement Scales

Then again, regarding the Groundbreaking Quality (TQ1 to TQ6), the mean scores of all things were better than expected (3.49 to 3.85), and SD additionally were a lot of variety. For College Picture (IM1 to IM5), the mean scores were not exactly high (3.76 to 3.92), and the SD esteems were a lot of variety. As far as Understudy Fulfillment (SS1 to SS6), the mean scores of all things were better than expected (3.75 to 3.91), and the SD were much variated. Additionally, the mean of all things for Understudy Devotion were better than expected (3.63 to 3.82), and the SD esteems were a lot of variety. The clear majority of the respondents applied the past information, activities, gaining from their won experimentation to apply in their works. The engaging examination of the estimation scale was appeared in Table 5.2.

The five-point Likert Scale was applied to measure the opinion, the true, and frequency that 1= “Strong Disagree”, 2= “Moderately Disagree”, 3= “Neutral”, 4= “Moderately Agree”, 5= “Strong Agree”. Table 5.2 showed the mean scores of 5 constructed that were more than the midpoint of the scale and SD were more than 1.0, showing much variation in the responses. As the researcher considered about the Teaching Methods (TM1 to TM5). It showed that the mean of all items was more than the midpoint. For the items of Infrastructure Facilities (IF1 to IF9), all items were also midpoint accepted 2 items (Fresh drinking water is available, and Transport facility is provided by the university) were below the midpoint. It could be seen that the fresh drinking water is not available, while the transport facility is not provided by the universities). Based on the Learning Material (LM1 to LM5), the mean scores were above average (3.12 to 3.60), and the SD were much variated. For the Academic Environment (AE1 to AE9), the mean scores were not quite high (3.84 to 4.06), and the SD were much variated.

Then again, as far as the Groundbreaking Quality (TQ1 to TQ6), the mean scores of all things were better than expected (3.49 to 3.85), and SD additionally were a lot of variety. For College Picture (IM1 to IM5), the mean scores were not exactly high (3.76 to 3.92), and the SD esteems were a lot of variety. Regarding Understudy Fulfillment (SS1 to SS6), the mean scores of all things were better than expected (3.75 to 3.91), and the SD were much variated. Additionally, the mean of all things for Understudy Faithfulness were better than expected (3.63 to 3.82), and the SD esteems were a lot of variety. The clear majority of the respondents applied the past information, activities, gaining from their won experimentation to apply in their works. The clear investigation of the estimation scale was appeared in Table 5.2.

Table 5.2 Descriptive Analysis of Measurement Scales

Construct	Items	Descriptive	Mean	Std. Deviation
Teaching Methods	TM1	The proportion between theory and practice was adequate	3.66	.656
	TM2	The bibliography, documentation, etc., provided were adequate	3.78	.711
	TM3	The teaching methods were appropriate	3.81	.734
	TM4	The level at which these subjects were discussed was appropriate	3.72	.705
	TM5	The extent and distribution of the subjects were correct	3.89	.707
Infrastructure Facilities	IF1	Sufficient playgrounds are available	3.23	.884
	IF2	There is enough space for parking at the university	3.63	.878
	IF3	Adequate numbers of washrooms are available	3.46	.886
	IF4	Hostel facility is provided by the university	3.03	1.033
	IF5	Fresh drinking water is available	2.94	1.038
	IF6	Generator facility is provided by the university	3.58	.939
	IF7	Transport facility is provided by the university	2.67	1.077
	IF8	Classrooms are well equipped	3.57	.878
	IF9	Waiting rooms are available for parents of the students	3.22	.966
Learning Material	LM1	Libraries are rich and updated with material related to subjects	3.60	.833

	LM2	Students are informed regularly about updated library collection	3.47	.871
	LM3	Adequate laboratories are available	3.12	.950
	LM4	Audio-visual aids are available for classroom teaching	3.22	.930
	LM5	Sufficient computers are available in my college	3.38	.964
Academic Environment	AE1	Instructors have the knowledge to answer my questions related to the course content	4.00	.731
	AE2	Instructors deal in a courteous manner	3.93	.736
	AE3	When I have a problem, instructors show a sincere interest in solving it	3.94	.730
	AE4	Instructors show positive attitude towards the students	3.94	.745
	AE5	Instructors communicate well in the classroom	3.96	.764
	AE6	Instructors provide feedback about my progress	3.84	.721
	AE7	Instructors are highly educated in their respective field	4.06	.718
	AE8	The hand-outs are provided adequately by the instructors	3.89	.756
	AE9	The documentations are provided adequately by the instructors	3.87	.770

Transformative Quality	TQ1	My university has enabled me to be more self-confident	3.70	.737
	TQ2	My university has helped me to think more critically	3.79	.724

	TQ3	My university has enabled me to have a higher level of self-awareness	3.85	.732
	TQ4	My university has helped me to develop problem-solving skills with respect to my field of study	3.77	.746
	TQ5	My university has allowed me to transcend my prejudices	3.49	.846
	TQ6	My university has enabled me to increase my knowledge and skills in general	3.85	.715
University Image	IM1	My university has a good academic reputation	3.82	.758
	IM2	Compared to other universities my university has a good image	3.82	.742
	IM3	Research output from my university is highly rated	3.77	.749
	IM4	Qualification gained from my university is externally perceived as being of value	3.92	.727
	IM5	My university is a prestigious university	3.76	.743
Student Satisfaction	SS1	My university has a good academic reputation	3.82	.758

	SS2	Compared to other universities my university has a good image	3.82	.742
	SS3	Research output from my university is highly rated	3.77	.749
	SS4	Qualification gained from my university is externally perceived as being of value	3.92	.727
	SS5	My university is a prestigious university	3.76	.743
	SS6	My university has good academic reputation	3.82	.758
Student Loyalty	SL1	Recommend your university to friends and relatives	3.79	.694
	SL2	Say favorable things about your university to others	3.79	.699
	SL3	Choose the same university again if you could start all over	3.63	.827
	SL4	Attend the same university if you follow another course in future	3.68	.843

Source: Constructed by author

5.3 Outliers

Outliers are non-existent on the Likert's scale. A strong response (1 or 5) is not an abnormal behavior.

In fact, many outliers were detected as not meeting previous expectations based on the researcher's experience. Preliminary study evidence from literature or common sense. In this study, five-point Likert Scale ranging from 1= "Strongly Disagree", 2= "Moderately Disagree", 3= "Neutral", 4= "Moderately Agree", 5= "Strongly Agree" with respect to multivariate outliers, Mahalanobis D^2 was used as a measure. The researcher found that there were not outliers. So that all observations should be retained for this study.

5.4 Testing for Multivariate Assumptions

5.4.1 Normality

The qualities for imbalance and kurtosis between - 2 and +2 are viewed as adequate to demonstrate typical univariate dispersion Mallery and George (2000) as measures for ordinariness that were introduced in Table 5.3 which showed that the vast majority of the skewness esteems were negative and near nothing (between - 0.156 to - 1.177) that implies the long tail of conveyance is to one side, while there was just a single variable (IF7) that had the positive-skewness. In the meantime, the majority of the kurtosis values were additionally negative and near nothing (between - 0.41 to - 0.913) that showed exceptionally slight level shape with not many cases at the extraordinary. The outcomes showed that the qualities were not outrageous. Consequently, none of these factors were changed.

Table 5.3 Assessment of Normality

Construct	Items	Skewness	Kurtosis	Construct	Items	Skewness	Kurtosis
Teaching	TM1	-.569	.839	Academic	AE1	-.953	1.988
Methods	TM2	-.590	1.260	Environment	AE2	-1.038	1.818
	TM3	-.998	1.809		AE3	-.836	1.995
	TM4	-.751	1.395		AE4	-1.013	1.915
	TM5	-.804	1.938		AE5	-.805	1.694
	IF1	-.462	-.051		AE6	-.653	1.387

Infrastructure	IF2	-.780	.677		AE7	-.843	1.852
Facilities	IF3	-.514	.198		AE8	-.626	1.057
	IF4	-.156	-.601		AE9	-.676	1.162
	IF5	-.163	-.778	Transformative	TQ1	-.659	1.135
	IF6	-.757	.427	Quality	TQ2	-.714	1.553
	IF7	.043	-.913		TQ3	-.923	1.818
	IF8	-.456	.171		TQ4	-.735	1.487
	IF9	-.461	-.229		TQ5	-.587	.422
Learning	LM1	-.526	.564		TQ6	-.931	1.886
Material	LM2	-.568	.438	University	IM1	-.971	1.729
	LM3	-.308	-.412	Image	IM2	-.820	1.776
	LM4	-.331	-.120		IM3	-.922	1.888
	LM5	-.534	-.041		IM4	-1.009	1.786
Student	SS1	-1.177	1.933		IM5	-.673	1.248
Satisfaction	SS2	-.928	1.962	Student Loyalty	SL1	-.844	1.854
	SS3	-.956	1.832		SL2	-.816	1.972
	SS4	-.975	1.887		SL3	-.834	1.066
	SS5	-1.065	1.892		SL4	-1.010	1.513
	SS6	-1.012	1.722				

Source: Constructed by author

5.5 Confirmatory Factor Analysis (CFA)

This part was to study confirmatory factor analysis (CFA) solution, the model that causal factors could affect the impact of innovative management on the undergraduate student satisfaction with business education in a case study at three Cambodian Universities. The purpose of this CFA was to investigate the adequacy of entries for the number of elements and dimensions they were constructing in this empirical model (Bollen, 1989). This research used the Second Orders Factor Analysis Technique with the estimation of weight factor determining the goodness of fit indices. Moreover, the research was considered by the Chi-square statistics, GFI (Goodness of fit index), RMSEA (Root mean square error of approximation), CFI (Comparative fit indices) and TLI (Tucker-Lewis Index) consisting of 8 measurement models: Teaching Methods, Infrastructure Facilities, Learning Material, Academic Environment,

Transformative Quality, University Image, Student Satisfaction, and Student Loyalty for this study.

5.5.1 Goodness of fits

The Goodness of Fit (GFI) measurement was made by Jöreskog and Sörbom (1993) as an option in contrast to the chi-square test and figures the extent of difference that was assessed as the assessed populace covariance (Tabachnick and Fidell, 2007). The figuring of the change and covariance accounted by the model. It showed how comparative the model was to the noticed covariance framework reenactment (Diamantopoulos et al., 2000). This measurement goes from 0 to 1, with bigger examples adding values. Due to the more noteworthy levels of opportunity contrasted with the example size, GFI had a diminished inclination (Sharma *et al.,* 2005). GFI expanded as the quantity of boundaries expanded (MacCallum and Hong, 1997), and the inclination was likewise higher with huge examples (Bog *et al*., 2005).

Traditionally, an omnibus cut-off point of 0.90 had been recommended for GFI, but model studies showed that cuts above 0.95 were more appropriate when loads, coefficients, and sample sizes are low (Shevlin & Miles, 1998). Therefore, this index had become less popular in recent years and it had been suggested that one should not use an index related to GFI (Sharma *et al.*, 2005). AGFI, which adjusts GFI to the degree of freedom with a very saturated version with up reduces fit (Tabachnick & Fidell, 2007).

Therefore, penalized and unsuitable models were preferred for complex models, and AGFI tends to increase with size. Unlike GFI, for example, AGFI values range from 0 to 1, and values above 0.90 usually indicate the appropriate version. Due to the frequent influence of the sample size on the appropriate index, these two were not used as standalone indices, but given their historical significance, they were often reported in structural analysis of the covariance. The results were within acceptable threshold levels and consistent with the concepts proposed by Hair (2009); MacCallum and Hong (1997) ; Filippini *et al*. (1998); Byrne

(1995); Vandenberg and Scarpello (1994); Arbuckle (1995) by Chi – Square (X^2/df) < 3, P-value < 0.05, GFI ≥ 0.80, AGFI ≥ 0.80, TLI > 0.90, CFI > 0.90, RMSEA < 0.08.

Table 5.4 Goodness of Fit

Index	**Acceptable Value**	**Comments**	**Source**
The ratio of the chi-square value to degree of freedom (CMIN/DF)	CMIN/DF<3	Value should be less than 3	Hair (2009)
Root-mean-square error of approximation (RMSEA)	RMSEA < 0.08	Range 0.05–0.1 is acceptable	Browne and Cudeck (1993)
Goodness-of-fit index (GFI)	GFI ≥ 0.80	Value greater or equal than 0.80 suggests a good fit	Filippini *et al.* (1998), Greenspoon and Saklofske (1998)
Adjusted goodness-of-fit index (AGFI)	AGFI ≥ 0.80	Value greater or equal than 0.80 suggests a good fit	Filippini *et al.* (1998)
Comparative fit index (CFI)	CFI > 0.90	Value greater than 0.90 suggests an acceptable fit	Byrne (1995), Hair (2009)
Tucker–Lewis index (TLI)	TLI > 0.90	Value greater than 0.90 suggests a good fit	Vandenberg and Scarpello (1994)
Normed fit index (NFI)	NFI >0.90	Value greater than 0.90 suggests a good fit	Arbuckle (1995)
Root mean square residual (RMR)	RMR<0.05	Value should be less than 0.05 suggests a good fit	Hair (2009)

Source: Constructed by author

Table 5.5 The Reliability Statistics of the Model (n=500)

Variables	Number of Items	Cronbach's Alpha
Teaching Methods	5	0.826
Infrastructure Facilities	9	0.870
Learning Material	5	0.799
Academic Environment	9	0.935
Transformative Quality	6	0.875
University Image	5	0.903
Student Satisfaction	6	0.938
Student Loyalty	4	0.816

Source: Constructed by author

Table 5.4 showed the reliability test results of each structure in this study in the pilot test. Alpha tests on how to train are as followed: 0.826, which was a very strong suggestion. Alpha testing for infrastructure facilities was equal to 0.870, which was a very good link strength. The alpha test for the study material was the same at 0.799, which was a good force to be reminded of suggestion. Alpha test for an equivalent academic environment was equal to 0.935, which was excellent for the suggestion. The alpha test for change quality was 0.875, which was a very good strength of suggestion. The alpha test for college images was 0.903, which was excellent of suggestion. The Alpha test for student satisfaction was equal to 0.938, which was excellent of suggestion. The Alpha test for student loyalty was equal to 0.816, which was a very good strength of suggestion. In conclusion, all the constructs in this study had an Alpha coefficient of above 0.80, which showed that all constructs were reliable, and adequate to be used as the research instrument for this study.

5.5.2 Construct Validity

5.5.2.1 Convergent Validity

The convergence validity was a structural result that measures the same structure or includes other items with a high covariance ratio (Pallant *et al*., 2015). How to set up validations that were affected by two or more measurements, having the same characteristics and gave similar or relative scores. Convergence validity could be assessed on composite reliability (CR) or internal consistency, and reliability could be measured using Cronbach alpha test (CA), load factor, and Average Variance Extracted (AVE). Two confidences of Cronbach's alpha coefficient (α) were known as confidence settings, and both should be used in most structural equations modeling (SEM). Finally, evaluating research tools were using composite reliability.

The composite reliability (CR) was derived from the inclusion of all factor loads or standardized loads, error variance, and R-square entries in variable elements related to the structure or scale reliability. Sum and the average variance extracted (AVE), which was the variance in indicators. The researcher had to consider loading factors for different items because CR would measure the overall reliability of different items but the similar items.

For each item, reliability tests were performed using the Cronbach Alpha (CA) test. The composite reliability (CR) focused on the structure, the latent variable, the load factor, and the relationship between each indicator and the structural variable. Latent structure indicators were used together to measure structure, and the average variance extracted (AVE) was the amount of covariance between latent structure indicators (Hair, 2009).

Iacobucci and Duhachek (2003) implied that the composite reliability rating was 0.70 or 0.80, which was supported by Hair (2009), indicating that the composite reliability should be above the 0.70 threshold. And the threshold of the plotted average extracted variance (AVE) was above 0.50, but Tseng *et al.* (2006) argued that the reliability of the composite should be

above 0.60 and the AVE should be above 0.50. According to Fornell and Larcker (1981), the authors stated that the AVE value should be greater than 0.50, which was considered favorable, which means that 50% of the measured variance was hypothetical setting.

Raines-Eudy (2000) concluded that the extracted variance should be greater than 0.50. This means that both the structure and the accuracy of each variable were high. Based on the fitted model of the chi-square test and the compound confidence, the two connections were very low when the compound confidence evaluated the strength of the correlation. However, the chi-square test measured a model's goodness-of-fit or relationship pattern.

Summary of the factor loading, Composite Reliability (CR), and Average Variance Extracted (AVE):

- Factor Loading (Standardized Coefficients) > 0.5 and p-value<0.5 (t-value>1.98) (Hair, 2009); (Fornell & Larcker, 1981)
- Composite Reliability (CR, Construct Reliability, pc) >0.7
- Average Variance Extracted (AVE, pv)>0.5 (Fornell & Larcker, 1981)

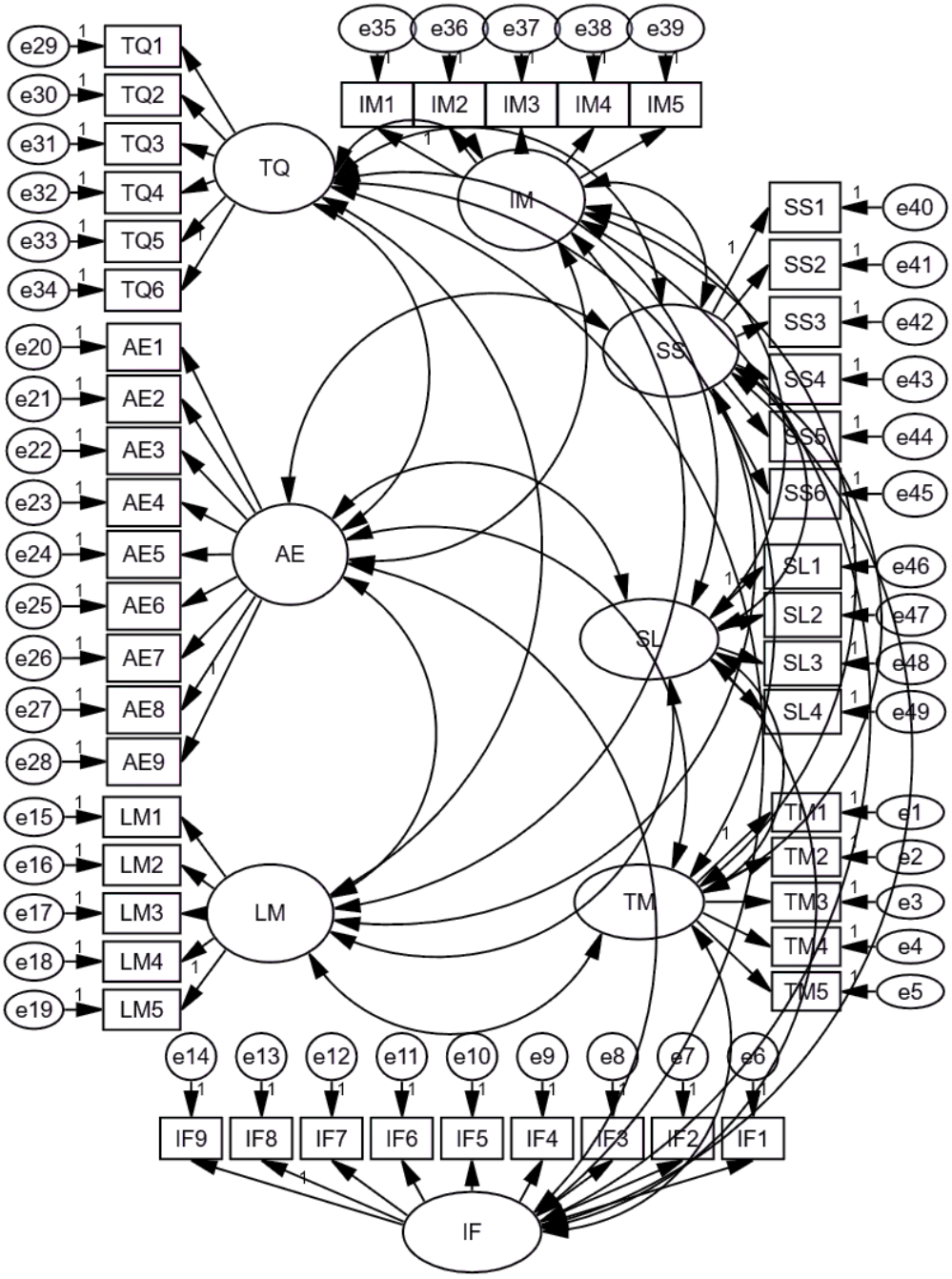


Figure 5.1 Overall Measurement Model before modification

The result from CFA analysis prior to modification did not meet the acceptable threshold levels, which was consistent with the previous studies conducted by Hair (2009), and Gefen *et al*. (2010). The results came out as Chi – Square = 3297.90, df = 1100, P-value = 0.000 < 0.05, and X^2/df. = 2.998. The results of the CFA analysis were good fit, and lack of fit to the indices of the model. The data based on a number included Goodness-of-fit statistic

(GFI)=0.781, Adjusted Goodness-of-fit statistic (AGFI)=0.756, Comparative Fit Index (CFI) = 0.898, Normed-fit index (NFI)= 0.854, Root Mean Square Error of Approximation (RMSEA) 0.063. In Summary, the CFA analysis before modification was not strong enough and resulted in Lack of Fit, as shown in Figure 5.1 and Table 5.6. The modification indices also suggested an **improved** model fit by adding a path connecting reports modification indices in Figure 5.2 and Table 5.7.

Table 5.6 Display Statistical Values to Assess the Harmony of the Model with Empirical Data

Index	**Criterion**	**Statistical Values Obtained from Analysis Before Modification**
X^2/df (CMIN/df)	< 3	2.998
GFI	≥ 0.80	0.781
AGFI	≥ 0.80	0.756
CFI	> 0.90	0.898
NFI	> 0.90	0.854
RMSEA	< 0.08	0.063
Model summary		**Not in harmony with empirical data**

Source: Constructed by author

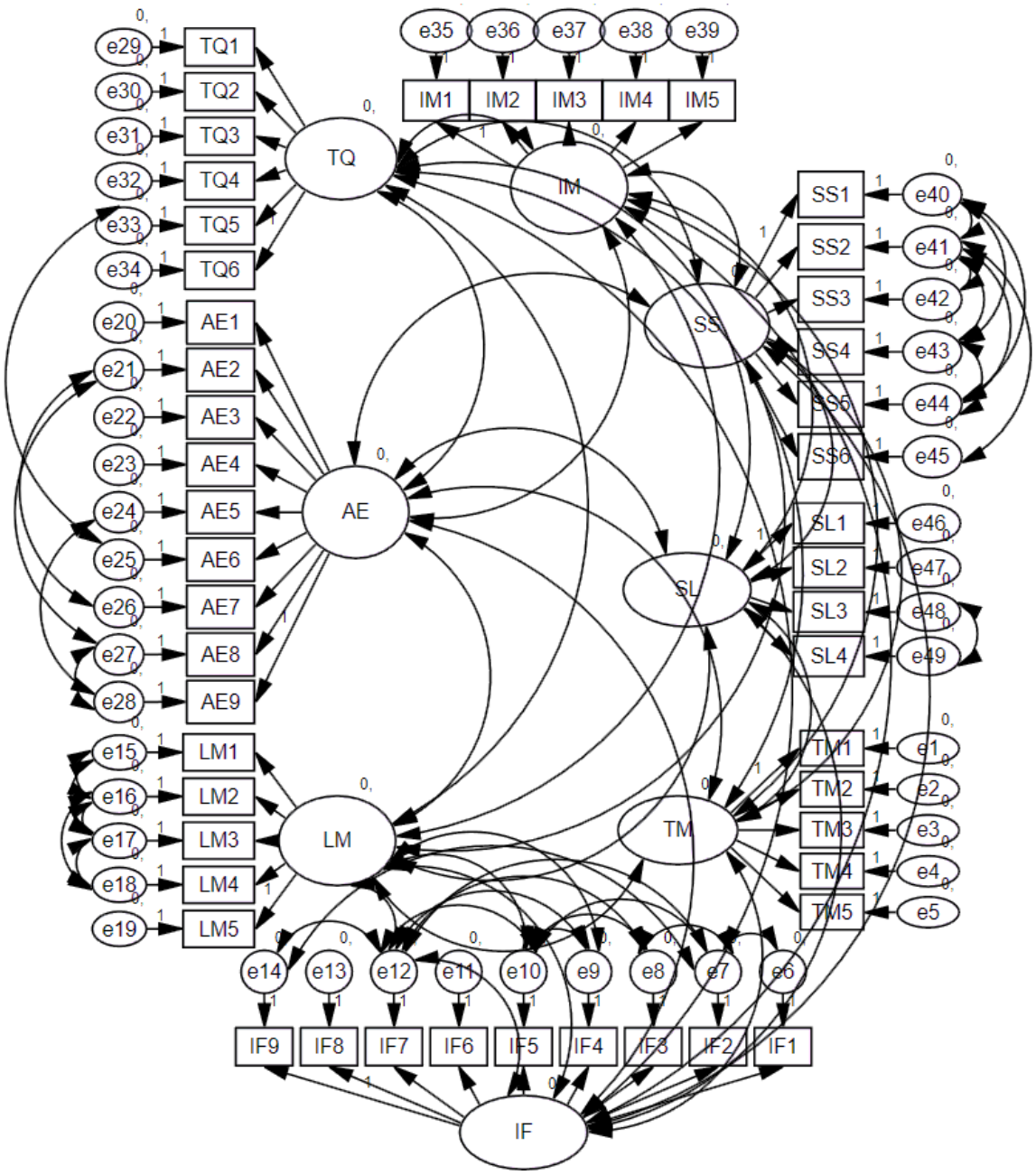


Figure 5.2 Overall Measurement Model after Modification

The result from CFA analysis after to modification met the acceptable threshold levels, which was consistent with the previous studies conducted by Hair (2009), and Gefen *et al.,* (2010). The results came out as Chi – Square = 1496.20, df = 1016, P-value = 0.000 < 0.05, and X^2/df. = 2.042. The results of the CFA analysis were good fit, and lack of fit to the indices of the model. The data based on a number included Goodness-of-fit statistic (GFI)=0.858,

Adjusted Goodness-of-fit statistic (AGFI)=0.834, Comparative Fit Index (CFI) = 0.950, Normed-fit index (NFI)= 0.905, Root Mean Square Error of Approximation (RMSEA) 0.046. In Summary, the CFA analysis before modification was not strong enough and resulted in Lack of Fit, as shown in Figure 5.2 and table 5.7. The modification indices also suggested an improved model fit by adding a path connecting reports modification indices.

Table 5.7 Display Statistical Values to Assess the Harmony of the Model with Empirical Data

		Statistical values obtained from analysis	
Index	**Criterion**	**Before modification**	**After modification**
X^2/df (CMIN/df)	< 3	2.998	2.042
GFI	≥ 0.80	0.781	0.858
AGFI	≥ 0.80	0.756	0.834
CFI	> 0.90	0.898	0.950
NFI	> 0.90	0.854	0.905
RMSEA	< 0.08	0.063	0.046
Model summary		**Not in harmony with empirical data**	**In harmony with empirical data**

Source: Constructed by author

To analyze the measurement model, if the convergent validity and discriminant validity were acceptable, then the researcher could continue to test the structural model. Average Variance Extracted (AVE) is higher than 0.50 but, the study can accept 0.4, as Fornell and Larcker (1981) stated that if AVE is less than 0.50, but composite reliability is higher than 0.60, the convergent validity of the construct is still adequate. The results of convergent validity testing showed that Cronbach's alpha and Composite reliability of each construct ranged from 0.799 to 0.938 (Table 5.5), all Alpha values were greater than the recommended level of 0.70 (Iacobucci & Duhachek, 2003), indicating high level of reliability. Additionally, the

discriminant validity among the constructs were assessed based on the criteria recommended by Fornell and Larcker (1981). The square root of the AVE should exceed the correlation shared between the construct and other construct in the model. As shown in Table 5.9, the square root of all the AVE estimates for each variable from 0.70 to 0.96 were greater than the inter-construct correlations; thus, the measurement had sufficient discriminant validity.

Table 5.8 Confirmatory factor analysis result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variable	**Factor Loanding>0.5**	**S.E.**	**t-stat>1.98 &p-value<0.05**	**CR (Pc)>0.7**	**AVE (Pv)>0.5**
Teaching Methods				**0.862**	**0.557**
(TM)					
TM1	.680				
TM2	.705	.080	14.062***		
TM3	.807	.082	15.800***		
TM4	.772	.079	15.204***		
TM5	.763	.079	15.052***		
Infrastructure Facilities				**0.856**	**0.503**
(IF)					
IF9	.597				
IF8	.798	.102	13.154***		
IF7	.536	.086	9.602***		
IF6	.595	.099	10.859***		
IF5	.622	.104	11.884***		
IF4	.547	.102	9.899***		
IF3	.735	.103	12.112***		
IF2	.693	.100	11.514***		
IF1	.625	.095	11.151***		

Learning Material				**0.845**	**0.524**
(LM)					
LM5	.578				
LM4	.753	.107	12.128***		
LM3	.754	.115	12.065***		
LM2	.750	.104	12.162***		
LM1	.767	.102	12.133***		

Source: Constructed by author

Variable	**Factor Loanding>0.5**	**S.E.**	**t-stat>1.98 &p-value<0.05**	**CR (Pc)>0.7**	**AVE (Pv)>0.5**
Academic Environment					
(AE)				**0.945**	**0.657**
AE9	.763				
AE8	.761	.033	30.074***		
AE7	.835	.051	20.172***		
AE6	.774	.052	18.559***		
AE5	.840	.058	19.197***		
AE4	.795	.054	19.064***		
AE3	.838	.052	20.336***		
AE2	.851	.052	20.657***		
AE1	.836	.052	20.308***		
Transformative Service Quality					
(TQ)				**0.915**	**0.645**
TQ6	.822				
TQ5	.598	.062	14.419***		
TQ4	.822	.048	21.829***		
TQ3	.876	.046	24.066***		
TQ2	.858	.045	23.309***		
TQ1	.813	.047	21.530***		

Source: Constructed by author

Variable	**Factor Loanding>0.5**	**S.E.**	**t-stat>1.98 &p-value<0.05**	**CR (Pc)>0.7**	**AVE (Pv)>0.5**
University Image					
(IM)				**0.925**	**0.713**
IM1	.824				
IM2	.841	.044	22.728***		
IM3	.853	.044	23.226***		
IM4	.872	.042	24.009***		
IM5	.834	.044	22.434***		
Student Satisfaction					
(SS)				**0.958**	**0.794**
SS1	.887				
SS2	.881	.043	23.623***		
SS3	.869	.046	22.828***		
SS4	.910	.044	24.643***		
SS5	.906	.048	22.839***		
SS6	.894	.044	23.981***		
Student Loyalty					
(SL)				**0.851**	**0.591**
SL1	.806				
SL2	.843	.050	20.778***		
SL3	.690	.064	16.257***		
SL4	.727	.064	17.269***		

Source: Constructed by author

5.5.2.2 Discriminant Validity

According to Fornell and Larcker (1981), testing for discriminant validity was evaluated by computing the square root of each AVE. Based on this study, the value of discriminant validity is larger than all inter-construct/factor correlations, therefore, the discriminant validity is considered to be supportive. If Factor Loading (Standardized Coefficients) < 0.5 but >0.3 and p-value<0.5, use this reference for Factor Loading>0.3 (Abdi, 2003).

Table 5.9 Discriminant Validity Output

Construct	TM	IF	LM	AE	TQ	IM	SS	SL
TM	**0.75**							
IF	0.47	**0.70**						
LM	0.29	0.47	**0.77**					
AE	0.71	0.31	0.41	**0.81**				
TQ	0.63	0.36	0.40	0.75	**0.96**			
IM	0.56	0.32	0.41	0.69	0.76	**0.85**		
SS	0.56	0.27	0.41	0.68	0.77	0.78	**0.87**	
SL	0.57	0.38	0.40	0.66	0.66	0.66	0.70	**0.76**
TM: Teaching Methods, IF: Infrastructure Facilities, LM: Learning Material, AE: Academic Environment, TQ: Transformative Service Quality, IM: University Image, SS: Student Satisfaction, SL: Student Loyalty								

Source: Constructed by author

5.6 Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) had become one of the techniques for researchers across disciplines. Therefore, this section aimed to study the model with the innovative management on the undergraduate student satisfaction with business education: A case study at three Cambodian universities. This model analyzed the relationships among various constructs to see the relationships among various constructs, as shown in Figure 5.3.

5.6.1 Structural Equation Modeling Analysis before Modification

The result from SEM analysis prior to modification did not meet the acceptable threshold levels, which was consistent with the previous studies conducted by Hair (2009), and Gefen et al. (2010). The results came out as Chi – Square = 4478.408, df = 1118, P-value = 0.000, and X/df. = 4.006. The results of the SEM analysis were good fit, and lack of fit to the eight indices of the model. The data based on a number included Goodness-of-fit statistic (GFI)=0.702, Adjusted Goodness-of-fit statistic (AGFI)=0.673, Comparative Fit Index (CFI) = 0.843, Normed-fit index (NFI)= 0.802, Root Mean Square Error of Approximation (RMSEA) 0.078. In Summary, the SEM analysis before modification was not strong enough and resulted in Lack of Fit, as shown in Figure 5.3 and table 5.10. The modification indices also suggested an improved model fit by adding a path connecting reports modification indices in Figure 5.4 and table 5.11.

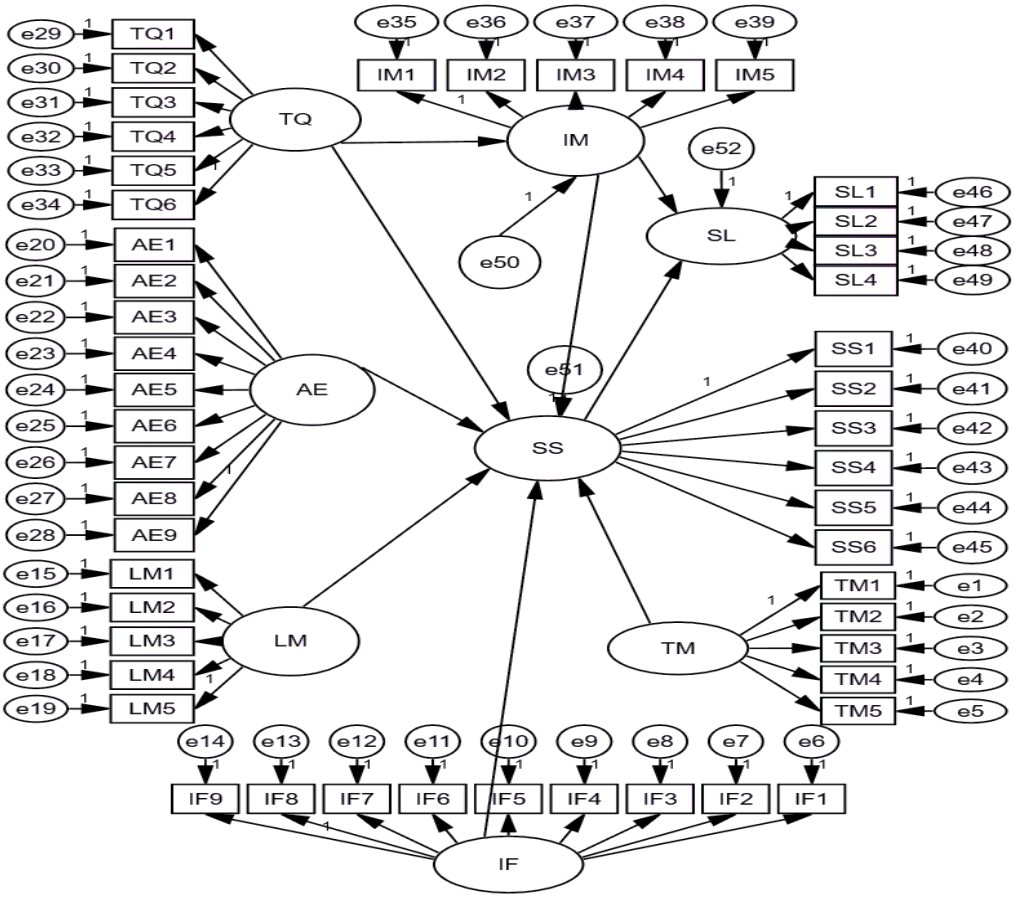


Figure 5.3 SEM analyses the causal factors that can affect the determinants of business education on student satisfaction in Higher Education: A case study in Cambodia before modification

Table 5.10 Fit Indices for the Structural Model Before Modification

Index	Criterion	Statistical values obtained from analysis Before Modification
X^2/df (CMIN/df)	< 3	4.006
GFI	≥ 0.80	0.702
AGFI	≥ 0.80	0.673
CFI	> 0.90	0.843
TLI	> 0.90	0.835
RMSEA	< 0.08	0.078
Model summary		**Lack of Fit**

Source: Constructed by author

5.6.1 Structural Equation Modeling Analysis After Modification

The data revealed SEM analysis on the causal factors that could affect innovative management on the undergraduate student satisfaction with business education: A case study at three Cambodian universities. Chi-square was a traditional measure to assess the fitness of the entire model and estimating the magnitude of the error between the sample and the fitted covariance matrix (Hu & Bentler, 1999).

A good model yielded insignificant results at the 0.05 threshold (Bollen, 1989). The results were within acceptable threshold levels and consistent with the concepts by Hair (2009); Browne and Cudeck (1993); Filippini *et al*. (1998) ; Byrne (1995); Vandenberg and Scarpello (1994); Arbuckle (1995) by Chi – Square (X^2/df) < 3, P-value < 0.05, GFI ≥ 0.80, AGFI ≥ 0.80, TLI > 0.90, CFI > 0.90, RMSEA < 0.08. Furthermore, the results of the SEM analysis on the causal factors that could affect the determinants of business education on student satisfaction in higher education: A case study in Cambodia were demonstrated relatively a reasonable fit of the eight indexes of model to the data based on a number of fit statistics.

Chi – Square (X^2/df) = 2236.249/1082 or 2.067, consistent with the concept by Hair (2009), but P-value = 0.0000, which leaded to Lack of Fit because a good model fit would provide an insignificant result at a 0.05 threshold (Bollen, 1989). Goodness-of-fit statistics (GFI)=0.841, Adjusted Goodness-of-fit statistic (AGFI)=0.820 Comparative Fit Index (CFI) = 0.946, Tucker Lewis Index (TLI)=0.941, Root Mean Square Error of Approximation (RMSEA) 0.046.

The results in the table showed SEM analysis with the causal factors that could affect the determinants of business education on student satisfaction in higher education: A case study in Cambodia. The results strongly suggested that each set of items represents a single underlying construct and provided evidence for discriminate validity or fit. From the overall perspective, the data indicated good suitability for the test version.

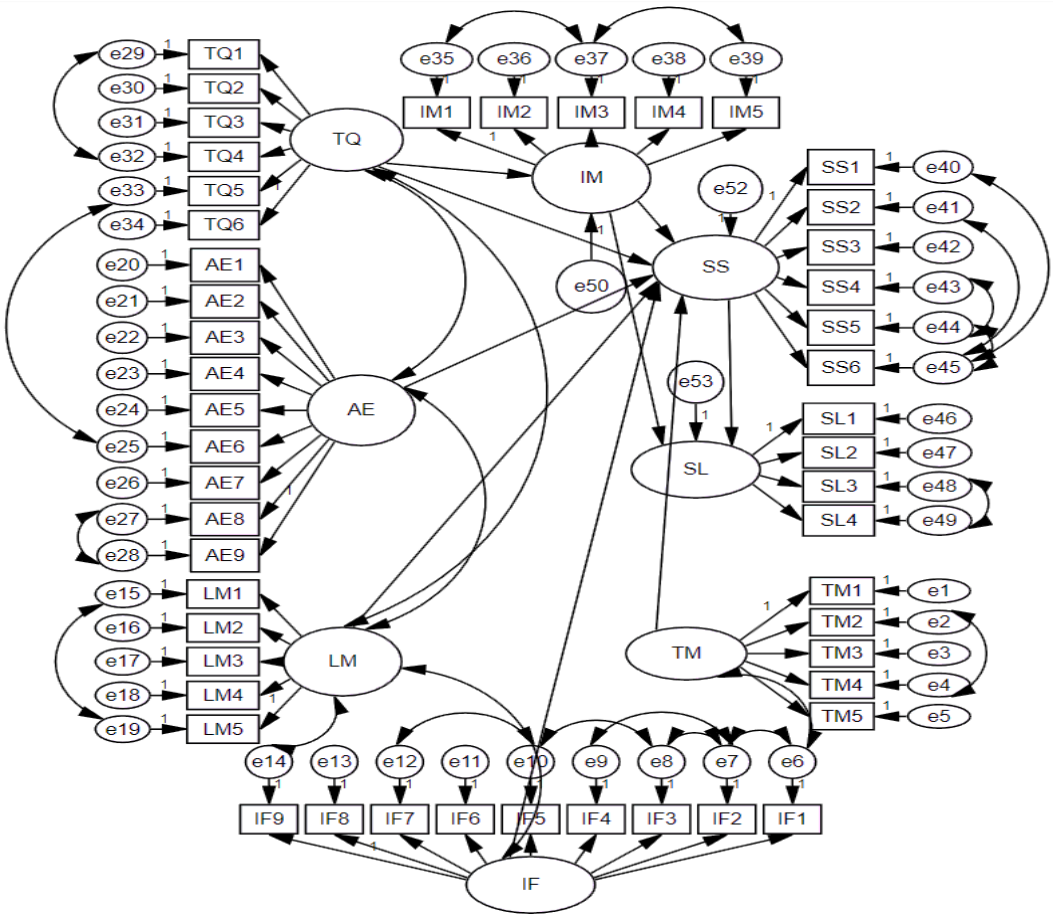


Figure 5.4 SME analyses the causal factors that can affect the determinants of business education on student satisfaction in Higher Education: A case study in Cambodia after modification

Table 5.11 Fit Indices for the Structural Model Before and After Modification

		Statistical Values Obtained from Analysis	
Index	**Criterion**	**Before modification**	**After modification**
X^2/df (CMIN/df)	< 3	4.006	2.067
GFI	≥ 0.80	0.702	0.841
AGFI	≥ 0.80	0.673	0.820
CFI	> 0.90	0.843	0.946
TLI	> 0.90	0.802	0.941
RMSEA	< 0.08	0.078	0.046
Model Summary		**Lack of Fit**	**Acceptable Model Fit**

Source: Constructed by author

Table 5.12 Path analysis by Structure Equation Modeling (SEM)

Hypotheses	Standardized path coefficients (β)	t-stat >1.98	Test Result
H1: Teaching Methods → Student Satisfaction	0.046	0.950	Not Supported
H2: Infrastructure Facilities → Student Satisfaction	-0.094	-1.297	Not Supported
H3: Learning Material → Student Satisfaction	0.108	1.483	Not Supported
H4: Academic Environment → Student Satisfaction	0.078	1.463	Not Supported
H5: Transformative Quality → Student Satisfaction	0.343	5.364*	Supported
H6: Transformative Quality → University Image	0.810	18.532*	Supported
H7: University Image → Student Satisfaction	0.467	8.925*	Supported
H8: University Image → Student Loyalty	0.315	5.061*	Supported
H9: Student Satisfaction → Student Loyalty	0.585	9.097*	Supported

Source: Constructed by author

The result from the table 5.12 above could be summarized as below.

H_1: The standardized path coefficient between Teaching Methods and Student Satisfaction was 0.046 (t-value=0.950). Therefore, there is no significant relationship between teaching methods and student satisfaction. Consequently, H_1 was not supported.

H_2: The standardized coefficient between Infrastructure Facilities and Student Satisfaction was -0.094 (t-value=-1.297). Therefore, there is no significant relationship between Infrastructure Facilities and Student Satisfaction. Consequently, H_2 was not supported.

H_3: The standardized coefficient between Learning Material and Student Satisfaction was 0.108 (t-value=1.483). Therefore, there is no significant relationship between Learning Material and Student Satisfaction. Consequently, H_3 was not supported.

H_4: The standardized coefficient between Academic Environment and Student Satisfaction was 0.078 (t-value =1.463). Therefore, there is no significant relationship between Academic Environment and Student Satisfaction. Consequently, H_4 was not supported.

H_5: The standardized coefficient between Transformative Service Qualities and Student Satisfaction was 0.343 (t-value=5.364*). Therefore, there is significant relationship between Transformative Service Qualities and Student Satisfaction. Consequently, H_5 was supported.

H_6: The standardized coefficient between Transformative Service Qualities and University Image was 0.810 (t-value =18.532*). Therefore, there is significant relationship between Transformative Service Qualities and University Image. Consequently, H_6 was supported.

H_7: The standardized coefficient between University Image and Student Satisfaction was 0.467 (t-value =8.925*). Therefore, there is a significant relationship between University Image and Student Satisfaction. Consequently, H_7 was supported.

H_8: The standardized coefficient between University Image and Student Loyalty was 0.315 (t-value=5.061*). Therefore, there is a significant relationship between University Image and Student Loyalty. Consequently, H_8 was supported.

H_9: The standardized coefficient between Student Satisfaction and Student Loyalty was 0.585 (t-value=9.097*). Therefore, there is significant relationship between Student Satisfaction and Student Loyalty. Consequently, H_9 was supported.

5.6.2 Direct, Indirect and Total Effects of Relationships

The number of direct impacts and aberrant impacts are the impacts of connections (Mueller, 1997). Direct impact was the point at which a free factor affected a needy variable with no intervening factors in the model while aberrant impact was the point at which an autonomous variable impacted a needy variable through interceding factors. Moreover, the coefficient of various assurance estimated by multiplying the relationship of coefficient and its portions are for the absolute fluctuation of the important variable to another variable (Ridder, 2014). At whatever point R^2 was zero, Y could be neither anticipated nor assessed by X. In the event that the estimation of R^2 is one, Y could be projected by X without blunder. As demonstrated in table 5.13, AMOS program was utilized to assess the immediate, backhanded, and absolute impacts of connections. The coefficient of multiple determination (R^2) measured the proportion of variation in the dependent variable that could be predicted from the set of independent variables in a multiple regression equation. When the regression equation fits the data well, R^2 will be large (i.e., close to 1).

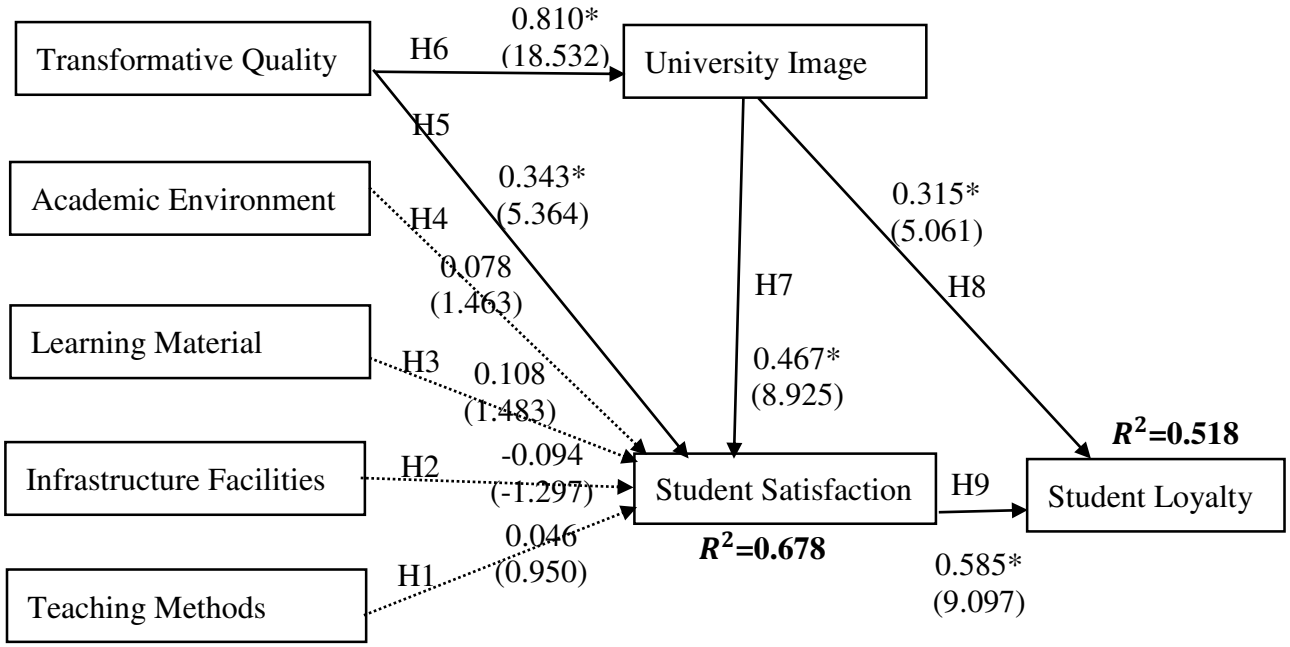
Based on the Table 5.13, the proportion of variation in University Image (IM) could not be predicted from the set of Transformative Service Quality (TQ) because of R^2 was 0.492. In the part of the proportion of variation in Student Satisfaction (SS) could be predicted from the set of Transformative Service Quality (TQ), Academic Environment (AE), Learning Material (LM), Infrastructure Facilities (IF), Teaching Methods (TM), and University Image (IM) as well, due to R^2 was 0.678. Furthermore, the proportion of variation in Student Loyalty (SL) could be predicted from the set of University Image (IM), and Student Satisfaction as well because of R^2 was 0.518.

Table 5.13 Direct, Indirect and Total Effects of Relationships

	Independent Variables							
Dependent Variables	**Effect**	**Transformative Service Quality (TQ)**	**Academic Environment (AE)**	**Learning Material (LM)**	**Infrastructure Facilities (IF)**	**Teaching Methods (TM)**	**University Image (IM)**	**Student Satisfaction (SS)**
University Image (IM)	DE	0.810*	-	-	-	-	-	-
	IE	-	-	-	-	-	-	-
	TE	0.810*	-	-	-	-	-	-
	R^2= 0.492							
Student Satisfaction (SS)	DE	0.721*	0.078	0.108	-0.094	0.046	0.467*	-
	IE	-	-	-	-	-	-	-
	TE	0.721*	0.078	0.108	-0.094	0.046	0.467*	-
	R^2= 0.678							
Student Loyalty (SL)	DE	-	-	-	-	-	0.315*	0.585*
	IE	0.677*	0.045	0.063	-0.055	0.027	0.273*	-
	TE	0.677*	0.045	0.063	-0.055	0.027	0.588*	0.585*
	R^2= 0.518							

Source: Constructed by author

5.6.3 The Reliability Statistics of the Model



Note: ⟶ is t-stat > 1.98, p-value < 0.05

⟶ is t-stat < 1.98, p-value > 0.05

Figure 5.5 Conceptual Framework of Reliability Statistic Model

The result from Table 5.13 and Figure 5.3 could be explained as below.

University Image: The significant direct effect of Transformative Quality (TQ) on University Image was 0.810. In terms of the total effect, Transformative Quality (TQ) was the most important variable that significantly influences on University Image.

Student Satisfaction: The significant direct effect of Teaching Methods (TM) on Student Satisfaction (SS) was 0.046. The significant direct effect of Infrastructure Facilities (IF) on Student Satisfaction (SS) was -0.094. The significant direct effect of Learning Material (LM) on Student Satisfaction (SS) was 0.108. The significant direct effect of Academic Environment (AE) on Student Satisfaction (SS) was 0.078. The significant direct effect of Transformative Quality (TQ) on Student Satisfaction (SS) was 0.343. The significant direct effect of University

Image (IM) on Student Satisfaction (SS) was 0.467. There was no indirect effect found from the analysis, so the direct effects were equal to the total effects. In terms of the total effect, Transformative Quality, University Image were the most important variable that significantly influences on Student Satisfaction.

Student Loyalty: The significant direct effect of University Image (IM) on Student Loyalty (SL) was 0.588. The significant direct effect of Student Satisfaction (SS) on Student Loyalty (SL) was 0.585. Whereas there was some indirect effect as shown in Table 5.13. The significant indirect effect of Teaching Methods on Student Loyalty was 0.027. The significant indirect effect of Infrastructure Facilities on Student Loyalty was -0.055. The significant indirect effect of Learning Material on Student Loyalty was 0.063. The significant indirect effect of Academic Environment on Student Loyalty was 0.045. The significant indirect effect of Transformative Quality on Student Loyalty was 0.677.

CHAPTER SIX

DISCUSSION, CONCLUSION, AND RECOMMENDATION

6.1 Discussion of Research Findings

This segment examines the aftereffects of the exploration discoveries, that are coordinated around the examination inquiries of the investigation. For the most part, this investigation looked to analyze the connection between showing techniques, framework offices, learning material, scholarly climate, extraordinary quality, and college picture just as understudy fulfillment. The connection between groundbreaking quality just as college picture, the impact of college picture, and understudy fulfillment just as understudy faithfulness.

6.1.1 Relationship between Teaching Method and Student Satisfaction

Consequences of the past examinations found that the encouraging technique has huge effect on understudy fulfillment and their ensuing dedication (Navarro et al., 2005). Moreover, the three colleges in Cambodia should improve the nature of educating for instructors, for example, (1) the extent among hypothesis and practice was sufficient; (2) the reference index, documentation, and so on, gave were satisfactory; (3) the encouraging strategies were proper; (4) the level at which these subjects were talked about was fitting; (5) the degree and dispersion of the subjects were right. As indicated by the outcome in Table 5.12, the normalized way coefficient between encouraging techniques and understudy fulfillment was 0.046 (t-stat=0.950). Accordingly, there is no huge connection between showing techniques and understudy fulfillment. In view of the examination of business understudies from 3 colleges in Cambodia, the specialists recognized that instructing strategies couldn't yet fulfill the understudies, for example, encouraging techniques were not down to earth, training techniques didn't yet address the issues of the work market.

6.1.2 Relationship between Infrastructure Facilities and Student Satisfaction

The outcome from the past examinations, framework offices altogether affect the understudies' fulfillment (Kaur and Bhalla, 2018). Moreover, the three colleges in Cambodia should improve the foundation offices in their colleges, for example, (1) Adequate play grounds are accessible in their colleges; (2) There is sufficient space for stopping in colleges; (3) Satisfactory quantities of washrooms are accessible; (4) Lodging office is given by the colleges; (5) Crisp drinking water is accessible at their colleges; (6) Generator office is given by the colleges; (7) Transport office is given by the colleges; (8) Study halls are exceptional in their colleges; (9) Lounge areas are accessible for guardians of the understudies in their colleges. The normalized coefficient between Framework Offices and Understudy Fulfillment was -0.094 (t-stat=-1.297). Thusly, there is no huge connection between framework offices and understudy fulfillment in Table 5.12. To draw in understudies to appreciate a college, the college should likewise be efficient, like the grounds, the parking area, the latrines should be perfect, the understudies' dorms from a long way away, the homerooms should be prepared. Satisfactory actual hardware should be given to vehicles for temporary job and there should be a sitting tight zone for understudies and their folks.

6.1.3 Relationship between Learning Material and Student Satisfaction

As shown by the past assessments, learning material inside and out influences understudy satisfaction (Kaur and Bhalla, 2018). Considering the results from three universities in Cambodia have a fair satisfaction from the understudies such: (1) Libraries are rich and revived with material related to subjects; (2) Understudies are taught regularly about invigorated library combination; (3) Acceptable exploration offices are open; (4) General media help is open for homeroom educating; (5) Sufficient computers are available in my school. The result showed that the standardized coefficient between learning material and

understudy satisfaction was 0.108 (t-stat=1.483). Thusly, there is no gigantic association between learning material and understudy satisfaction in Table 5.12.

6.1.4 Relationship Between Academic Environment and Student Satisfaction

Aside from the past investigations, the finding showed that the understudies with better view of the different elements of advanced education administration quality including scholastic climate (Ali et al., 2016). In light of the review from three colleges in Cambodia, all colleges need to adjust with the understudies, for example, (1) Teachers have the information to respond to my inquiries identified with the course content; (2) Educators bargain in a gracious way; (3) When I have an issue, teachers show an earnest premium in settling it; (4) Educators show inspirational mentality toward understudies; (5) Teachers show uplifting disposition toward understudies; (6) Educators give input about my advancement; (7) Educators are exceptionally taught in their particular field; (8) The hand-outs are given satisfactorily by the educators; (9) The documentations are given enough by the educators. In view of the outcome, the normalized coefficient between Scholastic Climate and Understudy Fulfillment was 0.078 (t-esteem =1.463). Thusly, there is no huge connection between scholastic climate and understudy fulfillment in Table 5.12.

6.1.5 Relationship between Transformative Quality and Student Satisfaction

In light of the past examinations, the discoveries showed that the extraordinary quality has critical relationship on understudy fulfillment (Teeroovengadum *et al.,* 2019). As indicated by the review from three colleges in Cambodia, all colleges deal with its understudies as (1) The colleges had empowered the understudies to be more fearless; (2) The colleges had assisted the understudies with intuition all the more basically; (3) The colleges had empowered the understudies to have a more elevated level of mindfulness; (4) The colleges had assisted the understudies with creating critical thinking abilities concerning my field of study. (5) The

colleges had permitted the understudies to rise above their biases; (6) The colleges had empowered the understudies to build their insight and abilities as a rule. The outcomes in Table 5.12 showed that the normalized coefficient between groundbreaking help characteristics and understudy fulfillment was 0.343 (t-stat=5.364*). Hence, there is a critical connection between groundbreaking help characteristics and understudy fulfillment. It has a significant impact on student satisfaction.

6.1.6 Relationship between Transformative Quality and University Image

Critically, results from the past investigations showed that groundbreaking quality has huge relationship with college picture (Teeroovengadum *et al*., 2019). In the review from three colleges in Cambodia uncovered that the extraordinary quality truly has a great deal to do with college picture. The outcome from Table 5.12 showed that the normalized coefficient between groundbreaking help characteristics and college picture was 0.810 (t-esteem =18.532*). Subsequently, there is a critical connection between groundbreaking assistance characteristics and college picture. It has a significant impact on university image.

6.1.7 Relationship between University Image and Student Satisfaction

As indicated by the past investigations, the discoveries showed that college picture has critical relationship with understudy fulfillment (Teeroovengadum et al., 2019). In the study from the understudies of three colleges in Cambodia. The college picture could truly draw in understudies to check out their college, for example, (1) The colleges had a decent scholarly standing; (2) Contrasted with different colleges, this college has a decent picture; (3) The examination yield from the colleges were exceptionally appraised; (4) The capability acquired from the colleges were remotely seen as being of worth; (5) The colleges were an esteemed college. The outcomes from Table 5.12 showed that the normalized coefficient between college picture and understudy fulfillment was 0.467 (t-esteem =8.925*). Along these lines, there is a

critical connection between college picture and understudy fulfillment. It has a significant impact on student satisfaction.

6.1.8 Relationship between University Image and Student Loyalty

Besides, the outcomes from the past examinations, the discoveries showed that college picture has critical relationship with understudy devotion (Teeroovengadum et al., 2019). In the study from the three colleges in Cambodia uncovered that college picture truly has a ton to do with understudy steadfastness. The outcome from Table 5.12 showed that the normalized coefficient between college picture and understudy reliability was 0.315 (t-stat=5.061*). Along these lines, there is a huge connection between college picture and understudy faithfulness. It has a significantly impact on student loyalty.

6.1.9 Relationship between Student Satisfaction and Student Loyalty

As recording from the previous studies, the findings showed that student satisfaction has significant relationship with student loyalty (Teeroovengadum *et al*., 2019). In the survey from the students of three universities in Cambodia revealed that student satisfaction was better with student loyalty to get students interested in their university such as: (1) the choice to enroll at their universities were a wise one; (2) The universities were exactly what was needed for higher education studies; (3) The universities did the right thing for the students; (4) The students were happy to enroll in the universities; (5) The students were enjoying studying at their universities; (6) The students were happy with experience provided by their universities. Based on the result form Table 5.12 showed that the standardized coefficient between student satisfaction and student loyalty was 0.585 (t-stat=9.097*). Therefore, there is significant impact on satisfaction and student loyalty.

6.2 Conclusion

After receiving the results of the survey, as well as for the university to strengthen its shortcomings in the context of competition, as well as for the survival and sustainability of the university in the future. According to the survey, the three universities have done well in terms of satisfactory conditions such as transformative quality, university image and so on. However, there are still some conditions that the university has not been able to meet well, which requires the university to pay attention to the students to be more qualified after graduating from this university.

In fact, the results of the student survey showed that there are four issues that universities need to pay attention to, such as teaching methods and infrastructure facilities, learning material, and academic environment that have not yet been able to meet the needs of students.

Firstly, teaching method was still incomplete due to the concerns of students on some areas, such as the theory obtained, but there was no practical application, some teaching materials did not update, some subjects could not help students to be able to complete the market needs, some teachers have not fully taught their skills.

Secondly, the university must also take care of satisfying the students, such as sufficient study materials, parking for professors and students, the classroom must be well-equipped and comfortable, there must be a car for the internships, there must be a waiting room for appropriate students or guardians, must be dormitories for students from the provinces, there must be mixed hot and cold-water tanks for students as appropriate.

Thirdly, learning material was concerned by students such as the libraries were not updated with material related to the subjects, the students were not informed regularly about updated library collection, Audio-visual aids were not available for the classroom teaching, and the sufficient computers were not available in the colleges as well.

Fourthly, the management team must concentrate on the academic environment such as the instructors had not answered the questions relating to the course content, Instructors did not show a sincere interest in solving the student's problem, Instructors did not show the communications well and provide feedback about student's progress, the hand-out and documents were not provided adequately by the instructors.

6.3 Practical Implications

The result of this study had several important implications for a good quality of education management in Cambodian higher institutions as followed.

Firstly, in the competition as well as the survival of the university, the university must pay close attention to certain conditions such as study curriculum, teachers, teaching materials, updating the library, there must have enough documents for students to conduct research.

Secondly, the results showed that it is not only the teaching methods, and infrastructure facilities that the university needs to pay attention to, but also the training of pedagogical teachers was an excellent condition for student satisfaction.

Thirdly, another focus of the university is that students who have graduated from this university are competent enough to fulfill their respective specializations.

Fourthly, the university must also pay close attention to the knowledge, skills, attitudes and life skills of students. The internships of students according to their specialties could lead to better knowledge and learned from direct work experience.

Based on the results showed that the transformative service quality and university image are significant impact on student satisfaction. Finally, the student satisfaction is significant impact on student loyalty.

6.4 Contributions of the Study

The organizational nature of the regional higher education system will become more important in the coming years as the system absorbs and integrates the rapid growth that has occurred over the past few years. The pressure of the education system will experience in stems of the organizational structure that affects the system's response to student, employer and regional needs (Simons, 2005).

One issue that was expected to become even more important was student mobility between institutions of higher education and universities. As mentioned earlier, higher education in Cambodia was divided into three divisions: universities, vocational institutions and technical training centers. This systematic approach had obvious advantages in terms of ensuring the ability to meet a variety of educational and labor market needs (Appelbaum *et al.*, 2000).

The organizational structure also encourages the institution to focus on individual missions and student markets. As the higher education market grows, separating the higher education system into individual levels was a challenge. The biggest problem was that moving students between institutions is often difficult (Frank, 2004).

In particular, universities at different levels tend to have different admission criteria, curriculum structures, and evaluation criteria (Biggs, 1999). This can complicate or interfere with the student's movements. Students would like to want to move from one stage to another as their careers and interests develop. The existence of a simple and transparent local vocal system is for the public good.

It is necessary to develop more transparent pathways for students through higher education systems, especially if the logical paths of students go through multiple institutions. This includes developing strong models of credit recognition, course contracts and program

split agreements, explicit and enforceable policies related to credit transfers, and increased support for joint programs, and cooperation (Birchall, 2003).

All these guidelines should cover both the university and non-university sectors. Because segregation was an obstacle to student mobility and human capital development. Immediate action is needed to increase the attractiveness and dignity of higher technical education and to reduce the distinction between universities and non-university institutions (Eastman & Lang, 2001).

A possible step in this direction is to establish a national qualifications framework to facilitate progress from one category to the next and to provide credit for experienced academic skills and prior work relation to work, and to reduce conversions between disciplines (Knapper & Cropley, 2000).

The transition to the national qualification's framework provides greater flexibility and can benefit from including a review of all higher education courses to address the excessive study time and theoretical content of the degree programs (Bess & Dee, 2008).

6.5 Recommendation

The study makes five recommendations for future studies as well as university administrators and management teams. In the first recommendation, teaching method infrastructure facilities, learning material, and academic environment were not significant relationship with student satisfaction; however, management team must develop professors' teaching methodology and put more investment on facilities, learning material, and hand-outs to improve the quality of teaching and learning.

The second recommendation was dedicated to the professors. University management teams should increase the number of fulltime professors, to be responsible for social services and research rather than actual teaching only.

The third recommendation takes recognition in consideration. University management teams should take actions to improve their graduate degree recognition, nationally, regionally and internationally through updating their curriculum, improving teaching and learning deliveries respectively.

Lastly, university management teams should build partnership with flagship local universities and international ones to involve in their strategic plan to take advantages of curriculum improvement, student and staff mobility. These would increase university image.

Another recommendation is for transforming the existing library to e-Library. e-Library would provide highly reliable and adequate updated resources to meet the needs of the students and academic staff. Furthermore, it may help generate more income to the higher education institutions to provide e-library service to local people and researchers besides their own students and staff.

Finally, it recommends a research center establishment to draw public attention and take exponential benefits. Research center, advancing the body of knowledge, would provide necessary interdisciplinary research environment and produce collaborations with national and international knowledge bodies fostering academical reputation.

6.6 Limitation and Future Research

Study the limitations of techniques used in data analysis. This study draws conclusions about the causal relationship between variables using SEM techniques and limited cross-sectional studies that can explain cause and effect. Firstly, this finding is valid for the 500 samples selected from the three mentioned universities. It cannot be interpreted as a sole indicator for Cambodian student loyalty to their university as a whole; therefore, over time, long-term studies are needed to ascertain the consequences and provide insight into the cause. In this regard, future research should increase the samples and differentiate the higher education institutions across the country.

Secondly, as this study is an analysis of quantitative research, some insights may not be answered. This study should be conducted in a qualitative manner that can gain valuable insight through further discussions with the president, vice president, and director of graduated school, and limited in terms of time and budget. Future research papers recommend testing with a larger questionnaire to ensure that the results are effective and efficient.

Additionally, future research papers should include additional variables to understand other factors that influence student loyalty. As far as it concerns, the survey method can apply more qualitative skills along with open-ended questions to understand and add value to satisfying students.

Finally, a study should be conducted for other universities in Phnom Penh or throughout Cambodia where this study was done in, to understand further and draw comparisons among those variables. Other avenues of research that could further this study may include interviewing professors and university administrators to cross check their responsiveness to the findings of this study.

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APPENDIX A

INDEX OF ITEM-OBJECTIVE CONGRUENCE (IOC) RATE FORM AND RESULT

Index of Item-Objective Congruence (IOC) Rating Form for Composting

The following items were included in measures designed to measure teaching methods, facilities, infrastructure, learning materials, academic environment, quality, change in college image, student satisfaction, and student loyalty. All items use a 5-point Likert scale.

Please answer the following question by mark "√" in the space given below. "1" if the item likely procedures the hypothesis and it objective, "0" if the item is unclear to portion the theory and it objective, and "-1" if the article probable doesn't not degree the paradigm and it objective. In addition, leaving further comment is an advantage for the research.

Example – Construct: Student Loyalty of their universities

Item	+1	0	-1	Comment
I want to come back to study with my university again.	√			

Construct 1: Teaching method

No	Item	+1	0	-1	Comment
1	The proportion between theory and practice was adequate				
2	The bibliography, documentation, etc., provided were adequate				
3	The teaching methods were appropriate				
4	The level at which these subjects were discussed was appropriate				
5	The extent and distribution of the subjects were correct				

Construct 2: Infrastructure Facilities

No	Item	+1	0	-1	Comment
1	Sufficient playgrounds are available				
2	There is enough space for parking in university				
3	Adequate numbers of washrooms are available				
4	Hostel facility is provided by the university				
5	Fresh drinking water is available				
6	Generator facility is provided by the university				
7	Transport facility is provided by the university				
8	Classrooms are well equipped				
9	Waiting rooms are available for parents of the students				

Construct 3: Learning Material

No	Item	+1	0	-1	Comment
1	Libraries are rich and updated with material related to subjects				
2	Students are informed regularly about updated library collection				
3	Adequate laboratories are available				
4	Audio-visual aids are available for classroom teaching				
5	Sufficient computers are available in my college				

Construct 4: Academic Environment

No	Item	+1	0	-1	Comment
1	Instructors have the knowledge to answer my questions relating to the course content				
2	Instructors deal in a courteous manner				
3	When I have a problem, instructors show a sincere interest in solving it				
4	Instructors show positive attitude toward students				
5	Instructors communicate well in the classroom				
6	Instructors provide feedback about my progress				
7	Instructors are highly educated in their respective field				
8	The hand-outs are provided adequately by the instructors				
9	The documentations are provided adequately by the instructors				

Construct 5: Transformative Quality

No	Item	+1	0	-1	Comment
1	My university has enabled me to be more self-confident				
2	My university has helped me to think more critically				
3	My university has enabled me to have a higher level of self-awareness				
4	My university has helped me to develop problem-solving skills with respect to my field of study				
5	My university has allowed me to transcend my prejudices				
6	My university has enabled me to increase my knowledge and skills in general				

Construct 6: University Image

No	Item	+1	0	-1	Comment
1	My university has a good academic reputation				
2	Compared to other universities my university has a good image				
3	Research output from my university is highly rated				
4	Qualification gained from my university is externally perceived as being of value				
5	My university is a prestigious university				

Construct 7: Student Satisfaction

No	Item	+1	0	-1	Comment
1	My choice to enroll at my university was a wise one				
2	This university is exactly what is needed for higher education studies				
3	I did the right thing by choosing my university				
4	I am pleased to be enrolled as a student at my university				
5	I am enjoying studying at my university				
6	I am happy with my experience as a student at my university				

Construct 8: Student Loyalty

No	Item	+1	0	-1	Comment
1	Recommend your university to friends and relatives				
2	Say favorable things about your university to others				
3	Choose the same university again if you could start all over				
4	Attend the same university if you follow another course in future				

Result of Index of Item-Objective Congruence (IOC) Rating

Construct No	Item No	Rating from experts			$\sum R$	IOC $= \frac{\sum R}{N}$	Result
		1st Expert	2nd Expert	3rd Expert			
1	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	1	3	1	Pass
	4	1	1	1	3	1	Pass
	5	1	1	1	3	1	Pass
2	1	1	0	1	2	0.67	Pass
	2	1	0	1	2	0.67	Pass
	3	1	1	1	3	1	Pass
	4	0	1	1	2	0.67	Pass
	5	0	1	1	2	0.67	Pass
	6	1	1	1	3	1	Pass
	7	0	1	1	2	0.67	Pass
	8	1	1	1	3	1	Pass
	9	1	1	0	2	0.67	Pass
3	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	0	2	0.67	Pass
	4	1	1	0	2	0.67	Pass
	5	1	1	1	3	1	Pass
4	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	1	3	1	Pass
	4	1	1	1	3	1	Pass
	5	1	1	1	3	1	Pass
	6	1	1	1	3	1	Pass
	7	1	1	1	3	1	Pass
	8	1	1	1	3	1	Pass
	9	1	1	1	3	1	Pass

5	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	1	3	1	Pass
	4	1	1	1	3	1	Pass
	5	1	1	1	3	1	Pass
	6	1	1	1	3	1	Pass
6	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	1	3	1	Pass
	4	1	1	1	3	1	Pass
	5	1	1	1	3	1	Pass
7	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	1	3	1	Pass
	4	1	1	1	3	1	Pass
	5	1	1	1	3	1	Pass
	6	1	1	1	3	1	Pass
8	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	1	3	1	Pass
	4	1	1	1	3	1	Pass

APPENDIX B

QUESTIONNAIRE ENGLISH VERSION

This questionnaire is developed for the determination of the education on “The impact of innovative management on the student satisfaction with business education of higher education institution of Cambodia: Applied measurement and structural modelling”. The study is conducted with regards to fulfilment the requirement of Philosophy Degree in Innovative Technology Management at Assumption University, Bangkok, Thailand. All the information collected of this study will be kept privately and will be used as the resolution of this study only. Thank you for your time and patience for response the answer is much appreciated.

Part I: Screening Questions

Which university are you studying? (Select only 1)

- □ National University of Management (NUM), Please continue this questionnaire
- □ Western University Phnom Penh (WU-PP), Please continue this questionnaire
- □ Western University Kampong Cham Branch (WU-KC), Please continue this questionnaire
- □ No, please do not continue this questionnaire

Part II: Measuring Variables

Please answer the following question by mark “√” in the space given below and do kindly answer truthfully and complete all questions.

1 = strongly disagree

2 = disagree

3 = neither agree nor disagree

4 = agree

5 = strongly agree

No.		1= strongly disagree	2= disagree	3= neither agree nor disagree	4= agree	5= strongly agree
Teaching Methods						
1	The proportion between theory and practice was adequate					
2	The bibliography, documentation, etc., provided were adequate					
3	The teaching methods were appropriate					
4	The level at which these subjects were discussed was appropriate					
5	The extent and distribution of the subjects were correct					

Infrastructure Facilities						
6	Sufficient playgrounds are available					
7	There is enough space for parking in university					
8	Adequate numbers of washrooms are available					
9	Hostel facility is provided by the university					
10	Fresh drinking water is available					
11	Generator facility is provided by the university					
12	Transport facility is provided by the university					
13	Classrooms are well equipped					
14	Waiting rooms are available for parents of the students					

No.		1= strongly disagree	2= disagree	3= neither agree nor	4= agree	5= strongly agree
	Learning Material					
15	Libraries are rich and updated with material related to subjects					
16	Students are informed regularly about updated library collection					
17	Adequate laboratories are available					
18	Audio-visual aids are available for classroom teaching					
19	Sufficient computers are available in my college					

	Academic Environment					
20	Instructors have the knowledge to answer my questions relating to the course content					
21	Instructors deal in a courteous manner					
22	When I have a problem, instructors show a sincere interest in solving it					
23	Instructors show positive attitude toward students					
24	Instructors communicate well in the classroom					
25	Instructors provide feedback about my progress					
26	Instructors are highly educated in their respective field					
27	The hand-outs are provided adequately by the instructors					
28	The documentations are provided adequately by the instructors					

No.		1= strongly disagree	2= disagree	3= neither agree nor	4= agree	5= strongly agree
	Transformative Quality					
29	My university has enabled me to be more self-confident					
30	My university has helped me to think more critically					
31	My university has enabled me to have a higher level of self-awareness					
32	My university has helped me to develop problem-solving skills with respect to my field of study					
33	My university has allowed me to transcend my prejudices					
34	My university has enabled me to increase my knowledge and skills in general					

	University Image					
35	My university has a good academic reputation					
36	Compared to other universities my university has a good image					
37	Research output from my university is highly rated					
38	Qualification gained from my university is externally perceived as being of value					
39	My university is a prestigious university					

No.		1= strongly disagree	2= disagree	3= neither agree nor disagree	4= agree	5= strongly agree
Student Satisfaction						
40	My choice to enroll at my university was a wise one					
41	This university is exactly what is needed for higher education studies					
42	I did the right thing by choosing my university					
43	I am pleased to be enrolled as a student at my university					
44	I am enjoying studying at my university					
45	I am happy with my experience as a student at my university					

Student Loyalty						
46	Recommend your university to friends and relatives					
47	Say favorable things about your university to others					
48	Choose the same university again if you could start all over					
49	Attend the same university if you follow another course in future					

Part III: Respondent's Demographic Profile

50. What is your gender?

□ Male □ Female

51. What is your age?

□ 18 – 25 years old □ 26 – 33 years old

□ 34 – 41 years old □ 42 – 49 years old

□ 49 years old and above

52. What is your school year?

□ Year 2

□ Year 3

□ Year 4

53. What is your major?

□ Accounting □ Marketing

□ Management □ Finance and Banking

54. Which university are you studying?

□ National University of Management (NUM)

□ Western University Phnom Penh (WUPP)

□ Western University Kampong Cham Branch (WUKC)

APPENDIX C

QUESTIONAIRE KMER VERSION

កម្រងសំណួរ

កម្រងសំណួរនេះត្រូវបានបង្កើតឡើងក្នុងគោលបំណងធ្វើការសិក្សាទៅលើ “Determinants of Business Education on Student Satisfaction in Higher Education: A Case Study in Cambodia” ការសិក្សានេះត្រូវបានធ្វើឡើងទាក់ទងនឹងការបំពេញតាមតម្រូវការនៅក្នុងផ្នែកនៃ Philosophy Degree in Innovative Technology Management at Assumption University, Bangkok, Thailand រាល់ព័ត៌មានដែលប្រមូលបាននៃការស្ទង់មតិនេះនឹងត្រូវរក្សាទុកជាការសម្ងាត់ ហើយនឹងត្រូវប្រើប្រាស់ជាគោលបំណងនៃការសិក្សាស្រាវជ្រាវនេះតែប៉ុណ្ណោះ។ សូមអរគុណចំពោះការចំណាយពេលវេលា និងការអត់ធ្មត់របស់អ្នក សម្រាប់ការឆ្លើយតបចម្លើយនេះត្រូវបានកោតសរសើរយ៉ាងខ្លាំង។

ផ្នែកទី១: សំណួរឆ្លុះបញ្ចាំង

តើសាកលវិទ្យាល័យមួយណាដែលអ្នកកំពុងសិក្សា? (ជ្រើសរើសយកតែ១)

- □ សាកលវិទ្យាល័យជាតិគ្រប់គ្រង , សូមបន្តទៅកម្រងសំណួរ
- □ សាកលវិទ្យាល័យវេស្ទើនភ្នំពេញ, សូមបន្តទៅកម្រងសំណួរ
- □ សាកលវិទ្យាល័យវេស្ទើនសាខាកំពង់ចាម, សូមបន្តទៅកម្រងសំណួរ
- □ ទេ, សូមកុំបន្តទៅកម្រងសំណួរ

ផ្នែកទី២: អថេរវាស់វែង

សូមឆ្លើយសំណួរខាងក្រោមដោយសម្គាល់“ √” ក្នុងចន្លោះដែលបានផ្តល់ជូនខាងក្រោម ហើយសូមឆ្លើយដោយស្មោះត្រង់និងបំពេញឲ្យបានគ្រប់សំណួរទាំងអស់។

1	= មិនយល់ព្រមខ្លាំង	4	= យល់ព្រម
2	= មិនយល់ព្រម	5	= យល់ព្រមខ្លាំង
3	= យល់ព្រមខ្លះ មិនយល់ព្រមខ្លះ		

ចំនួន		1= មិនយល់ព្រមខ្លាំង	2= មិនយល់ព្រម	3= យល់ព្រមខ្លះៗ មិនយល់ព្រមខ្លះៗ	4= យល់ព្រម	5= យល់ព្រមខ្លាំង

វិធីសាស្ត្របង្រៀន

1	សមាមាត្ររវាងទ្រឹស្តីនិងការអនុវត្តមានគ្រប់គ្រាន់។					
2	ឯកសារយោង និង ឯកសារផ្សេងៗ មានគ្រប់គ្រាន់។					
3	វិធីសាស្ត្របង្រៀន គឺសមស្រប។					
4	កម្រិតនៃមុខវិជ្ជាត្រូវបានពិភាក្សាគឺសមស្រប។					
5	កម្រិត និង ការបែងចែកនៃមុខវិជ្ជាគឺត្រឹមត្រូវ។					

គ្រឿងបរិក្ខារហេដ្ឋារចនាសម្ព័ន្ធ						
6	មានកន្លែងសម្រាប់លេងគ្រប់គ្រាន់។					
7	មានកន្លែងចតយានយន្តគ្រប់គ្រាន់នៅក្នុងសាកលវិទ្យាល័យ។					
8	មានបន្ទប់សម្រាប់ដុះលាងគ្រប់គ្រាន់។					
9	មានគ្រឿងសម្ភារៈសម្រាប់ការស្នាក់នៅត្រូវបានផ្តល់ដោយសាកលវិទ្យាល័យ។					
10	មានទឹកបរិសុទ្ធសម្រាប់ពិសា។					
11	មានម៉ាស៊ីនភ្លើងនៅសាកលវិទ្យាល័យ។					
12	មានយានសម្រាប់ដឹកជញ្ជូននៅសាកលវិទ្យាល័យ។					
13	ថ្នាក់រៀនត្រូវបានបំពាក់ដោយឧបករណ៍បរិក្ខាបានល្អ។					
14	បន្ទប់រង់ចាំមានសម្រាប់មាតាបិតាសិស្ស។					

ចំនួន		1= មិនយល់ច្រឡំខ្លាំង	2= មិនយល់ច្រឡំ	3= យល់ច្រឡំខ្លះ មិនយល់ច្រឡំខ្លះ	4= យល់ច្រឡំ	5= យល់ច្រឡំខ្លាំង

សម្ភារសិក្សា

15	បណ្ណាល័យគឺសម្បូរបែប ហើយត្រូវបានបន្ទាន់សម័យប្រកបដោយសម្ភារឧបទេសត្រូវនឹងមុខវិជ្ជា។					
16	និស្សិតត្រូវបានជូនដំណឹងយ៉ាងទៀងទាត់ពីឯកសារនៃបណ្ណាល័យដែលត្រូវបានបន្ទាន់សម័យ។					
17	មានបន្ទប់ពិសោធគ្រប់គ្រាន់។					
18	មានសម្ភារដំនួយសោតទស្សន៍គ្រប់គ្រាន់សម្រាប់ថ្នាក់រៀន។					
19	មានកុំព្យូទ័រគ្រប់គ្រាន់នៅមហាវិទ្យាល័យខ្ញុំ។					

បរិស្ថានសិក្សា						
20	គ្រូបង្រៀនមានចំណេះដឹងឆ្លើយតបនឹងសំណួរពាក់ពន្ធ័នឹងខ្លឹមសារមុខវិជ្ជា។					
21	គ្រូបង្រៀនដោះស្រាយបញ្ហាដោយកាយវិការគួរសម។					
22	ពេលមានបញ្ហា គ្រូបង្រៀនបង្ហាញចំណាប់អារម្មណ៍ស្មោះត្រង់ក្នុងការដោះស្រាយ។					
23	គ្របង្រៀនបង្ហាញឥរិយាបថវិជ្ជមានចំពោះសិស្ស។					
24	គ្រូបង្រៀនមានទំនាក់ទំនងល្អក្នុងថ្នាក់។					
25	គ្រូបង្រៀនផ្តល់ព័ត៌មានត្រលប់អំពីការសិក្សាខ្ញុំ។					
26	គ្រូបង្រៀនទទួលបានការអប់រំខ្ពង់ខ្ពស់ក្នុងមុខវិជ្ជាជំនាញគាត់។					
27	សំណៅឯកសារត្រូវបានផ្តល់គ្រន់គ្រាន់ដោយគ្រូបង្រៀន។					
28	ឯកសារត្រូវបានផ្តល់ឲ្យបានគ្រប់គ្រាន់ដោយគ្រូបង្រៀន។					

ចំនួន		1= មិនយល់ព្រមខ្លាំង	2= មិនយល់ព្រម	3= យល់ព្រមខ្លះ មិនយល់ព្រមខ្លះ	4= យល់ព្រម	5= យល់ព្រមខ្លាំង
	គុណភាពផ្លាស់ប្តូរ					
29	សាកលវិទ្យាល័យខ្ញុំធ្វើឲ្យខ្ញុំអាចមានជំនឿទុកចិត្តលើខ្លួនឯងជាងមុន។					
30	សាកលវិទ្យាល័យខ្ញុំបានជួយខ្ញុំឲ្យចេះគិតបែបល្អិតល្អន់ច្រើន។					
31	សាកលវិទ្យាល័យខ្ញុំជួយឲ្យខ្ញុំអាចមានកម្រិតនៃការស្គាល់ខ្លួនឯងខ្ពស់ជាងមុន។					
32	សាកលវិទ្យាល័យខ្ញុំអភិវឌ្ឍជំនាញដោះស្រាយបញ្ហាដែលពាក់ពន្ធ័នឹងវិជ្ជាដែលសិក្សា។					
33	សាកលវិទ្យាល័យខ្ញុំអនុញ្ញាតឲ្យខ្ញុំទៅហួសពីការឲ្យតម្លៃដោយលំអៀង។					
34	សាកលវិទ្យាល័យខ្ញុំអាចឲ្យខ្ញុំបង្កើនចំណេះដឹង និងជំនាញទូទៅ។					

	រូបភាពសាកលវិទ្យាល័យ					
35	សាកលវិទ្យាល័យខ្ញុំមានឈ្មោះល្បីខាងការសិក្សាអប់រំ។					
36	ធៀបនឹងសាកលវិទ្យាល័យដ៏ទៃសាកលវិទ្យាល័យខ្ញុំមានកេរ្តិ៍ឈ្មោះល្អ។					
37	លទ្ធផលនៃការស្រាវជ្រាវរបស់សាកលវិទ្យាល័យខ្ញុំត្រូវបានវាយតម្លៃខ្ពស់។					
38	សញ្ញាបត្រទទួលបានពីសាកលវិទ្យាល័យខ្ញុំត្រូវបានផ្តល់តម្លៃ។					
39	សាកលវិទ្យាល័យខ្ញុំជាសាលាល្បី។					

ចំនួន		1= មិនយល់ព្រមខ្លាំង	2= មិនយល់ព្រម	3= យល់ព្រមខ្លះ មិនយល់ព្រមខ្លះ	4= យល់ព្រម	5= យល់ព្រមខ្លាំង
	ការពេញចិត្តរបស់និស្សិត					
40	ជម្រើសរបស់ខ្ញុំក្នុងការជ្រើសរើសសាកលវិទ្យាល័យមានភាពឆ្លាតវៃ។					
41	សាកលវិទ្យាល័យនេះពិតជាឆ្លើយតបនឹងតម្រូវការសិក្សានៅថ្នាក់ឧត្តម។					
42	ខ្ញុំធ្វើត្រឹមត្រូវក្នុងការជ្រើសរើសសាកលវិទ្យាល័យខ្ញុំ។					
43	ខ្ញុំរីករាយបានចុះឈ្មោះជាសិស្សនៅសាកលវិទ្យាល័យខ្ញុំ។					
44	ខ្ញុំមានចិត្តរីករាយសិក្សានៅសាកលវិទ្យាល័យខ្ញុំ។					
45	ខ្ញុំរីករាយចំពោះបទពិសោធខ្ញុំក្នុងនាមជានិស្សិតនៅសាកលវិទ្យាល័យខ្ញុំ។					

	ភាពស្មោះត្រង់របស់និស្សិត					
46	ជូនយោបល់ចំពោះសាកលវិទ្យាល័យអ្នកទៅមិត្ត និងសាច់ញាតិ					
47	និយាយពីអ្វីដែលអ្នកពេញចិត្តអំពីសាកលវិទ្យាល័យអ្នកទៅអ្នកដ៏ទៃ។					
48	ជ្រើសរើសសាកលវិទ្យាល័យដូចគ្នាម្តងទៀតបើអ្នកអាចចាប់ផ្តើមជាថ្មី។					
49	ចូលរៀនសាកលវិទ្យាល័យដដែលបើអ្នករៀនមុខជំនាញផ្សេងមួយទៀតនៅអនាគត។					

ផ្នែកទី៣: ព័ត៌មានប្រជាសាស្ត្ររបស់អ្នកឆ្លើយតប

50. តើអ្នកមានភេទអ្វី?

□ ប្រុស □ ស្រី

51. តើអ្នកមានអាយុប៉ុន្មាន?

□ 18 – 25 ឆ្នាំ □ 26 – 33 ឆ្នាំ

□ 34 – 41 ឆ្នាំ □ 42 – 49 ឆ្នាំ

□ 49 ឆ្នាំនិងលើសពីនេះ

52. តើអ្នកសិក្សានៅឆ្នាំទីប៉ុន្មាន?

□ ឆ្នាំទី២ □ ឆ្នាំទី៣ □ ឆ្នាំទី៤

53. តើអ្នករៀនមុខជំនាញអ្វី?

□ គណនេយ្យ □ ទីផ្សារ

□ គ្រប់គ្រង □ ហិរញ្ញវត្ថុ និងធនាគារ

54. តើអ្នកកំពុងរៀននៅសាកលវិទ្យាល័យមួយណា?

□ សាកលវិទ្យាល័យជាតិគ្រប់គ្រង

□ សាកលវិទ្យាល័យវេស្ទើនភ្នំពេញ

□ សាកលវិទ្យាល័យវេស្ទើនសាខាខេត្តកំពង់ចាម

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Determinants of Business Education on Student Satisfaction in Higher Education: A Case Study in Cambodia

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Abstract

The study uses an innovative management perspective to investigate the environment of higher education institutions to ensure the survival of universities in Cambodia. This has led Cambodian universities to expand their educational offerings to students in Years 2, 3 and 4. The data was collected through a Google Forms survey to facilitate and accelerate data collection. The sample of 500 students come from three higher education institution by employing multi-stage sampling technique of probability and non-probability sampling methods to ensure representation of the research population. The data were analyzed by using Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) to investigate the impact of these determinants on students' satisfaction and loyalty, via answering 54 questions. The results showed that the three Cambodian universities perform well in terms of satisfactory conditions such as transformative quality and university image. There are four issues to which universities need to pay attention, namely, teaching methods, infrastructure facilities, learning material, and academic environment that are yet to meet the needs of students. This study contributes to the principle of innovative management in the context of Cambodian academic environment. The results help to fathom the depth of enhancing quality and institutional survival.

Keywords: Innovation, Student Satisfaction, Student Loyalty, Image, Business Education

JEL Classification Code: A10, A20, M10, M21

1. Introduction

Nowadays, higher education institutions in Cambodia and the surrounding educational institutions were experiencing a competitive environment (De Lourdes Machado, Brites, Magalhães, & Sá, 2011) in addition to developing the customer needs (Nguyen, Carrieri-Kohlman, Rankin, Slaughter, & Stulbarg, 2004). For college preparation, it was difficult to manage these institutions from a marketing perspective because the concept of the customer is unclear. Professional literature reviews discovered the presence of diverse groups that could be classified as stakeholders of educational institutions such as students, employees, families, and society (Jiménez-Aleixandre, Bugallo Rodríguez, & Duschl, 2000). Despite this diversity, one group agreed to consider that the client was a student at the institution (Navarro, Iglesias, & Torres, 2005). Among the new classifications of this student were the following: "Adult students" (Chevaillier & Eicher, 2002). These stakeholders were often very talented professional individuals, but who wanted to pursue education (Novoa, Alves, & Canario, 2000).

The Cambodian education system had changed five cycles already. In the early days during French colonial period between 1863 and 1954, the educational organization heavily influenced Cambodian's education system (Foley, 2006). The first university was opened in 1954 to provide religious studies and Khmer language studies, Buddhist university (Rany, Zain, & Jamil, 2012). In the second stage, higher education improved significantly throughout Sang Kum Reas Niyum between 1954 and 1969 (Pov & Kawai, 2020).

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The third stage was that the country's educational system was almost destroyed in the 1970s, and had to fight the legacy of this destruction for years (Ayres, 1999). During this period, all schools and colleges were closed.

The situation got worse after the Pol Pot regime took hold of the country in 1975. Cambodian people did not need the most basic level of higher education. The teacher was in doubt. It was possible to escape the country and most people died (Chen & Tsai, 2007). Only 3,000 trained secondary school teachers remained in Cambodia after 1979 from an estimated pre-1975 total of 21,000 (Ayres, 1999). The failure of the Pol Pot regime in 1979 brought Cambodia about the fourth stage of educational development to 1993. There was reestablishment for Cambodian education system; schools and research institutes were re-opened, and Cambodian higher education resumed again (Mukherjee, Lightfoot, & Sloper, 2000). Since the first general election sponsored by the United Nations in Cambodia in 1993, there was a dramatic change in political and economic conditions, and as a result, the educational system changed.

The number of college graduates was inadequate to recover from a civil war from 1970 to 1993. And the last stage was the Paris Agreement in 23 October 1993 bringing an independent market and wealth signal to Cambodia. Since economics had reformed, there was an increase of foreign investment, demand for human resources grew. In this regards, education service had been invested heavily (Bray, 1996). Cambodian education during that period was led by privatization. Ahead of 1996, there were only state-run universities, and the response rate received was very low because of insufficient budget and less talented professors. Cambodian higher education administration was directly controlled by local centers, departments and unrelated local offices. The "education flow" was controlled by the General Administration (Un & Sok, 2018). Nowadays, there were two departments: The Higher Education Department (DHE), which was responsible for joint and undergraduate programs, and the Scientific Research Department, which oversees graduates and research graduate programs. "Technology and Occupation" of the Technical Director and Vocational Training by MoLVT (Un & Sok, 2016).

2. Literature Review

2.1. Behaviorism Theory

Behaviorism was related to human behavior that could be perceived and evaluated. Behavioral learning theory emphasized behavioral change in respect to stimulus-response associations to learner stimuli. A behavior driven by stimulation each person chose one response instead of another due to previous coordination and emotional motivations presenting when decision was made (Parkay & Hass, 2000).

Primarily, behaviorism was related to observable and measurable human behavior aspects (Zhou & Brown, 2015). Behaviorist learning theories emphasized behavior changes caused stimulus-response relations made by the students (Weegar & Pacis, 2012). Behavior was directed by stimuli. According to past conditioning and emotional drove existing at the moment of the action, an individual selected one response on behalf (Scriven, 1956).

2.2. Theory of Teaching and Learning

The teaching theory was created by the author (Verzat, O'Shea, & Jore, 2017). The theoretical education of teaching and learning and user's learning through teaching and learning activities. A user's learning activities were determined by three structures: student factor, teacher factor, and learning environment. In addition, learning outcomes are determined by three structures: student factors, learning environment and teaching and learning activities. If students needed to prepare for lifelong learning, they should be given the opportunity to develop their ability to control the learning as they progressed through the higher education process (Nicol & Macfarlane-Dick, 2006). The structure of self-control indicated the level at which students could define their views on anticipating, stimulation, and behavior in the process of learning (Pintrich & Zusho, 2002). Similarly, organizations need to understand the skills of their employees from a research and real-world perspective because sometimes organizations are not ready to share their knowledge and skills (Syed et al., 2021).

2.3. Theory of Service Quality in Education

Numerous studies of service quality had strengthened the field of service marketing over the past 30 years (Berry & Parasuraman, 2004). Most of these studies focused on the dimension of service quality in cultural industries and enterprises (Lewis & Mitchell, 1990). These studies had developed specific measures or scales to measure quality. Among the most widely used metrics was SERVQUAL, which had formulated the concept of the expectation-disruption paradigm (EDP) (Jiang, Klein, & Carr, 2002). The dimension of service quality was by industry (Lee, Lim, & Kim, 2017), by service type (Nadiri, Kandampully, & Hussain, 2009), by culture (Sultan & Wong, 2010), and even by service providers or companies in the same industry. Since low retention rates affected institutional funds (Rowley, 2003), student recruitment and retention had moved to the top of most college agendas due to the desire to increase the student number in link with the government goals. Therefore, student satisfaction was a very important issue for universities and administration (Douglas, McClelland, & Davies, 2008). The elements of an organizational effort to develop a good corporate culture to achieve organizational performance (Kawiana, Dewi, Hartati, Setini, & Asih, 2021).

3. Hypotheses

3.1. Teaching Methods

Faculty members should seek effective teaching methods and self-assessments, including appropriate lesson plans, to ensure that students were learning more effectively and interacting with satisfied students to learn (Klug, Bruder, Kelava, Spiel, & Schmitz, 2013). This study built students' trust in the school's skills and abilities with business-oriented teaching methods in business schools. At the same time, the continuous interaction between the faculty and the student made it possible to grasp the students' potential skills and abilities, making the learning process clearer, and the faculty was no longer simply disseminating information to students (Shea & Parayitam, 2019).

H1: *There is a significant relationship between teaching methods and student satisfaction.*

3.2. Infrastructure Facilities

The infrastructure facilities related to the physical characteristics of the institution (Ford, Howard, & Harris, 1999). Many articles in infrastructure facilities were called tangible assets (Bhalla & Das, 2018). Studies conducted by Bhalla and Das (2018) showed that infrastructure facilities had an encouraging and significant impact on student satisfaction, and physical infrastructure should not be overlooked when trying to improve student satisfaction and learning opportunities, examining that as one of the elements of higher education institution selection, we reviewed elements of higher education institution student selection and admissions opportunities. Gruber, Fuß, and Gläser-Zikuda (2010) reviewed the composition of higher education institution student selection and admissions opportunities as one of the components of higher education institution selection.

H2: *There is a significant relationship between infrastructure facilities and student satisfaction.*

3.3. Learning Materials

The learning material was related to the availability of modern laboratories, equipment and others and up to date technology introduced innovation in education and research. Kaur and Bhalla (2018) also claimed that classroom facility and these facilities, which had a positive relationship with student satisfaction. The expected impact between satisfaction with classroom material and classroom effort had slightly diminished (Santini, Ladeira, Sampaio, & da Silva Costa, 2017).

H3: *There is a significant relationship between learning materials and student satisfaction.*

3.4. Academic Environment

It used the HESQUAL level suggested by Teeroovengadum, Nunkoo, Gronroos, Kamalanabhan, and Seebaluck (2019) to review the composition of higher education institution selection and admissions opportunities as one of the components of higher education institution selection. One of the components of higher education institution selection is a review of the components of higher education institution selection and admissions opportunities (Annamdevula & Bellamkonda, 2016). Grady, Hussaini, and Abdullah (2005) observed that the main drivers of student satisfaction in the context of higher education institutions were academic and non-academic achievements, program-related issues, accessibility and reputation.

H4: *There is a significant relationship between academic environment and student satisfaction.*

3.5. Transformative Quality

The primary constraint of traditional education was that the concept of quality of service was neglected in most studies of quality of service and student satisfaction assessments and the loyalty model of higher education institutions (Teeroovengadum et al., 2019). The important goals of higher education institutions were to transform learners through education (Leibowitz, Bozalek, Van Schalkwyk, & Winberg, 2015). This was why researchers focused on the need for higher education institutions to focus on the concepts of quality, service and change (Nash, Zachariah, Nitschmann, & Psencik, 2007).

H5: *There is a significant relationship between transformative quality and student satisfaction.*

3.6. Transformative Quality

First, awareness of service quality was improved, and changes could lead to increased awareness of student image and satisfaction and increased perceived value for institutions (Teeroovengadum et al., 2019). The importance of the relationship seemed to be an industry characteristic. However, in the situation of developed schooling, quality of facility, change (technical) was a good image predictor (Teeroovengadum et al., 2019). However, the individual characteristics of an entrepreneur can be divided into background, psychological and environmental characteristics (Lee & Kim, 2019).

H6: *There is a significant relationship between transformative quality and university image.*

3.7. University Image

Research in this area was generally heavily influenced by the marketing literature focusing on the quality of Higher

Education Services (HESQUAL) and related concepts such as student satisfaction, perceptions, values, and visualization (Teeroovengadum et al., 2019).

Thus, competition might be fierce due to institutional attempts to build images in higher education systems (Stimac & Simic, 2012). Faculty also affected student satisfaction, and student loyalty (Doña-Toledo, Luque-Martínez, & Del Barrio-García, 2017). The effect of the image on the stability of the image was also tested (Chandra, Hafni, Chandra, Purwati, & Chandra, 2019). According to four researchers, images had a huge impact on loyalty (Kandampully & Suhartanto, 2000). Furthermore, satisfaction, image and perception values positively impacted loyalty to each higher education institution (Teeroovengadum et al., 2019). The university imagery affected satisfaction, and loyalty (Doña-Toledo et al., 2017). Unfortunately, only a minority of educations was shown to confirm the relationship between quality of service, image of the university, satisfaction, and loyalty (Chandra et al., 2019).

H7: *There is a significant relationship between university image and student satisfaction.*

H8: *There is a significant relationship between university image and student loyalty.*

3.8. Student Satisfaction

The confident impact of the satisfaction on the loyalty (Ismanova, 2019). However, the positive and important impact on student satisfaction on student loyalty (Chandra et al., 2019). Another study conducted by Alotaibi, Weheba, and Toy (2016) showed that a positive and significant impact of the quality of service on student satisfaction in developing student loyalty. Raposo, Alves, & Duarte (2009) also pointed out that undergraduate allegiance was important to the satisfaction. Customer satisfaction referred to the measure that determines the level of satisfaction or dissatisfaction of a customer after purchasing a company's products, services and capabilities (Widagdo & Roz, 2021).

H9: *There is a significant relationship between student satisfaction and student loyalty.*

4. Research Methods and Materials

4.1. Research Framework

The current study adapted service quality in education to create the conceptual research model (Figure 1). The service quality in education to adapt innovative management is used as dependent variable in this study. Due to the possibility of duality between the independent variables, a stepwise multivariate regression analysis was performed to evaluate the degree to which each independent variable helped explain the variance of the dependent variables (Guimaraes, 2011).

The independent variable in this study was student satisfaction. (In terms of the education method, facilities, infrastructure, academic learning media, service quality, university change, and image) and university image (in terms of service quality, change, and student satisfaction). Understanding what a mediator did in mediation and the effects of such behavior on settlements, relationships, and other outcomes were not a new question in education, mediation, or the real world (Borton & Paul, 2018). This study aimed to study further examines the undergraduate business students who are studying in year 2, year 3, and year 4 in

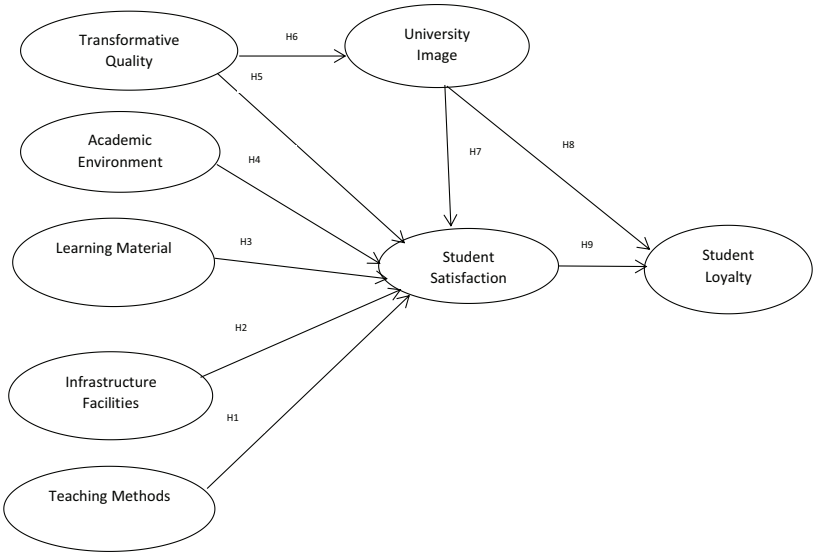

Figure 1: The conceptual Framework

three Cambodian universities. The conceptual framework of this study was developed based on eight variables. There were three types of variables in this study; independent, mediator, and dependent variable such as Teaching Method (TM), Infrastructure Facilities (IF), Learning Material (LM), Academic Environment (AE), Transformative Quality (TQ), University Image (IM), Student Satisfaction (SS), and Student Loyalty (SL).

4.2. Methodology

The researcher has adapted the quantitative method to conduct this research. The questionnaires were prepared and sent through google form via Telegrams. And it was distributed in three Cambodian Universities. The target respondents were highlighted as year 2, year3, and year 4, studying in field of business administration. The collected data will be studied on the persuasive factors influencing student loyalty. The questionnaire was divided into three parts. First part refers to the screening questions to select the relevant target respondents. The second part are a five-point Likert scale questions that represent to undergraduate business students, all variables will be measured by the range of 1 represents "strongly disagree" to 5 represents "strongly agree". The demographic information of target respondents will be analyzed in the third part of the questionnaire.

4.3. Population and Sample Size

The target population made up of people who share actions on certain factors (Clark-Carter, 2010). Ali, Zhou, Hussain, Nair, and Ragavan (2016) mentioned that the target population was a complete group of relevant components involved in the test because it had information on researcher designed to collect. Also, Rawung (2013) specified that the target population was the person, records, or events that were the main focus of the study. Lillah, Arnolds, and Stofile (2013) specified that the target population was defined as an entire group of elements with a common set of properties. Taherdoost (2016) indicated that the target population was a group of people whom the researcher was interested in researching. The population for this research consists of business students in three Cambodian Universities, who are 18 years old and above in their 2nd, 3rd, and 4th years in those higher education institutions, living in Cambodia and learning in part of undergraduate students with business education. The researcher has used A-priori Sample size Calculator for Structural Equation Models (SEM) from Danielsoper's website to refer the recommended minimum sample size (Soper, n.d.). There were set up as 8 latent variables and 49 observed variables with a probability level of 0.05. The minimum sample size as recommended is 444 respondents. After screening all the responses, the qualified respondents for the study were finalized at 500.

4.4. Sampling Technique

A multi-stage sampling technique was employed: purposive sampling methods were used to select two private universities (Western University based in Phnom Penh City and Western University based in Kampong Cham Province) and one public university in Cambodia for the survey, conducted between September and November 2020. The two private universities involved in the study have been in business since 2003, thus their structures might have been well formed and their experience. The oldest public university (National University of Management) was selected because it was the first business-age university, and popular in business studies in Cambodia.

Stratified sampling method was used in the second stage to select key stakeholders as data sources. The questionnaires were requested to the university administration to create the student Telegram groups with the three higher education institutions (National University of Management, Western University Phnom Penh, and Western University Kampong Cham Branch), and then link of the Google Forms survey was copied and sent into student those Telegram groups. Foundation year students were not included in the sample due to lack of experience because college satisfaction and loyalty were not evaluated (Azoury, Daou, & El Khoury, 2013).

Table 1 showed that the researcher selected the three universities in Cambodia such as National University of

Table 1: Population and Sample Size by Cambodian Universities

Universities	Approximate Population Size	Percentage (%)	Proportionate Sample Size
National University of Management	11,845	77	386
Western University Phnom Penh	1,755	12	58
Western University Kampong Cham Branch	1,725	11	56
Total	15,325	100	500

Source: Constructed by author (Based on MoEYS-2019: Education Congress Report, March, Phnom Penh, Cambodia).

Management, Western University in Phnom Penh, and Western University in Kampong Cham Branch in the academic year 2019–2020. Furthermore, National University of Management has a total of 11,845 students, the researcher selected 386 students. At Western University in Phnom Penh has a total of 1,755 students, the researcher selected 58 students, and Western University Kampong Cham Branch has a total of 1,725 students, the researcher also selected 56 students.

Purposive sampling was used in the final stage to select business students from three Cambodian Universities to constitute the sample size because even in each business student. Additionally, the researcher selected to represent as the target population were Cambodian students who had been learning in year 2, year 3, and year 4 in the field of business department from three higher education institutions in Cambodia. Purposive sampling in this instance enabled us to choose people whose views are relevant to the research topic (Jankowicz, 1995). The key informant technique of purposive sampling was also used to select people with specialized knowledge about the issues in question for interviewing (Tongco, 2007).

5. Results and Discussion

5.1. Demographic Factors

In this study, a valid questionnaire of 500 respondents returned 29.40% and 70.60% for men and women. For the age of respondents, 95% were 18–25 years old, 5% were 26–33 years old (some students fail the high school). In the second year, 22.20%, in the third year, 41.60%, and in the fourth year, 36.20% were undergraduate students. In addition, all students from three universities: 38.80% in accounting, 10.60% in marketing, 8.60% in business, 42% in finance and banking. Furthermore, 77% of students were collected from National University of Management, 12% of students were collected from Western University Phnom Penh amount, and 11% of students were collected from Western University Kampong Cham Branch.

5.2. Confirmatory Factor Analysis (CFA)

CFA was used prior for analyzing the measurement model with structural equation model (SEM). The result of CFA as shown in Table 2 indicated that all items in each variable are significant and have factor loading to prove discriminant validity as illustrated in Table 3. This part was to study confirmatory factor analysis (CFA) solution, the model that causal factors could affect the impact of innovative management on the undergraduate student satisfaction with business education in a case study at three Cambodian Universities. The purpose of this CFA was to investigate the adequacy of entries for the number of elements and dimensions they were constructing in this empirical model (Bollen, 1989). Factor loadings are higher than 0.50 and *p*-value of lower than 0.05. Furthermore, aligning with the recommendation from Fornell and Larcker (1981), the composite reliability is greater than the cut-off point of 0.7 and the average variance extracted was higher than the cut-off point of 0.5. All the estimates are positive.

This research also employed the First Orders Factor Analysis Technique with the estimation of weight factor determining the goodness of fit indices. Moreover, the research was considered by the Chi-square statistics, GFI (Goodness of fit index), RMSEA (Root mean square error of approximation), CFI (Comparative fit indices) and TLI (Tucker-Lewis Index) consisting of 8 measurement models: Teaching Methods, Infrastructure Facilities, Learning Material, Academic Environment, Transformative Quality, University Image, Student Satisfaction, and Student Loyalty for this study as illustrated in Table 4.

Traditionally, an omnibus cut-off point of 0.90 had been recommended for GFI, but model studies showed that cut

Table 2: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Teaching Method (TM)	Navarro et al. (2005)	5	0.826	0.680–0.807	0.862	0.557
Infrastructure Facilities (IF)	Kaur and Bhalla (2018)	9	0.870	0.536–0.798	0.856	0.503
Learning Material (LM)	Kaur and Bhalla (2018)	5	0.799	0.578–0.767	0.845	0.524
Academic Environment (AE)	Ali et al. (2016)	9	0.935	0.761–0.851	0.945	0.657
Transformative Service Qualities (TQ)	Teeroovengadum et al. (2019)	6	0.875	0.598–0.876	0.915	0.645
University Image (IM)	Teeroovengadum et al. (2019)	5	0.903	0.824–0.872	0.925	0.713
Student Satisfaction (SS)	Teeroovengadum et al. (2019)	6	0.938	0.881–0.910	0.958	0.794
Student Loyalty (SL)	Teeroovengadum et al. (2019)	4	0.816	0.690–0.843	0.851	0.591

Note: CR = Composite Reliability, AVE = Average Variance Extracted.

Table 3: Discriminant Validity

Factor Correlations								
Variables	**TM**	**IF**	**LM**	**AE**	**TQ**	**IM**	**SS**	**SL**
TM	0.75							
IF	0.47	0.70						
LM	0.29	0.47	0.77					
AE	0.71	0.31	0.41	0.81				
TQ	0.63	0.36	0.40	0.75	0.96			
IM	0.56	0.32	0.41	0.69	0.76	0.85		
SS	0.56	0.27	0.41	0.68	0.77	0.78	0.87	
SL	0.57	0.38	0.40	0.66	0.66	0.66	0.70	0.76

Note: The diagonally listed value is the AVE square roots of the variables.

Table 4: Goodness of Fit

Index	**Acceptable Values**	**Values**
CMIN/DF	< 3.00 Hair, Black, Babin, Anderson, and Tatham (2009)	2.042
RMSEA	< 0.08 MacCallum, Browne, and Sugawara (1996)	0.046
GFI	≥ 0.80 Filippini, Forza, and Vinelli (1998), Greenspoon and Saklofske (1998)	0.858
AGFI	≥ 0.80 Filippini et al. (1998)	0.834
CFI	≥ 0.90 Byrne (2013)Barbara M, Hair, Risher, Sarstedt, and Ringle (2019)	0.950
TLI	≥ 0.90 Vandenberg and Scarpello (1994)	0.941
NFI	> 0.90 Arbuckle (1995)	0.901
RMR	< 0.05 Hair et al. (2009)	0.039

above 0.95 were more appropriate when loads, coefficients, and sample sizes are low (Shevlin & Miles, 1998). Therefore, this index had become less popular in recent years and it had been suggested that one should not use an index related to GFI (Sharma, Verma, & Pathare, 2005). AGFI, which adjusts GFI to the degree of freedom with a very saturated version with up reduces fit (Tabachnick, Fidell, & Ullman, 2007).

From Table 4: CMIN/DF = The ratio of the chi-square value to degree of freedom, RMSEA = root mean square error of approximation, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, CFI = comparative fit index, TLI = Tucker-Lewis index, NFI = normalized fit index, and RMR = root mean square residual CMIN/DF = 2.042, GFI = 0.858, AGFI = 0.834, CFI = 0.950, TLI = 0.941, NFI = 0.901, RMSEA = 0.046, RMR = 0.039.

5.3. Structural Equation Model (SEM)

The data revealed SEM analysis on the causal factors that could affect innovative management on the undergraduate student satisfaction with business education: A case study at three Cambodian universities. Chi-square was a traditional measure for assessing the fit of the entire model and estimating the magnitude of the error between the sample and the fitted covariance matrix (Hu & Bentler, 1999).

A good model yielded insignificant results at the 0.05 threshold (Bollen, 1989). The results were within acceptable threshold levels and consistent with the concepts by Hair et al. (2019); MacCallum et al. (1996); Filippini et al. (1998); Byrne (2013); Vandenberg and Scarpello (1994); Arbuckle (1995) by Chi–Square (χ^2/df) < 3, *P*-value < 0.05, GFI ≥ 0.80, AGFI ≥ 0.80, TLI > 0.90, CFI > 0.90, RMSEA < 0.08. Furthermore, the results of the SEM analysis on the causal factors that could affect innovative management on the undergraduate student satisfaction with business education: A case study at three Cambodian universities were demonstrated relatively a reasonable fit of the eight indexes of model to the data on the basis of a number of fit statistics.

Chi–Square (χ^2/df) = 2236.249/1082 or 2.067, consistent with the concept by Hair et al. (2019), Goodness-of-fit

statistic (GFI) = 0.841, Adjusted Goodness-of-fit statistic (AGFI) = 0.820 Comparative Fit Index (CFI) = 0.946, Tucker Lewis Index (TLI) = 0.941, Root Mean Square Error of Approximation (RMSEA) 0.046.

The results showed SEM analysis with the causal factors that could affect the innovative management on the undergraduate student satisfaction with business education: A case study at three Cambodian universities. The results strongly suggested that each set of items represents a single underlying construct and provided evidence for discriminate validity or fit. Overall, the data indicated good suitability.

5.4. Research Hypothesis Testing Results

For Hypothesis 1, the standardized path coefficient between Teaching Methods and Student Satisfaction was 0.046 (*t*-value = 0.950). Therefore, there is no significant relationship between teaching methods and student satisfaction. Consequently, H1 was not supported. For Hypothesis 2, the standardized coefficient between Infrastructure Facilities and Student Satisfaction was –0.094 (*t*-value = –1.297). Therefore, there is no significant relationship between Infrastructure Facilities and Student Satisfaction. Consequently, H2 was not supported. For Hypothesis 3, the standardized coefficient between Learning Material and Student Satisfaction was 0.108 (*t*-value = 1.483). Therefore, there is no significant relationship between Learning Material and Student Satisfaction. Consequently, H3 was not supported. For Hypothesis 4, the standardized coefficient between Academic Environment and Student Satisfaction was 0.078 (*t*-value = 1.463). Therefore, there is no significant relationship between Academic Environment and Student Satisfaction. Consequently, H4 was not supported. For Hypothesis 5, the standardized coefficient between Transformative Service Qualities and Student Satisfaction was 0.343 (*t*-value = 5.364*). Therefore, there is significant relationship between Transformative Service Qualities and Student Satisfaction. Consequently, H5 was supported. For Hypothesis 6, the standardized coefficient between Transformative Service Qualities and University Image was 0.810 (*t*-value = 18.532*). Therefore, there is significant relationship between Transformative Service Qualities and University Image. Consequently, H6 was supported. For Hypothesis 7, the standardized coefficient between University Image and Student Satisfaction was 0.467 (*t*-value = 8.925*). Therefore, there is significant relationship between University Image and Student Satisfaction. Consequently, H7 was supported. For Hypothesis 8, the standardized coefficient between University Image and Student Loyalty was 0.315 (*t*-value = 5.061*). Therefore, there is significant relationship between University Image and Student Loyalty. Consequently, H8 was supported. For Hypothesis 9, the standardized coefficient between Student Satisfaction and Student Loyalty was 0.585 (*t*-value = 9.097*). Therefore, there is significant relationship between Student Satisfaction and Student Loyalty. Consequently, H9 was supported. This is summarized in Table 5.

Moreover, for Direct, Indirect and Total effects of the relationship between variables, the result could be explained as: University Image: The significant direct effect of Transformative Quality (TQ) on University Image was 0.810. In terms of the total effect, Transformative Quality (TQ) was the most important variable that significantly influenced on University Image. Student Satisfaction: The significant direct effect of Teaching Methods (TM) on Student Satisfaction (SS) was 0.046. The significant direct effect of Infrastructure Facilities (IF) on Student Satisfaction (SS) was –0.094. The significant direct effect of Learning Material (LM) on Student Satisfaction (SS) was 0.108. The significant direct effect of Academic Environment (AE) on

Table 5: Hypothesis Result of the Structural Model

Hypotheses	Paths	Standardized Path Coefficients (β)	S.E.	*T*-Value > 1.98	Tests Result
H1	TM → SS	0.046	0.082	0.950	Not Supported
H2	IF → SS	–0.094	0.097	–1.297	Not Supported
H3	LM → SS	0.108	0.107	1.483	Not Supported
H4	AE → SS	0.078	0.050	1.463	Not Supported
H5	TQ → SS	0.343	0.050	5.364*	Supported
H6	TQ → IM	0.810	0.050	18.532*	Supported
H7	IM → SS	0.467	0.050	8.925*	Supported
H8	IM → SL	0.315	0.050	5.061*	Supported
H9	SS → SL	0.585	0.060	9.097*	Supported

Note: *$p < 0.05$.

Student Satisfaction (SS) was 0.078. The significant direct effect of Transformative Quality (TQ) on Student Satisfaction (SS) was 0.721. The significant direct effect of University Image (IM) on Student Satisfaction (SS) was 0.467. There was no indirect effect found from the analysis, so the direct effects were equal to the total effects. In terms of the total effect, Transformative Quality, University Image were the most important variables that significantly influenced Student Satisfaction. Student Loyalty: The significant direct effect of University Image (IM) on Student Loyalty (SL) was 0.588. The significant direct effect of Student Satisfaction (SS) on Student Loyalty (SL) was 0.585. Whereas there was some indirect effect as shown so that the significant indirect effect of Teaching Methods on Student Loyalty was 0.027. The significant indirect effect of Infrastructure Facilities on Student Loyalty was –0.055. The significant indirect effect of Learning Material on Student Loyalty was 0.063. The significant indirect effect of Academic Environment on Student Loyalty was 0.045. The significant indirect effect of Transformative Quality on Student Loyalty was 0.677.

6. Conclusions and Limitations

According to the survey, the three universities have done well in terms of satisfactory conditions such as transformative quality, university image with student satisfaction, and student loyalty. However, there are still some conditions that the university has not been able to meet well, which requires the university to pay more attention to the students to be more qualified for job markets after graduating from these universities.

In fact, the results of the student survey showed that there are four issues that universities need to pay attention to, such as teaching methods, infrastructure facilities, learning material, and academic environment that have not yet been able to meet the needs of students.

First, teaching method was still incomplete due to the concerns of students on some areas, such as the theory obtained, but there was no practical application, some teaching materials did not update, some subjects could not help students to be able to complete the market needs, some teachers have not fully taught their skills.

Second, the universities must also take care of satisfying the students, such as providing sufficient study materials, parking for professors and students, the classroom must be well-equipped and comfortable, there must be cars for the internships, there must be a waiting room for appropriate students or guardians, must be dormitories for students from the provinces, there must be mixed hot and cold-water tanks for students as appropriate.

Third, learning material was a concern of students such as the libraries were not updated with materials related to subjects, the students were not informed regularly about updated library collection, audio-visual aid were not available for the classroom teaching, and the sufficient computers were not available in the colleges also.

Fourth, the management team must concentrate on the academic environment as the instructors had not answered the questions relating to the course content. Instructors did not show a sincere interest in solving the student's problem. Instructors did not show the communicate well and provide the feedback about student's progress, the hand-out and documents were not provided adequately by the instructors.

The study makes five recommendations for future studies as well as university administrators and management teams. In the first recommendation, teaching method, infrastructure facilities, learning material, and academic environment had not a significant relationship with student satisfaction; however, management team has to develop professors' teaching methodology and put more investment on facilities, material, and academic environment to improve the quality of teaching and learning.

The second recommendation goes to professors. University management teams should increase the number of full-time professors, to be responsible for social services and research rather than actual teaching only.

The third recommendation takes recognition into consideration. University management teams should take actions to improve their graduate degree recognition, nationally, regionally and internationally through updating their curriculum, improving teaching and learning deliveries respectively.

Next, university management teams should build partnership with flag-ship local universities, regional and international ones to involve in their strategic plan to take advantages of curriculum improvement, student and staff mobility. These would increase university image, ultimately.

Another recommendation is for transforming the existing library to e-library. E-library would actually provide highly reliable and adequate updated resources to meet the need of students and academic staff. Also, it may help generate more income to the higher education institutions to provide e-library service to local people and researchers besides their own students and staff.

Finally, it recommends the establishment of a research center to draw public attention and take exponential benefits. Research center, advancing the body of knowledge, would provide necessary interdisciplinary research environment and produce collaborations with national and international knowledge bodies fostering academical reputation.

Study the limitations of techniques used in data analysis. This study draws conclusions about the causal relationship between variables using SEM techniques and limited cross-sectional studies that can explain cause and effect. First, this finding is valid for the 500 samples selected from the three

mentioned universities. It cannot be interpreted as a sole indicator for Cambodian student loyalty to their universities as a whole; therefore, over time, long-term studies are needed to ascertain the consequences and provide insight into the cause. In this regards, future research should increase the samples and differentiate the higher education institutions across the country.

Secondly, as this study is an analysis of quantitative research, some insights may not be answered. This study should be conducted in a qualitative manner that can gain more valuable insights through further discussions with the president, vice president, and director of graduate school, and limited in terms of time and budget. Future research papers recommend testing with a larger questionnaire to ensure that the results are effective and efficient.

Additionally, future research papers should include additional variables to understand other factors that influence student loyalty. As far as it concerns, the survey method can apply more qualitative skills along with open-ended questions to understand and add value to satisfying students.

Finally, a study should be conducted for other universities in Phnom Penh or throughout Cambodia where this study was done in, to understand further and draw comparisons among those variables. Other avenues of research that could further this study may include interviewing professors and university administrators to cross check their responsiveness to the findings of this study.

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