

Lap Ming Liu, Elena Kasimovskaya

THE ANTECEDENT FACTORS OF STUDENT LOYALTY IN HONG KONG: A SUB-DEGREE EDUCATION LEVEL



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This book represents the outcomes of the research in the field of the education in Hong Kong. The authors discover several general issues in the field of the development of the sub-degree programs in contemporary Hong Kong and the successful marketing strategies. It is stressed that the articulation pathway is a significant factor, undervalued in most cases by the current administrations of the schools. The recommendations could be disseminated and used in the other national and geographical context.

The authors consequently used PLS-SE modeling in building up the final model. The algorithm could be reproduced in the forthcoming research.

The book could be useful for the researchers, practitioners, students and professors, everyone who is interested in the problems of education and human development under the market economy.

Lap Ming Liu is a young researcher, teaching in Hong Kong Institute of Vocational Education

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Acronyms

AD	Associate Degree
AP	Articulation Pathway
AVE	Average Variance Extracted
AY	Academic Year
CB	Covariance Based
CC of CityU	Community College of City University/UOW College HK
CC of HK BU	Community college from HK Baptist University (Academy of Film/ College of International Education/ School of Continuing Education)
HD	Higher Diploma
HE	Higher Education
HK	Hong Kong
HK CC	HK Community College (under the HK Polytechnic University)
(Under HK PU)	
HKCAAVQ	Hong Kong Council for Accreditation of Academic and Vocational Qualifications
HKDSE	Hong Kong Diploma of Secondary Education Examination
HKEAA	HK Examinations and Assessment Authority
HKEDB	Hong Kong Education Bureau
HKIVE/ HKDI	HK Institute of Vocational Education / HK Design Institute (under VTC)
(Under VTC)	
IA	Institute A
LSF	Locally Self-financed Top-up Degree Programme
MM	Measurement Model
OTU	Top-up Degree Programme That Jointly Organized by Local Institutes and Overseas Universities
PLS	Partial Least Square
PSQ	Perceived Service Quality
PYJ	Project YiJin
RQ	Research Questions
SC	Student Commitment
SEM	Structural Equation Modeling
SM	Structural Model
SS	Student Satisfaction
SSSDP	Study Subsidy Scheme for Designated Professions/Sectors
ST	Student Trust
UGC	Government Funded Top-up Degree Programme
VIF	Variance Inflation Factor

Abstract

This research assessed the relationship between student's loyalty to their institutions and its antecedent factors in the HK sub-degree higher education sector. Apart from the student satisfaction, perceived service quality, trust, and commitment, an additional factor, articulation pathway that many researchers did not address, was introduced into the research model to cope with the education system in HK. The research model is an extension of the research framework suggested by (Rojas et al. (2009)), and their research model was derived from the Relationship Quality-based Student Loyalty (RQSL) model made by Hennig-Thurau, Langer, & Hansen (2001). The path coefficients computed by the PLS-SEM analysis ($p < 0.005$) demonstrated all the antecedent factors positively and directly affecting student loyalty except student satisfaction, which displayed an indirect and positive influence on student loyalty only. These findings are consistent with the research model of (Rojas et al. (2009)).

The multiple regression of Student Loyalty (LOY), [$F(3, 385) = 72.47$, $p < 0.000$, $R^2 = 0.361$], indicated government-funded articulation programme contributed the most substantial influence on LOY in the main study. While the results [$F(3, 145) = 39.64$, $p < 0.05$, $R^2 = 0.451$] indicated overseas top-up programme gave the most substantial influence on LOY in the case study which used for cross-checking the results from the main study.

These findings suggested sub-degree programme providers should consider all antecedent factors in designing their student engagement strategies to establish positive student loyalty and they should also consider different sub-degree students will have different articulation needs as per the finding of this research.

Chapter 1. Introduction

1.1 Introduction

This chapter begins by presenting the research background to explain the context of the study, particularly the sub-degree Higher Education (HE) sector in Hong Kong (HK). After that, the research questions (RQs) and research hypotheses (RHs) for this research are formulated, and the research methodologies and their rationales are provided. Next, the statistical techniques adopted to analyze the data collected from quantitative and qualitative approaches are explained. Thereafter, the findings of the main and case studies are presented; lastly, the findings and contributions of this research are discussed.

1.2 Research Background

This research aims to study the relationship between students' loyalty to their institutions (hereafter "student loyalty") and its antecedent factors among sub-degree students in HK. As the education system in HK was transformed from an elite to a mass education system in 2000 (Leung, Ng, & Chan, 2011; Wong, P., Ng, Mak, & Chan, 2016), the number of study places (study quota) surged, especially for the sub-degree education sector in HK. Under the massification of HE, Associated Degree (AD) programmes were introduced into the HE industry to accommodate the demand of the secondary school leavers in HK. Moreover, the HK government wished to increase the student participation rate for HE from 30 percent to 60 percent by 2010–11 (The Federation for Continuing Education in Tertiary Institutions, 2001). Based on a report released by the Hong Kong Education Bureau (HKEdB) in 2006, the percentage of students in HE soared from 33 percent in 2000 to 66 percent in 2005. In 2018, this figure rose to around 73 percent (HKEdB., 2017). The report revealed that the increase in the rate of student participation had far exceeded the government's target.

As the secondary student population has been dropping since Academic Year (AY) of 2013/2014 (Concourse for Self-financing Post-secondary Education, 2017), competition for student recruitment in the HE sectors

has become keen, especially at the sub-degree level. Moreover, data from the Hong Kong Examinations and Assessment Authority (HKEAA) shows that the number of secondary student graduates dropped from 73,074 in 2012 to 59,000 in 2018, which represents a fall of 24 percent. This figure is expected to drop to 45,100 in AY2022/2023 (Lo, J., Yung, & Feng, 2015), explaining why competition for a government-funded degree programme is becoming easier. As a result, competition for student recruitment in the sub-degree sector (normally self-financed) is becoming even greater. According to data from HKEdB, the number of sub-degree students surged from 36,058 in AY2008/2009 to 42,762 in AY2012/2013, then gradually dropped to 30,388 in AY2019/20 (Concourse for Self-financing Post-secondary Education, 2020c). The figure reveals fierce competition in the sub-degree education sector. To survive in this battle, sub-degree programme providers are taking a market approach to engage students by establishing student loyalty or, in other words, to beat the competition by winning students' trust; therefore, they need to meet the expectations of stakeholder, particularly students.

Indeed, studies have predicted that HK HE's massification will inevitably lead to educated unemployment and poor education quality (Wan, 2011; Wong et al., 2016). This marketization indicates market competition among institutions (Brown, 2011) for students and resources, which, inevitably, leads institutions to treat students as customers (Hemsley-Brown et al., 2010; Ledden, Kalafatis, & Mathioudakis, 2011; Zhao, 2017). To satisfy the students under the market mechanism, institutions try to achieve the highest customer loyalty, as this will not only enable them to retain current students but also to attract a new intake (Eurico, Da Silva, João Albino Matos, & Do Valle, 2015; Izogo, 2015; Lee, Kelvin & Salciuviene, 2018). However, existing studies of the link between marketization and study loyalty have mainly studied the situation in other regions, and the studied targets were students at degree level. Hence, their generalizability to the HK sub-degree sector is doubtful. Meanwhile, empirical study on the antecedent factors of student loyalty in the HK sub-degree sector is very limited. To provide a comprehensive analysis for the HK sub-degree providers, this research wishes to extend the study model constructed by Rojas-Méndez et al. (2009) on the antecedent factors of student loyalty with a focus on the HK sub-degree education sector. Moreover, to make the model more suitable for the HK sub-degree environment, one further factor, namely articulation

pathway (AP), has been added into the research. In HK, there are three common types of AP for sub-degree students.

- 1. Government-funded undergraduate degree programmes governed by the University Grants Committee (UGC) of HK, also known as UGC programmes.
- 2. Overseas Top-up (OTU) degree programmes that jointly organized with overseas universities, also known as OTU programmes.
- 3. Locally self-financed (LSF) degree programs, also known as LSF programmes.

This research aims to determine the strength of these three common types of articulation degree programs to the sub-degree student’s loyalty and satisfaction on their institutions. The proposed framework attempts offer an in-depth insight for sub-degree providers (both the managers and the administrators) in designing their respective strategies to address the coming challenges.

1.3 Research Questions (RQs) and Research Hypotheses (RHs)

This research assesses the relationship between student loyalty (LOY) and its various antecedent factors including Perceived Service Quality (PSQ), Student Satisfaction (SS), Articulation Pathway (AP), Student Trust (ST) and Student Commitment (SC). Moreover, the researchers will analyze the relationships among those antecedent factors in the HK sub-degree education sector. To ensure the replicability of the research model, a case study of a particular group of the sub-degree students was conducted, namely Higher Diploma (HD) students studying business (also called as HD business students), in Institute A (IA).

To address the research gap discussed above, the RQs and respective RHs for the main and case studies were developed and are summarized in (Table 1) and (Table 2), respectively.

Table 1. – Research Questions and Research Hypotheses for Main Study

No.	Research Questions
1	2
RQ1	What is the relationship among Perceived Service Quality, Student Satisfaction and Student Loyalty for sub-degree students in HK?
RQ2	Does Student Satisfaction mediate between Perceived Service Quality and Student Loyalty for sub-degree students in HK?

1	2
RQ3	What is the relationship among Articulation Pathway, Student Satisfaction and Student Loyalty for sub-degree students in HK?
RQ4	Does Student Satisfaction mediate between Articulation Pathway and Student Loyalty for sub-degree students in HK?
RQ5	Does the UGC Articulation Pathway have a greater influence on Student Loyalty and Student Satisfaction than the other two Articulation Pathways for sub-degree students in HK?
RQ6	What is the relationship among Student Satisfaction, Student Trust, Student Commitment, and Student Loyalty for sub-degree students in HK?
Research Hypotheses	
H1	Perceived Service Quality positively influences Student Loyalty for sub-degree students in HK.
H2	Perceived Service Quality positively influences Student Satisfaction for sub-degree students in HK.
H3	Student Satisfaction positively influences Student Loyalty for sub-degree students in HK.
H4	Student Satisfaction mediates between Perceived Service Quality and Student Loyalty for sub-degree students in HK.
H5	Provision of Articulation Pathway positively influences Student Loyalty for sub-degree students in HK.
H5a	Provision of UGC Articulation Pathway has the strongest positive influence on Student Loyalty among the three articulation pathways.
H5b	Provision of OTU Articulation Pathway has the smallest positive influence on Student Loyalty among the three articulation pathways.
H5c	Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.
H6	Provision of Articulation Pathway positively influences Student Satisfaction for sub-degree students in HK.
H6a	Provision of UGC Articulation Pathway has the strongest positive influence on Student Satisfaction among the three articulation pathways.
H6b	Provision of OTU Articulation Pathway has the smallest positive influence on Student Satisfaction among the three articulation pathways.
H6c	Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.
H7	Student Satisfaction mediates between Articulation Pathway and Student Loyalty for sub-degree students in HK.

<i>1</i>	<i>2</i>
H8	Student Satisfaction positively influences Student Trust for sub-degree students in HK.
H9	Student Trust positively influences Student Commitment for sub-degree students in HK.
H10	Student Commitment positively influences Student Loyalty for sub-degree students in HK.”

Table 2. – Research Questions and Research Hypotheses for Case Study

No.	Research Questions
<i>1</i>	<i>2</i>
RQ1	What is the relationship among Perceived Service Quality, Student Satisfaction and Student Loyalty for HD business students in IA?
RQ2	Does Student Satisfaction mediate between Perceived Service Quality and Student Loyalty for HD business students in IA?
RQ3	What is the relationship among Articulation Pathway, Student Satisfaction and Student Loyalty for HD business students in IA?
RQ4	Does Student Satisfaction mediate between Articulation Pathway and Student Loyalty for HD business students in IA?
RQ5	Does the UGC Articulation Pathway have a greater influence on Student Loyalty and Student Satisfaction than the other two Articulation Pathways for HD business students in IA?
RQ6	What is the relationship among Student Satisfaction, Student Trust, Student Commitment and Student Loyalty for HD business students in IA?
Research Hypotheses	
H1	Perceived Service Quality positively influences Student Loyalty for HD business students in IA.
H2	Perceived Service Quality positively influences Student Satisfaction for HD business students in IA.
H3	Student Satisfaction positively influences Student Loyalty for HD business students from IA.
H4	Student Satisfaction mediates between Perceived Service Quality and Student Loyalty for HD business students in IA.
H5	Articulation Pathway positively influences Student Loyalty for HD business students in IA.

1	2
H5a	Provision of UGC Articulation Pathway has the strongest positive influences on Student Loyalty among the three articulation pathways.
H5b	Provision of OTU Articulation Pathway has the smallest positive influences on Student Loyalty among the three articulation pathways.
H5c	Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.
H6	Provision of Articulation Pathway positively influences Student Satisfaction for HD business students in IA.
H6a	Provision of UGC Articulation Pathway has the strongest positive influences on Student Satisfaction among the three articulation pathways.
H6b	Provision of OTU Articulation Pathway has the smallest positive influences on Student Satisfaction among the three articulation pathways.
H6c	Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.
H7	Student Satisfaction mediates between Articulation Pathway and Student Loyalty for HD business students in IA.
H8	Student Satisfaction positively influences Student Trust for HD business students in IA.
H9	Student Trust positively influences Student Commitment for HD business students in IA.
H10	Student Commitment positively influences Student Loyalty for HD business students in IA.

1.4 Research Methodology

The research paradigm adopted for this research is positivism, and a deductive and cross-sectional quantitative approach was used. In addition, to measure the RQs and their corresponding hypotheses, the research population was divided into two target groups. All full-time sub-degree students in HK, excluding the HD business students attending IA, were studied in the main empirical study. Only the HD business students attending IA were examined in the case study. The researchers reviewed a number of different data collection methods and finally selected the snowball approach, using an online questionnaire platform. This ensured that respondents' identities were kept anonymous and, at the same time, respected government policies on Covid-19 pandemic measures by maintaining

proper social distancing and work-from-home rules. Structural Equation Modeling (SEM) and multiple regression were principally applied to analyze the data collected.

Furthermore, other research papers using SEM were benchmarked and are tabulated in chapter 3. Based on a comparison with the previous studies and the sample size reference proposed by Sekaran and Bougies (2014), this research sought to obtain around 385 and 150 valid responses for the main study and case study respectively. Regarding the questionnaire design, all questions/items were adopted or modified from previous research papers which had been validated (Ali, F., Zhou, Hussain, Nair, & Ragavan, 2016; Dennis, Papagiannidis, Alamanos, & Bourlakis, 2016; Duarte, Raposo, & Alves, 2012; Giner & Rillo, 2016; Li, 2013; Ng, Peggy ML, Wong, Mak, & Chan Jason, 2015; Rojas-Méndez et al., 2009). After the pilot test, the questionnaire was fine-tuned. Finally, 44 items were classified into six sections to be scored with a 7-point Likert scale. The last part of the questionnaire addressed the profile of the respondents.

To ensure this research model could be replicated in a particular situation, a case study of a specific group of sub-degree students was carried out. The same quantitative questionnaire was used in the case study to reduce the bias and facilitate comparison of research findings. Moreover, in-depth qualitative interviews were conducted to triangulate the findings of the main empirical study and case study. The ethical issues regarding the data collection for this research are discussed in the last section.

1.5 Research Analysis

Before conducting data analysis, data screening and data cleaning must be performed to identify and eliminate any irregularities. Once these processes had been carried out, the quantitative data was analyzed by Microsoft Excel 2010 and SmartPLS3.0. Descriptive statistics of the 44 items from the questionnaire were first calculated by Excel Tool Pack. The Mean, Frequency, and Standard Deviation (SD) were then tabulated, and the respondents' profiles were summarized and illustrated by charts and tables. Finally, the relationship among all variables was constructed in the correlation matrix.

Cronbach's alpha (α) test was then used to evaluate the scales' reliability. The acceptable threshold of α is set at 0.7 (Hair et al., 2017); therefore, a test result of below 0.7 was considered unacceptable for this research.

Partial Least Square-Structural Equation Modeling (PLS-SEM) evaluated the 10 main hypotheses by means of two measurement models (the reflective measurement and structural models). According to Hair et al. (2017), the reflective measurement model (RMM) checks the internal consistency, convergent validity, and discriminant validity of the research model. The structural model (SM) corresponds to the collinearity, path coefficient, coefficient of determination and predictive relevance of the model.

The six sub-hypotheses were used to evaluate the strength of different APs on LOY and SS individually by multiple regression. Data was assessed whether it fulfilled the assumptions of conducting multiple regression before the analysis. Finally, the ANOVA test was used to check the working background of different respondent groups on LOY.

1.6 Research Findings for the Main Study

Hair et al. (2017) suggested that RMM includes three assessments, namely Internal Consistency, Convergent Validity, Discriminant Validity. While the Internal Consistency assessment includes Composite Reliability (CR) evaluation. Convergent Validity assessment includes individual indicator reliability and Average Variance Extracted (AVE). Meanwhile, Discriminant Validity assessment covers cross-loading checking and Fornell-Larcker test. The CR values for all the variables are found between 0.948 to 0.972, which are all larger than the indicated acceptable threshold 0.7 (Hair et al., 2017). Hence, internal consistency for all variables is accepted. As the AVE values between 0.693 and 0.863 are larger than the critical value of 0.5; the convergent validity for this research is supported. Lastly, since the Fornell-Larcker test and cross-loadings check also met the criteria, this research is said to achieve the requirement of RMM.

The next step is to perform the SM for this research. The path coefficient at five percent significant level demonstrates that apart from H3, H4, H7, all main hypotheses are supported. This revealed that SS has no direct positive influence on LOY (H3). Hence, SS is said to have no mediation effect between 1) PSQ and LOY (H4) and; 2) AP and LOY (H7). A more in-depth discussion will be covered in later chapters.

Multiple regression is adopted to assess the strength of the three different types of AP on LOY and SS in this research. Before the test, the researchers conducted a series of data assumption tests and confirmed that the data fulfilled all assumptions for multiple regression, which includes:

1) minimum sample size; 2) linear relation between independent and dependent variables; 3) equal variance or no heteroscedasticity; 4) data are normally distributed and 5) no multicollinearity problem (Saunders, Lewis, & Thornhill, 2019). The findings discovered that the descending effect order of the three types of AP to the LOY is $UGC > LSF$. Since OTU is found to have no effect on LOY, only H5a and H5c are supported, while the descending impact of the three types of AP on SS is $UGC > OTU > LSF$. This finding supports H6a, H6b and H6c.

The last assessment of this research aims at determining whether the working background of the respondents will result in different traits on their LOY. Respondents are classified into 4 different distinct groups namely: 1) students with full-time experience (FT); 2) students with both full-time and part-time experience (FTnPT); 3) students with part-time experience (PT) and; 4) students with no work experience (NE). Since there are more than three groups, ANOVA analysis was performed instead of the t-test. Based on the result of Levene's test ($F [3, 385] = 1.32, p > 0.05$), One-way ANOVA is suggested where p -value is 0.27 at five percent significant level. The finding showed LOY ($F [3, 385] = 1.96, p > 0.05$), where p -value (0.12) was larger than the indicated threshold of 0.05 at five percent significant level. Hence, null hypothesis was accepted. This supported that there is no significant difference among all four groups on LOY. All findings of the hypotheses are tabulated in (Table 3).

1.7 Research Findings for the Case Study

A case study was conducted to diagnose the findings of the main study for evaluation and comparison. In such a situation, the same research approach was adopted for the case study. The business students from IA were included in the case study in order to obtain a comparable result to testify the research model. Since the same approach was used for the case study, research hypotheses were same as the main study but in the context of the business students in IA. The same set of questionnaires was distributed to the target respondents, while the same statistical analysis approach was adopted, which includes data reliability and validity assessment, PLS-SEM analysis, multiple regression, and finally ANOVA test.

In the PLS-SEM analysis, the CR values of variables were all over the threshold 0.7, whereas all variables' AVE values were higher than the critical value of 0.5. The results reflected that both internal consistency and convergent validity were met for this case study. Likewise, the criteria of Fornell-

Larcker test and cross-loading evaluation for the discriminant validity assessment were also fulfilled. Both the RMM and SM analysis at a five percent significant level were met, with the main hypotheses in the case study indicating consistent findings in the main study. This implies that, except for H3, H4, H7, all main hypotheses in the case study were supported. The findings revealed that SS has no positive influences on LOY directly (H3). Hence, SS has no mediation effect between: 1) PSQ and LOY and; 2) AP and LOY. The findings are also the same as that of the main study.

However, the findings from the multiple regression evaluation gave a different result, in which the findings from the case study discovered that only OTU and LSF have positively influenced LOY and the descending effect order of these two types of APs on LOY is $OTU > LSF$. In terms of the influence on SS, only OTU demonstrated a significant effect on SS. These discrepancies between the main and case studies were mainly due to the context of the IA. Since IA is a vocational institution, therefore, the students generally show different views on the articulation preference.

For the ANOVA test on respondents' work background to the LOY, the business students from IA are divided into four groups based on the same approach used in the main study. As the Levene's test ($F [3,145] = 0.48, p > 0.05$) displayed p -value is 0.696 at five percent significant level; the null hypotheses (H_0) cannot be rejected. Therefore, One-way ANOVA was adopted to test if any difference existed in the means of the groups on the LOY. Again, LOY ($F [3, 148] = 1.37, p > 0.05$) expressed the p -value of 0.254 is larger than the critical 0.05 at five percent significant level. As a result, the H_0 is accepted, which supported that there is no significant difference among the four groups on LOY. All findings for the main and case studies are summarized in (Table 3).

Since the findings of the sub-hypotheses display discrepancies between the main and case studies, a qualitative analysis was conducted to investigate the discrepancies. As face-to-face interview is not recommended due to the Covid-19 pandemic measure, 10 business students from the IA were finally invited to attend the interview over the phone under the assistance of the respective programme leaders. The main findings from the qualitative interview showed that since IA is a vocational institution that offers HD programmes, the business students from IA show different views compared to the main study. In addition, the qualitative data collection discovered some in-depth explanations on the lack of no direct relation between SS and LOY. The mixed research methods

help the researcher understand the study topic thoroughly. More details are listed in chapter five.

Table 3. – Findings Comparison between
the Main Study and Case Study

No.	Hypotheses	Test Result (Main)	Test Result (Case)
1	2	3	4
H1	Perceived Service Quality positively influences Student Loyalty for HK sub-degree students in HK/HD business students in IA.	Supported	Supported
H2	Perceived Service Quality positively influences Student Satisfaction for sub-degree students in HK/HD business students in IA.	Supported	Supported
H3	Student Satisfaction positively influences Student Loyalty for sub-degree students in HK/HD business students in IA.	Not supported	Not Supported
H4	Student Satisfaction mediates between Perceived Service Quality and Student Loyalty for sub-degree students in HK / HD business students in IA.	Not supported	Not Supported
H5	Provision of Articulation Pathway positively influences Student Loyalty for sub-degree students in HK/ HD business students in IA.	Supported	Supported
H6	Provision of Articulation Pathway positively influences Student Satisfaction for sub-degree students in HK/ HD business students in IA.	Supported	Supported
H7	Student Satisfaction mediates between Articulation Pathway and Student Loyalty for sub-degree students in HK / HD business students in IA.	Not supported	Not support
H8	Student Satisfaction positively influences Student Trust for sub-degree students in HK / HD business students in IA.	Supported	Supported
H9	Student Trust positively influences Student Commitment for sub-degree students in HK / HD business students in IA.	Supported	Supported
H10	Student Commitment positively influences Student Loyalty for sub-degree students in HK / HD business students in IA.	Supported	Supported

1	2	3	4
Sub-hypotheses			
H5a	Provision of UGC Articulation Pathway has the strongest positive influence on Student Loyalty among the three articulation pathways.	Supported	Not supported
H5b	Provision of OTU Articulation Pathway has the smallest positive influence on Student Loyalty among the three articulation pathways.	Not supported	Supported
H5c	Provision of LSF Articulation Pathway has the medium positive influence on Student Loyalty among the three articulation pathways.	Supported	Supported
	Effect size (Strength) Descending effect order: UGC > LSF (Main Study) Descending effect order: OTU > LSF (Case Study)	Finding inconsistency	
H6a	Provision of UGC Articulation Pathway has the strongest positive influence on Student Satisfaction among the three articulation pathways.	Supported	Not supported
H6b	Provision of OTU Articulation Pathway has the smallest positive influence on Student Satisfaction among the three articulation pathways.	Supported	Supported
H6c	Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.	Supported	Not Supported
	Effect size (Strength) Descending effect order: UGC > OTU > LSF (Main Study) Descending effect order: OTU only (Case Study)	Finding inconsistency	

ANOVA test:	
Hypothesis statement:	There is no difference regarding the impact of work background on student loyalty among the students the sub-degree students in HK / HD business students in IA.
Hypothesis	$H_0: \mu_{FT} = \mu_{FT \& PT} = \mu_{PT} = \mu_{NF}$ H_1 : All means are not equal
Finding:	LOY ($F [3, 385] = 1.96, p > 0.05$) (Main Study) LOY ($F [3, 148] = 1.37, p > 0.05$) (Case Study)
Conclusion	$p > 0.05$; therefore, H_0 is accepted and revealed no mean difference between groups. Respondents' work background has no statistical difference on Student Loyalty

1.8 Research Justification and Significance

As discussed in previous sections, the sub-degree sector in HK faces keen competition since the massification in 2000. In view of the decreasing number of school-aged secondary school students, more sub-degree providers are marketized to ensure sufficient student enrollment. To succeed in the competition, nurturing student loyalty is the key. The researchers in this research attempt to determine the relationship of the student loyalty with its antecedent factors, including the articulation pathways. In addition, some justifications were discussed. Firstly, because of the very limited studies specifically for this sector, there is a need for empirical data to examine student loyalty at the HK sub-degree level. The second justification is that the result provides value to the sub-degree stakeholders (i.e., sub-degree providers and the government) to formulate corresponding strategies to enhance the operation in this sector. Thirdly, this research extended the studies of Rojas-Mendez et al. (2009) in student loyalty at the HE industry and focused on the HK sub-degree education sector. Fourthly, to comprehend the research in the context of HK sub-degree environment, one additional factor has been added into the research model to complete the study on this topic area. Finally, the suggested new research framework serves as a gate for other writers to testify this topic in different contexts, such as other educational sectors in different countries.

1.9 Structure of the Research

This research consists of six chapters according to the requirement of SBS. Chapter one is the introduction, while chapter two reviews all the relevant literature on the topics studied. The methodology and research findings are explained in Chapter three and four respectively. To validate the research model, a case study is testified in Chapter five. Finally, summary, implications and recommendations for further research are included in Chapter six.

1.10 Conclusion

To sum up, the introduction of this thesis serves as an overview of the whole research, in which the introductory paragraphs give readers a general idea of this research structure. Figure 1 exhibits the structure of this research.

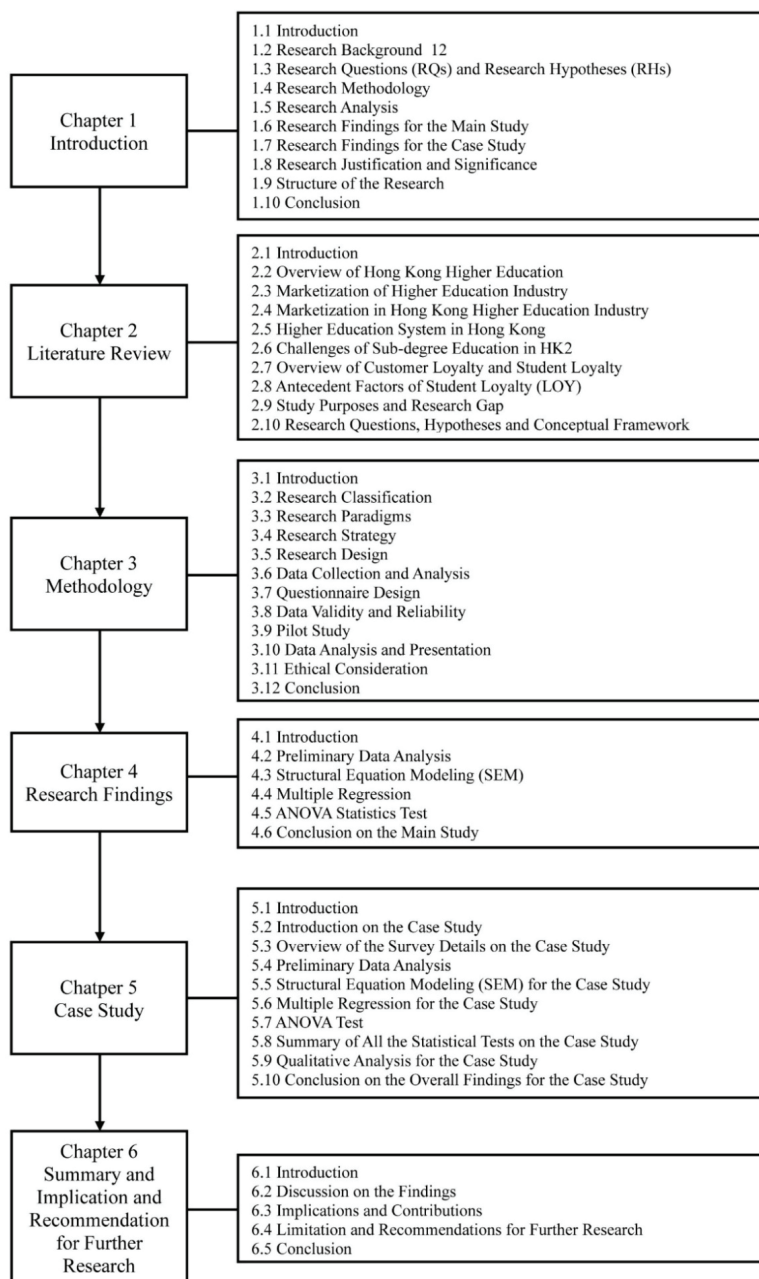


Figure 1. Research Map

Chapter 2. Literature Review

2.1 Introduction

This chapter comprehensively reviews literature to offer an in-depth understanding of the antecedent factors of student loyalty (LOY). Following a discussion on the general situation on HK Higher Education (HE) and an analysis of the marketization in HE Industry in both global and local situations, this chapter will explain the HE system in Hong Kong (HK) and the challenges in the local Sub-degree sector, with LOY and its antecedent factors reviewed accordingly. Furthermore, the research purposes and research gaps for this research are also highlighted. Finally, RQs & RHs are formulated at the end of this chapter. Figure 2 illustrates the structure of this chapter.

2.2 Overview of the Higher Education in HK

In the recent years, many sub-degree programmes have become available in the market in order to meet the high demand for higher education (Hong Kong Education Bureau, 2017; Marginson, 2016). However, many students, parents and employers commented that the quality of the sub-degree education has been sacrificed by the quantity (Kember, Hong, Ho, & Ho, 2011). In particular, quite a number of students are disappointed and dissatisfied with the teaching quality of the programmes and the campus facilities that they have access to (Wan, 2011). Since sub-degree students usually expect the teaching quality and campus facilities to be better, it is therefore, logical to assume that many students wish to get into government-funded undergraduate degree programmes governed by the University Grants Committee of HK (UGC) (Wong et al., 2016).

Unfortunately, the slim chance in securing a place of UGC degree programme has led to fierce competition (SCMP Editorial, 2006; Wong et al., 2016). As many stakeholders (especially students) are disappointed with the limited opportunities in getting into UGC programmes, many students did not trust and commit on those sub-degree programmes that failed to offer a desirable articulation pathway, mostly the one that leads to UGC programmes. Worse, some of the students even queried on the policy in launching the sub-degree programmes (Lau, 2013).

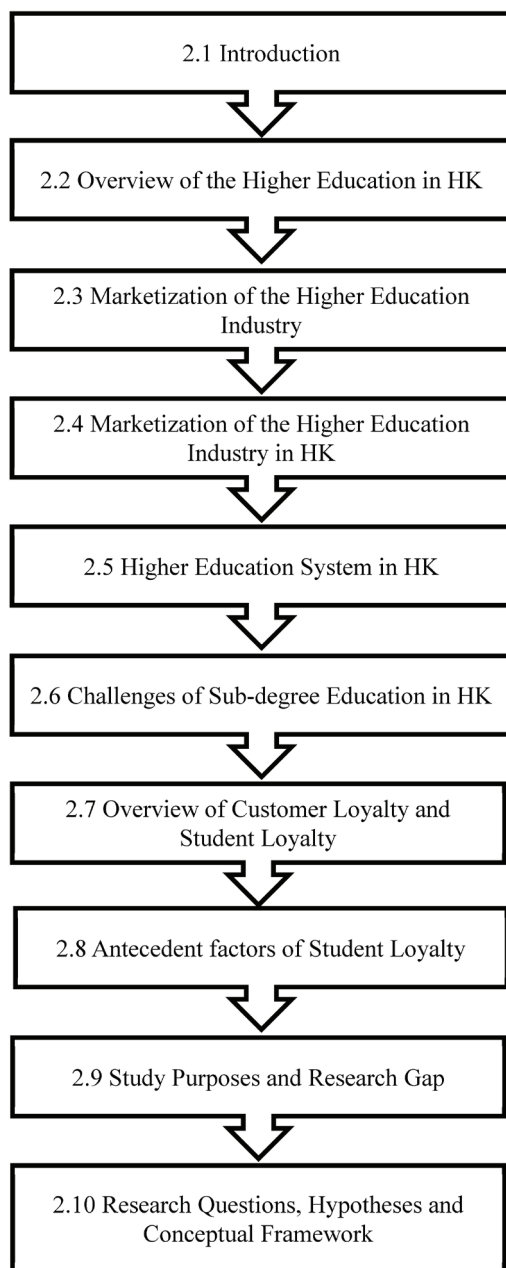


Figure 2. Outline for Chapter 2

To address this problem, some sub-degree institutions provide other articulation pathways, e.g., top-up degree programmes jointly organized with overseas universities (OTU) or locally self-financed degree programmes (LSF), to meet the students' expectation. Unfortunately, such programmes failed to satisfy students' needs (Wong et al., 2016) and reflected that student's satisfaction depends on what the institutions offer to the students. Similar to the customer service concept, when customers are satisfied, there would have higher levels of loyalty towards the company (Lee & Salciuvienė, 2018). While looking at the achievement of customer retention and reputation (Izogo, 2015), a close linkage can be revealed among satisfaction, commitment, and loyalty.

Based on Figure 3, the number of graduates from secondary day school has been dropping in recent years. With the lower number of graduates, higher education institutions have to compete for students. To win, it is necessary to regain the students' confidence by meeting their expectations.

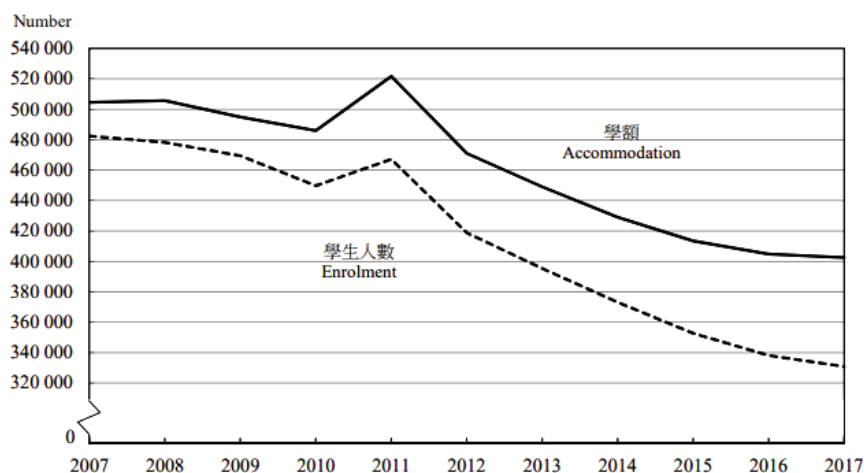


Figure 3. Student Enrolment and Accommodation in Secondary Day School in HK, 2007–2017

Note. The graph shows the number of student enrolment and accommodation in secondary day school have all been dropping from 2007 to 2017. From *Student Enrollment Statistics, 2017/18* (p. 78), by School Education Statistics Section of Education Bureau, June 2018, retrieved from https://www.edb.gov.hk/attachment/en/about-edb/publications-stat/figures/Enrol_2017.pdf

Since marketization of HE industry can encourage the institutions to take a customer-centric approach in providing education to their students, especially the non-government funded institutions, the direction has become one of the solutions for school administrators nowadays. With a long-term relationship between students and the institutions, student enrollment can be boosted (Eurico et al., 2015). In the 2020 Policy Address, the HK government advocated a lifelong learning practice in the active evolving knowledge community (University Grants Committee, 2010). Under this policy, sub-degree students were encouraged to achieve a higher education level (Ma, 2018; Yuen, 2015) by getting an undergraduate degree or even higher education achievement in their education ladder (SCMP Editorial, 2014).

Meanwhile, it is also well-recognized by the public that the sub-degree education can serve as a bridging qualification for admission into degree programmes (Education and Manpower Bureau, 2006; University Grants Committee, 2010). The articulation pathway is therefore recognized as one of the factors that influences students' choice in registering HE programmes in HK (Ng et al., 2015).

Under this circumstance, many researchers studied student loyalty and its antecedent factors in HE (Ali et al., 2016; Annamdevula & Bellamkonda, 2016a; Annamdevula & Bellamkonda, 2016b; Eurico et al., 2015; Giner & Rillo, 2016; Nguyen & LeBlanc, 2001; Perin, Sampaio, Simões, & de Pól-vora, 2012; Rojas-Méndez et al., 2009; Sembiring, 2013). However, since most of the researchers focused on degree level or above, there was very limited research that focused on education at sub-degree level (Hemsley-Brown et al., 2010; Ledden et al., 2011; Rojas-Méndez et al., 2009; Serenko, 2011; Thomas, 2011). Some researchers also studied the general situation of post-secondary level including all levels in the HE industry (e.g., bachelor degree, sub-degree or vocational training) (Law, 2013; Ng et al., 2015; Perin et al., 2012).

This research aims at focusing on the sub-degree education level in HK. The researchers extended the study model constructed by Rojas-Mendez et al. (2009) on the antecedent factors of student loyalty in HE Industry into HK sub-degree sector. To make the model more relevant to the local context, one more factor, i.e., Articulation Pathway (AP) is added. In fact, many researchers have overlooked the importance of AP. By adding AP into the model among other factor, i.e., Perceived Service Quality, Student Satisfaction, Student Trust, and Student Commitment,

the relationship between student loyalty and its antecedent factors for this group of students can be covered. Moreover, this study can fill the research gap resulted from insufficient empirical study on this group of students (especially the APs that are rarely found in various sets of research databases). At the same time, it can address the education needs of sub-degree students and offer a glance to the sub-degree providers in planning their marketing strategies for serving the students and their institutions.

2.3 Marketization of the Higher Education Industry

Under the trend of globalization, a community needs ample skills and new knowledge for economic development. Hence, it is important for communities nowadays to raise the overall academic qualification of the people, in particular the percentage of population with tertiary education background. To nurture suitable human resource in order to meet the demands of the job market, many countries, such as UK, Australia and even China (Chan & Mok, 2001), are now investing massive amount of resource on education, especially post-secondary education (University Grants Committee, 2010). In addition, the world bank group in 2003 reported that higher education is taking a significant role in dealing with the challenges under the influences of economic globalization (Wan, 2011).

While a market from a business perspective is understood as a place that offers products or services in return for value, it is often referred to as social coordination in an economic context, where the demand and supply of products or services are always governed by the price mechanism (Brown, 2011). With these two explanations, the HE industry offering education service in return for tuition fee could be considered as a business. As the phenomenon of different institutions competing against each other for student enrollment also aligns with the meaning of economic perspective, HE can be considered as a huge element in the entire education market.

According to Brown (2011), HE industry is marketized with four indicators, namely institutional autonomy, institution competition, price issue and information acquisition. Zhao (2017) further suggested the four indicators can be generalized into two interrelated dimensions, namely education policy and education objective. While education policy encourages competition by giving autonomy to the institutions, education objective signifies a process that treating students as pure learners to certain degree of consumers status.

In addition, other authors argued that marketization on HE encouraged more players to join the industry (Mok & Tan, 2004) by following the mechanism of the market demand and supply (Brown, 2011). The obvious increasing number of institutions providing higher education service in many countries (Brown, 2011; Chan & Mok, 2001; Furedi, 2010; Perin et al., 2012), apart from showing that more students can receive higher education, also revealed that HE industry is massified according to the market system.

The financial burden of the HE in many countries is transferred to the market mechanism, and it is understandable that the massification links to privatization (Hemsley-Brown et al., 2010; Ledden et al., 2011; Zhao, 2017). Students are considered consumers who various institutions will be competing for, just like how enterprises in other industries would do. Hence, student loyalty and student satisfaction are important for institutions, especially those areas that under serious massification such as HK that massified HE in 2000 (Lee, Michael H., 2014). Meanwhile, institutions offering articulation to students could retain more students and have their financial source guaranteed (Zhao, 2017).

According to the service marketing concept, customer satisfaction and the service or product quality are of high importance, if not more, than receiving appreciation from target customers of company (Izogo, 2015; Ruizalba, Bermúdez-González, Rodríguez-Molina, & Blanca, 2014; Sanchez-Hernandez & Miranda, 2011). For the HE industry, there is no exception. Since education is the main product in the HE industry, student satisfaction and education quality of institutions are essential in order to gain appreciation from the students.

2.4 Marketization of the Higher Education Industry in HK

With the discussion in section 2.3, the researchers argue that marketization of HE industry also happens in HK because the two marketization elements discussed by (Zhao, (2017)) can also be found in the local education sector.

Owing to the economic evolution of HK, the economic structure has transformed in the short period from the industrial nature at the 80s to financial & service-oriented base at the 90s (Chiu, S. W., 2018). As a result, HK needed a qualified workforce to contribute towards the development in all sorts of business activities. In order to catch up with this transformation and to satisfy the human resources of HK, HKEdB re-

vamped the HE policy extensively from the elite system to mass education so as to accommodate more students for post-secondary education in 2000 (Leung et al., 2011; Wong et al., 2016). Under this education policy, the government wished to achieve 60 percent of graduates at secondary level to receive post-secondary education in 10 years' time (Lo et al., 2015; University Grants Committee, 2010).

To achieve this goal, the HK government encouraged universities founded by the University Grants Committee to provide sub-degree programmes (both AD and HD) and invited private institutions to launch sub-degree programmes. The new education policy of the HK government introduced market mechanism to the local HE and created competition among institutions (Lo, William Yat Wai & Ng, 2015). This situation achieved the first marketization element as described by Zhao (2017).

With the new education policy on post-secondary education and the articulation pathway in the HK HE industry, the percentage of students who received higher education in the 5-year period from 2000–2005 soared from 33 percent to 66 percent (Education and Manpower Bureau, 2006), which exceeded the target of 60 percent set by the HK government (Hong Kong Education Bureau, 2017). The figure continued to rise to around 72.7 percent in 2018 (a changed, demonstrated in Figure 4). With the shift, HK has been transformed from elite to mass education system in less than five years. The expansion was considered rapid when compared with that of western countries, which generally took several decades to achieve the goals (Kember, 2010).

According to Zhao (2017) & Lee (2014), HK achieved its greatest progress in marketization the HE sectors since 2000, during which there has been a remarkable expansion of the sub-degree programmes in self-financed mode. The rapid expansion enabled the HK government to achieve its education objectives by raising the students' quality. However, it also rapidly transformed the policy of education institutions. Apart from treating the students as customers, the institutions also have to ensure good learning experience for the students. Meanwhile, the institutions also need to compete for students in view of the dropping number of secondary graduates in the recent years. Such a phenomenon has met the second element of marketization as suggested by Zhao (2017).

Just like other business operations, perfect marketization is hard to establish, especially in the education sector. Since education is considered as a kind of public goods (Zhao, 2017); government intervention is there-

fore involved to a certain extent. As claimed by Zhao (2017), since the quality assurance and governance of education in HK are set by the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ), the education sector can be viewed as a quasi-market. Hence, market measures such as quality assurance and assessment exercise were introduced into the HE industry.

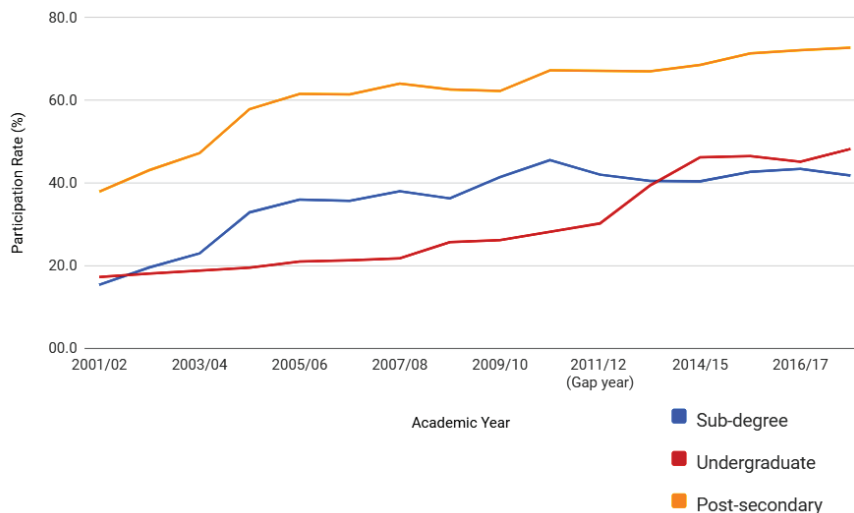


Figure 4. Participation Rate of Post-secondary Education in Hong Kong

Note. The graph shows an increasing participation rate of post-secondary education from the academic year of 2001/02 to 2016/17. Meanwhile, the participation rate of undergraduate level has become higher than the sub-degree level since the academic year of 2013/14. From *Statistics by Concourse for Self-financing Post-secondary Education* (2018), retrieved from: <https://www.cspe.edu.hk/en/Statistics.page#!>

In HK, the quality assurance in HE covers three major areas, namely research, teaching & learning, and management (Lee, 2014). According to Lee (2014), research study is mainly used to allocate the funding for universities, which also take the research results for university ranking and quality endorsement. Since research study is not necessary to be conducted at the sub-degree level; quality assurance may only cover teaching & learning and institute management. Since many studies in the past did not emphasize programmes at the sub-degree level, this study aims to address the issues and challenges facing sub-degree level in order to fill up the research gap.

2.5 Higher Education System in Hong Kong

2.5.1 Articulation System in HK Higher Education Industry

The education system in HK offers a pathway for students to articulate into a higher academic level. Upon completion of secondary education in HK, most students need to sit for the Hong Kong Diploma of Secondary Education Examination (HKDSE), the public examination mainly used to evaluate the students' learning capabilities and provide them with multiple pathways of further studies, training, and employment (Education and Manpower Bureau, 2006). Moreover, the HKDSE also provides a benchmark for employers to find suitable employees according to the candidates' competence and enable universities to screen applicants' suitability for various programmes. Apart from academic abilities and interests, secondary school graduates normally apply different programmes according to their academic performance.

Students with good HKDSE results can be admitted directly to either 4-year UGC degree programmes or LSF degree programmes, while students unable to receive undergraduate degree offers due to unsatisfactory HKDSE examination results would mostly apply for 2-year sub-degree programmes of either Higher Diploma (HD) or Associate Degree (AD) (Education and Manpower Bureau, 2006; Kember, 2010; Kember et al., 2011; Lau, 2013; Ma, 2018; Wan, 2011; Wong et al., 2016). Sub-degree graduates can then apply for top-up degree programmes (either UGC-funded or self-financed) in the third year. Since the UGC-funded degree programmes offer 5,000 study places for the sub-degree graduates, sub-degree graduates with good grades will normally compete for the limited offers (Lau, 2013; Wan, 2011).

Meanwhile, other sub-degree graduates can apply self-financed degree programmes organized by local private institutions on their own. Under this situation, institution offering degree programmes are competing for enrolments from this group of students. If the sub-degree graduates have loyalty to certain institutes, there is a high chance for them to choose degree programmes organized by the same institutions. Hence, student loyalty is very important for sub-degree programme providers to recruit sufficient number of students.

Finally, those who failed to secure sub-degree offers can apply for pre-sub-degree programmes such as foundation diploma or equivalent programmes, e.g., Project YiJin (PYJ). The goal of such programmes is mainly

to build up the academic foundation of the students, especially at the generic level so that students can explore opportunities for further education (University Grants Committee, 2010). Graduates from these pre-sub-degree programmes are also eligible to articulate into sub-degree programmes.

To sum up, the articulation pathway and loyalty are crucial factors in determining students' choice in HE programmes. The local HE system and its corresponding articulation pathway, shown in Figure 5, aims at achieving the education objectives by offering multiple pathways for students to develop their talents and cultivate their interests to contribute to the community (Hong Kong Education Bureau, 2017).

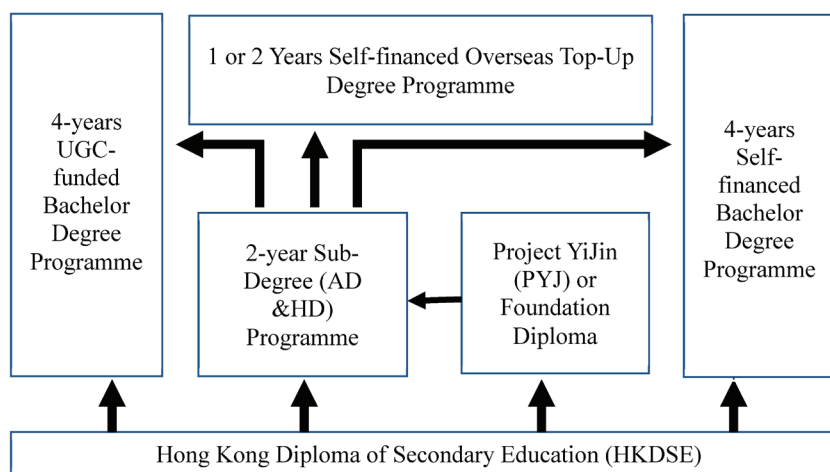


Figure 5. Articulation Pathway of HK Higher Education

2.5.2 Classification of Higher Education in HK

HE refers to post-secondary education that serves secondary school leavers. HE in HK covers the pre-sub-degree level, sub-degree level, undergraduate level, and post-graduate level (HKEdB). Programme providers mainly composed of government & private institutions (Lee, M. H., 2014). To align with the objectives of education policy in promoting life-long learning and filling the high demand, the government provides multiple pathways for students to explore their talents with various articulation channels. The features of each level are discussed in the following sections.

2.5.2.1 Pre-Sub-degree Level. The pre-sub-degree level in HK mainly covers the pre-associate degree programmes, foundation of diploma stud-

ies and project YiJin (PYJ) (HKEdB). These programmes, designed for secondary school leavers who did not achieve passes in five subjects (including two languages –English and Chinese) from the HKDSE, are mainly conducted in one-year full time or two-year part-time. Graduates from these programmes are deemed to have achieved passes in five subjects from the HKDSE and are eligible to articulate into sub-degree education.

2.5.2.2 Sub-degree Level. There are currently two types of mainstream sub-degree programmes for full-time secondary school leavers to take. While the Associate Degree (AD) programmes prepare students for further academic studies, the Higher Diploma (HD) programmes are more vocationally oriented and mainly targets students who wish to enter the job market upon graduation (Lau, 2013; University Grants Committee, 2010; Wan, 2011).

Introduced in 2001 under the reform of the education policy in HK, the AD has diversified the pathways in the HE sectors (Hong Kong Education Bureau, 2017). With an aim to allow more secondary students to acquire relevant knowledge and skills for further studies (Kember, 2010; Wan, 2011), the AD programmes train graduates who are yet ready to enter the job market.

The vocational HD programme is more job-ready for graduates to enter the workforce. HD has been introduced a long time ago, and the programme structure will be reviewed regularly according to the job market. Due to the high demands for achieve the HE level in HK, HD students are now also looking for completing their university degrees (Lau, 2013).

To relieve the public's financial burden, the HK government has funded universities to set up community colleges while encourage private institutions to operate full-time sub-degree programmes under a self-financed model. In fact, only very few study places are government-funded (Yuen, 2015). The duration of these two types of programmes is usually two-years full-time. Graduates are then eligible to articulate into degree programmes in the third year.

To cope with the high demand of getting degree qualification in HK, the supply for self-financed degree programmes (including top-up degree) rose to 8,000 study places in 2016 (Lo et al., 2015), whereas the UGC-funded degree study places allocated to sub-degree students increased from 2000 to 5000 (Chiu, 2018). Moreover, the HK government also launched 3,000 subsidized places via the scheme of SSSDP (Hong Kong Education Bureau, 2017). Appendix A summarized the profiles of HK sub-degree providers in 2018.

2.5.2.3 Undergraduate Level. According to the HKEdB, there are three types of undergraduate degree programmes (bachelor's degree) that serve sub-degree graduates for their articulation apart from the usual 4-year undergraduate programme, such programmes include 1) UGC programmes, 2) LSF programmes, 3) OTU programmes.

UGC programmes are solely run by government-funded universities. There are currently eight universities providing around 5,000 study places of UGC programmes every year (HKEdB). Due to limited places, only students who have achieved good grades in their sub-degree programmes could be given the offers. In comparison, the LSF programmes provide more offers for potential students. There are altogether 142 LSF programmes operated by 16 private institutions or local universities and 31 programmes operated by five non-local universities/ institutions. Appendix B exhibits the distribution of these LSF programmes in HK. Lastly, the OTU programmes are jointly run by non-local universities and local private institutions. Currently, 16 local institutions offer 237 local OTU programmes and six local institutions offering 83 non-local OTU programmes.

According to Figure 4, the participation rate of undergraduates is even higher than that of the students in the sub-degree level since AY2013/14. The result revealed the fierce competition for student enrollment in the undergraduate level.

2.6 Challenges of Sub-degree Education in HK

Just like the transition of education massification that has to overcome many challenges, sub-degree education is no exception. Due to the successful achievement in the target participation rate of 60 percent, there are many noises about the quality of the sub-degree programmes (Kember, 2010; Lau, 2013; Young Post, 2017; Yuen, 2015).

From the literature review, the researchers concluded three critical challenges for the HE sector in HK. The following discussion will mainly focus on the features illustrated by the sub-degree level, including: 1) the dropping population of secondary school leavers has led to fierce competition in the market; 2) opportunities for articulation, and; 3) quality assurance.

2.6.1 Drop in Student Population and Fierce Competition

To release the public's financial burden, the HK government introduced private organizations in HE industry in 2000 (Committee on Self-financing Post-secondary Education, 2018). As the policy allows commu-

nity colleges to set up sub-degree programmes; the opportunities suddenly increased rapidly (Lau, 2013). However, according to the figure depicted in Lo et al. (2015), the number of secondary school graduates has been dropping over the last ten years (as illustrated in Figure 6).



Figure 6. Projection on The Graduate's
Population at Secondary School Level

Note. The projected figures of S6 students have been dropping from 2013 and will gradually increase from 2022. From *The Development and Challenges of Self-financing Higher Education in Hong Kong* by Lo, J., Yung, W. K., & Feng, E. Q. (2015), Public Administration and Policy, an Asia-Pacific Journal, 18(1), 75–88.

The drop was consistent with the figure from HK Examinations and Assessment Authority (HKEAA) which explained that the number of secondary school students dropped 24 percent from 73,074 in 2012 to 59,000 in 2018 (Table 4). The figure was expected to further drop to 45,100 by 2022. However, the total number of sub-degree places dropped around 25.6 percent from 42,762 in 2012 to 31,825 in 2018 (Figure 7 on Number of sub-degree intake offers). It revealed a fierce competition for student recruitment among various institutions. Programmes that failed to compete in the market were phased out gradually. In the worst case, some institutions were closed due to an insufficient number of student recruitment (Lau, 2013). An example was Sacred Heart Canossian College of Commerce that closed in 2013 (Nip & Man, 2013). There were 53 sub-degree programmes, which reduced from 331 in 2014/2015 to 278 in 2018/2019 (Table 5 Full-time Locally

Accredited Self-Financed Post-Secondary Programmes). The figure revealed that sub-degree providers need to survive by enhancing their operation and building up good relationship with stakeholders, particularly students who will stay in the same institute for their top-up degree articulation and also spread their positive learning experience to others through words of mouth.

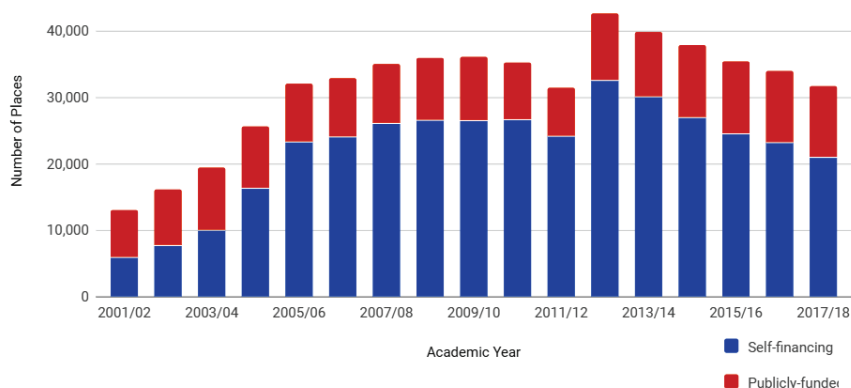


Figure 7. Number of Sub-degree Intake Places

Note. The number of sub-degree places dropped around 25.6% to 31,825. From the *Statistics* by Committee on Self-financing Post-secondary Education, 2019, retrieved from: <https://www.cspe.edu.hk/en/Statistics.page#>!

Table 4. – Number of Participating Secondary Schools and Candidature of HKDSE from 2012–2018

年份 Year	日校 Day schools			所有學校 All schools			自修生 Private candidates		全體考生 All candidates	
	學校數目 No. of schools	報考人數 No. entered	出席人數 No. sat	學校數目 No. of schools	報考人數 No. entered	出席人數 No. sat	報考人數 No. entered	出席人數 No. sat	報考人數 No. entered	出席人數 No. sat
2012	469	70 282	70 109	532	71 745	71 479	1 329	1 141	73 074	72 620
2013	456	69 750	69 557	514	71 168	70 905	11 115	10 450	82 283	81 355
2014	450	65 270	65 102	505	66 576	66 352	12 996	12 048	79 572	78 400
2015	448	61 136	60 969	498	62 199	61 981	11 932	10 878	74 131	72 859
2016	445	56 112	55 934	494	57 127	56 899	11 001	9 975	68 128	66 874
2017	443	51 192	51 008	489	52 058	51 824	9 566	8 525	61 624	60 349
2018	439	50 642	50 447	486	51 636	51 375	7 364	6 274	59 000	57 649

Note. The number of secondary school students that take HKDSE dropped 24% from 2021 to 2018. From “*The HKDSE Statistics of Entries and Results Over the Years*” by Committee on Self-financing Post-secondary Education (2019). (https://www.hkeaa.edu.hk/DocLibrary/HKDSE/Exam_Report/Examination_Statistics/dseexamstat18_7.pdf)

Table 5. – Full-time Locally Accredited Self-financing Post-Secondary Programmes

Academic Year	Level of study	Total	Total sub-degree
2014/15	Higher Diploma	186	331
2014/15	Associate Degree	145	
2015/16	Associate Degree	124	299
2015/16	Higher Diploma	175	
2016/17	Higher Diploma	174	299
2016/17	Associate Degree	125	
2017/18	Associate Degree	125	286
2017/18	Higher Diploma	161	
2018/19	Higher Diploma	151	278
2018/19	Associate Degree	127	

Note. The landscape of full-time locally accredited Self-financed Post-secondary programmes in Hong Kong. From *Self-financing Post-secondary institutions* by Committee on Self-financing Post-secondary Education, 2019, retrieve from <https://www.cspe.edu.hk/en/institution-list.page>

2.6.2 Articulation Opportunity

The articulation channel for the sub-degree graduates are one of the three kinds of topping up degree programmes (UGC, LSF and OTU programmes). Take the AY2018–19 as an example, around 45 percent was achieved in the students’ conversion to degree programmes. The figure has been kept steady over the previous years (University Grants Committee, 2019). The situation revealed that some graduates still failed to secure offers from the available degree programme following their graduation from the post-secondary programmes and also reflected that the demand for degree offers are still high. Meanwhile, owing to the perceived good quality (Ma, 2018) and lower tuition fees (Lau, 2013), more students prefer UGC programmes rather than non-UGC programmes (Lau, 2013; Ma, 2018; Young Post, 2017). This makes the competition for UGC programme even more

fierce. Furthermore, most parents and students see sub-degree programmes as steppingstones for them to transit into degree level (University Grants Committee, 2010). As Wong et al. (2016) also claimed that sub-degree students concern about the articulation opportunities for them to reach degree level, a clear and suitable articulation pathway is crucial to the students.

2.6.3 Quality of Sub-degree Programmes

One of the main difficulties for the self-financed institutions is the financing concern, which makes it difficult for them to recruit talented lecturers. In order to lower the operating costs, each lecturer has to teach several modules (Lo et al., 2015; Wong et al., 2016) in one semester. The heavy workloads have prevented the lecturers from giving sufficient attention and time to monitor the students' progress. For example, in 2012, two community colleges of Lingnan University were discovered to have over-enrolled 2,000 students that drove the teacher-student ratio of 1:200 in some classes (Lau, 2013). Besides, the campus environment and facilities of some community colleges also become a concern. Kember et al. (2011) explained that to use the financial resource on hand effectively while dealing with the dropping enrollment figures, some self-financed institutes, including University's community colleges, are operating in small tower blocks or some spaces in commercial buildings. While the learning environment is far below satisfactory, the student's learning experience are also much affected. The situation has raised concerns of many researchers towards the quality of sub-degree programmes (Kember, 2010; Leung et al., 2011; Lo & Ng, 2015; Wan, 2011; Wong et al., 2016). In addition, employers also think that the sub-degree graduates from self-financed institutions generally do not perform as well as graduates from UGC-funded Universities (Yuen, 2015). This makes sub-degree graduates hesitate to enroll in the degree programmes offered by the non-UGC programmes (Fung, 2016).

2.7 Overview of Customer Loyalty and Student Loyalty

2.7.1 Overview of Customer Loyalty

Srivastava & Rai (2014) explained that "*customer loyalty is a psychological process, and it is formed by sustained satisfaction of the customer coupled with emotional attachment with the service provider. This will lead to a relationship with preference and patronage.*". Therefore, customer loyalty can be understood as the commitment of customers to re-consume the products or

services (Annamdevula & Bellamkonda, 2016b; Aritonang & Lerbin, 2014; Austin & Pervaiz, 2017; Casidy, 2014b; Izogo, 2015; Perin et al., 2012; Thomas, 2011). As such, loyalty can be varied from people to people, nature of the product, the industry, the territory, and even different time period.

Customer loyalty can also be defined as the behaviours of frequent re-buying of a particular product (Tellis, 1988). It can be recognized as the strength of a relationship between customers' buying behaviour and repeated patronage. Since a loyal customer will re-buy from the same brand, customer loyalty can be understood as an overall commitment that customers attach to an organization's products or brand (Lam, Shankar, Erramilli, & Murthy, 2004).

Kandampully & Suhartanto (2000) classified customer loyalty into two dimensions of behavioural and attitudinal loyalty. While behavioural loyalty is regarded as customer re-purchasing the product or service or re-patronaging the shop from time to time, attitudinal loyalty can be interpreted as how the customer intends to re-purchase or recommend his/her friend on the products/ services they have used. This is similar to the suggestion of Srivastava & Rai (2014), which described that there is a psychological commitment to the brands or to the stores. Rather than displaying only one dimension; customers often have multidimensional behaviours (both behavioural and attitudinal dimensional) on customer loyalty (Srivastava & Rai, 2014). Customer loyalty allows companies to receive reputation from their customers (Beaver, 2011; Wong, A., Tong, & Wong, 2017) while enjoying good business.

Rojas-Mendez et al. (2019) explained loyalty as a process that involves customer's cognition, affects, conation and behaviours. Since loyalty is an outcome of both behavioural and attitudinal dimensions, the nurturing of loyalty is a long-term process that is difficult to establish within a short time. The interpretation also aligns with the explanation from Ali et al. (2016) who claimed that loyalty is a commitment of customers to continue to shop at a particular company or shop over a period of time. As there is no consensus on determining the main drivers of customer loyalty and different researchers have suggested various variables to compose customer loyalty, it all relies on the characteristics of the industry to determine the shaping of customer loyal (Srivastava & Rai, 2014). This research will adopt the explanation of loyalty in the HE context in the following sections.

The increasing market orientation on HE industry has encouraged institutions to treat students as customers (Ali, M. & Ahmed, 2018). Institutions nowadays are trying to meet the students' expectations (Thomas, 2011) in

order to ensure student recruitment and retention (Austin & Pervaiz, 2017). Thomas (2011) highlighted that more and more universities / institutions see the HE sector as a service industry and have therefore become more market-oriented. Under such a service model, student loyalty is the appropriate element to describe the situation in the HE industry, with customer loyalty being considered as student loyalty in the HE industry. To achieve high level of customer satisfaction, administrators of various HE institutes will need to consider the factors that affect student loyalty.

2.7.2 Overview of Student Loyalty

Student loyalty is a behavioural attachment that lasts even after the students have finished their studies (Giner & Rillo, 2016). Giner & Rillo, (2016) pointed out a series of behavioural patterns that are expected to happen with well-established student loyalty, such elements include alumni donation, social participation, and more importantly, positive word-of-mouth (WOM) to other people (Temizer & Turkiymaz, 2012). Under this circumstance, a good brand image is established towards the institution (Ng et al., 2015), and current students or the graduates may recommend the institute to other stakeholders, especially students and parents.

Casidy (2014a) explained that student loyalty (LOY) is defined as the duration of the students in the institute since enrollment and after graduation. Thus, building up loyalty makes the student commit to re-purchasing, which means that the students will enroll another programme in the future. Since most sub-degree students in HK wish to attain higher education levels, LOY needs to be carefully considered by the institute administrators. The aim of cultivating loyal among students is to encourage them to articulate to other degree programmes offered by the same institution.

Similar to customer loyalty as described by Kandampully & Suhartanto (2000), LOY also involves these same two dimensions (behavioural and attitudinal) (Ali et al., 2016). Just like behavioural loyalty that refers to the repeated purchase of a brand or product, LOY can be interpreted as how much the students are willing to enroll in another programme or articulate to other programmes offered by the same institute. In some cases, it can refer to former graduates returning to the same institutes to update their knowledge (Thomas, 2011). Meanwhile, attitudinal loyalty refers to the customer's preference, commitment or buying intentions. These aspects can be used to explain the students' retention to return and the spread the good reputation through means such as word of mouth (WOM). In

general, loyal students will have positive views in both the behavioural and attitudinal dimensions. Thus, LOY is a long-term impact on their institute (Annamdevula & Bellamkonda, 2016b; Giner & Rillo, 2016). With high level of LOY, graduates from sub-degree offer by the institutions of HK will be more likely to apply for the undergraduate degree programmes (top-up degree) offered by the same institution. Studying LOY in HE industry helps the programme providers to adopt suitable tactics to promote, build-up and maintain positive relationships with students in the long run (Perin et al., 2012).

Thomas (2011) further explained that loyal students could positively influence teaching quality by showing active participation & commitment. The comment was also echoed by Ali et al. (2016). By understanding LOY and carry out appropriate measures, it helps the institution's administrators to design appropriate programmes (Giner & Rillo, 2016) that satisfy the students' learning needs. Ng et al. (2015) also commented that the institution's image and student's satisfaction are antecedent factors of student loyalty.

The above literatures focused on the students in HE, including those in the sub-degree sector. Hence, the discussion on the LOY should be applied to the sub-degree students in HK. Based on the discussion, the LOY in this research refers to the behavioral and attitudinal actions of the HK sub-degree students towards their institutions. With this focus, the researchers will discuss the antecedent factors of LOY in order to address the RQs for this research in the later sections.

2.7.3 Reviews on Student Loyalty Model

Hennig-Thurau et al. (2001) proposed a Relationship Quality-based Student Loyalty (RQSL) model (Figure 8 RQSL Model). The model combined the main concepts of the Tinto model (Figure 9 Tinto's drop out model) in 1993 that mainly studied the student drop-out behaviour and the Hennig-Thurau and Klee model (Figure 10 Henning – Thurau and Klee Model) developed in 1997. The RQSL model proposed that LOY affects three constructs (student perceived quality of teaching-related activities, students' trust, and students' commitment to the institution). However, the model did not consider the effect of student satisfaction (SS). As per discussion on the previous sections, marketization of HE industry treats students as customers in which satisfaction will directly affect customer loyalty. In addition, the importance of SS has been recognized in HE industry (Austin & Pervaiz, 2017).

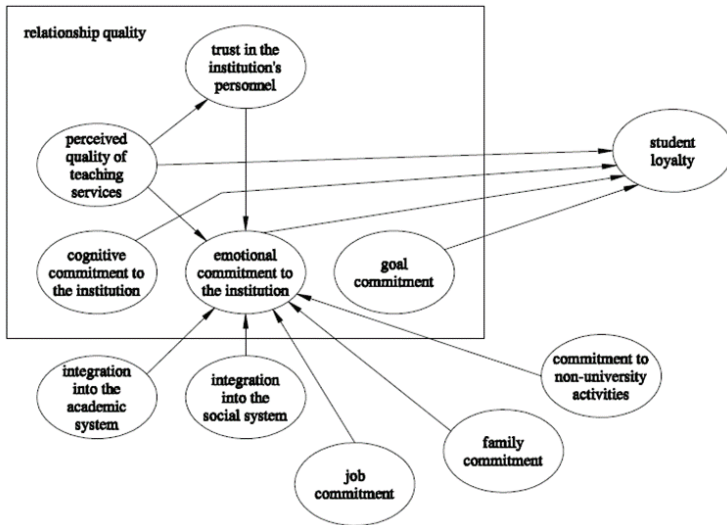


Figure 8. Relationship Quality-based Student Loyalty (RQSL) Model

Note. The Relationship Quality-based Student Loyalty (RQSL) Model. From Modeling and Managing Student Loyalty-An approach Based on the Concept of Relationship Quality by Hennig-Thurau, T., Langer, M. F., & Hansen, U. (2001), *Journal of Service Research: JSR*, 3(4), 331–344. doi:10.1177/109467050134006

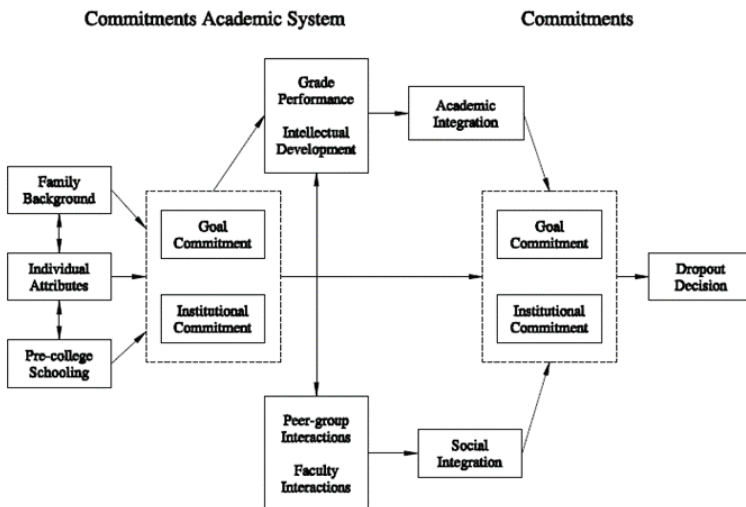


Figure 9. Tinto's Drop Out Model

Note. Tinto's Drop Out Model. From Modeling and Managing Student Loyalty-An approach Based on the Concept of Relationship Quality by Hennig-Thurau, T., Langer, M. F., & Hansen, U. (2001), *Journal of Service Research*: JSR, 3(4), 331–344. doi:10.1177/109467050134006

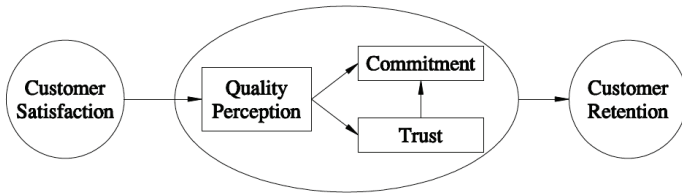


Figure 10. Henning –Thurau and Klee Model

Note. Henning – Thurau and Klee Model. From Modeling and Managing Student Loyalty-An approach Based on the Concept of Relationship Quality by Hennig-Thurau, T., Langer, M. F., & Hansen, U. (2001), *Journal of Service Research*: JSR, 3(4), 331–344. doi:10.1177/109467050134006

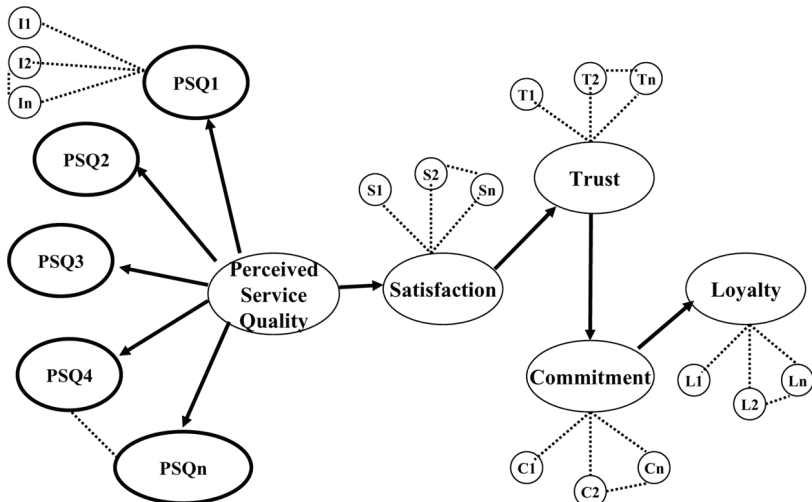


Figure 11. Loyalty Model Proposed by Rojas-Mendez et al. (2009)

Note. The Loyalty Model proposed by Rojas-Mendez et al. From Determinants of Student Loyalty in Higher Education: A Tested Relationship Approach in Latin America by Rojas-Méndez, J. I., Vasquez-Parraga, A. Z., Kara, A., & Cerda-Urrutia, A. (2009), *Latin American Business Review*, 10(1), 21–39

Rojas-Méndez et al. (2009) attempt to reveal the key factors affecting Loyalty in HE industry along the relationship pathways by adopting the RQSL model. According to them, the direct relationship pathway starts from the Perceived Service Quality (PSQ) to the Satisfaction. The outcome will then affect the Loyalty via two variables (Trust and Commitment). Their findings demonstrated that commitment was the most influential factor on Loyalty. Likewise, other factors such as PSQ, Satisfaction, and Trust, all have an indirect effect on Loyalty. (Figure 11).

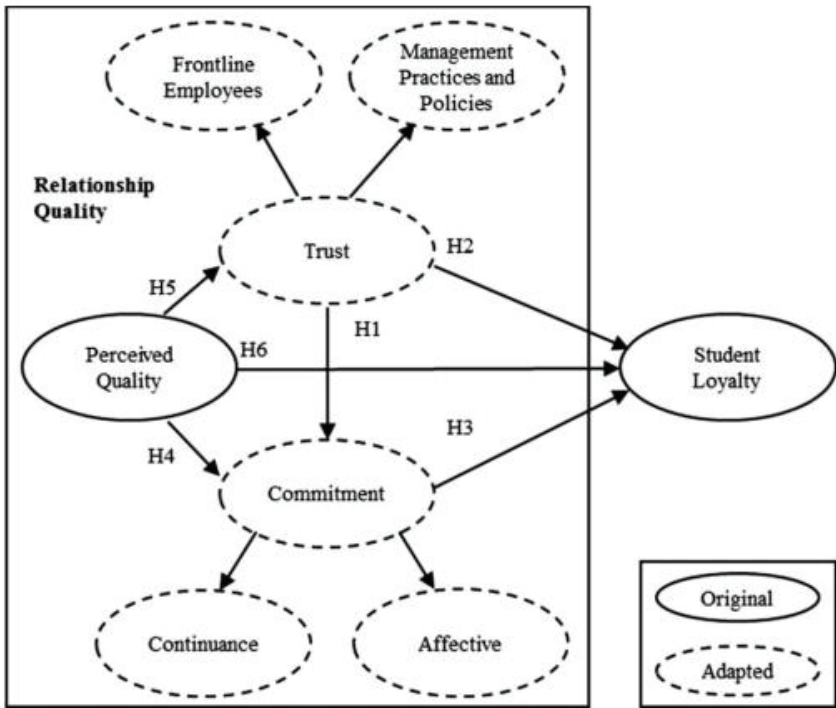


Figure 12. Quality Relationship Based on the Student Loyalty Model suggested by Perin et al. (2012)

Note. Quality Relationship Based on the Student Loyalty Model. From Modeling antecedents of student loyalty in higher education by Perin, M. G., Sampaio, C. H., Simões, C., & de Pólvora, R. P. (2012), *Journal of Marketing for Higher Education*, 22(1), 101–116

In similar research conducted by Perin et al. (2012), it was discovered that apart from the direct relationship between commitment and LOY,

trust also directly relates to LOY. Moreover, perceived quality showed a direct relationship to trust and commitment but not for LOY. In fact, trust and commitment can indirectly influences the perceived quality (Figure 12 Quality Relationship Based on the Student Loyalty Model). However, their study scope did not cover SS.

On the contrary, Annamdevula & Bellamkonda (2016b) found the PSQ showed a direct and positive effect on satisfaction and loyalty. Similar results were also found in other papers (Casidy, 2014b; Duarte et al., 2012; Temizer & Turkyilmaz, 2012). In addition, Satisfaction mediates between Service Quality and LOY. However, Casidy (2014b) did not prove this mediating relationship in his survey. While Temizer & Turkyilmaz (2012) has only suggested that satisfaction is directly affecting LOY, meaning the relationship between LOY and PSQ was yet to be studied. Although their study targeted on sub-degree students, they did not investigate the linkage between service quality and loyalty.

While Casidy (2014b) indicated that service quality affects loyalty, satisfaction and WOM individually, his study only focused on the mediating effect of brand orientation on these three relationships, and the linkage between SS and loyalty was not covered. In view of this gap, this research wishes to consolidate all the above discussions in this section and to extend the investigation among sub-degree students in HK.

2.8 Antecedent Factors of Student Loyalty

Several papers have concluded that a consistency study on the LOY is difficult to reach (Ali, F., Kim, & Ryu, 2016; Hennig-Thurau, Langer, & Hansen, 2001). These research papers were conducted on their own way and each researcher based on the study context to design the antecedent factors for LOY. Table 6 summarized some of the key antecedent factors from the literature review.

Table 6. – Key Antecedent Factors for Student Loyalty

Author (s)	Research Topic	Research Target	Antecedent Factors
1	2	3	4
Rojas-Méndez et al. (2009)	Determinants of student loyalty in higher education: A tested relationship approach in Latin America	The overall HE in Latin America	Perceived service quality, satisfaction, trust, commitment

1	2	3	4
Perin et al. (2012)	Modeling antecedents of student loyalty in higher education	The overall HE in Brazil	Trust, commitment, perceived quality, satisfaction
Temizer & Turkeyilmaz (2012)	Implementation of Student Satisfaction Index Model in Higher Education Institutions	The overall HE situation and measure by SSI model	Image, expectation, perceived quality, perceived value, customer satisfaction
Duarte et al. (2012)	Using a Satisfaction Index to Compare Students' Satisfaction During and After Higher Education Service Consumption	The university students from Portugal	Image, customer expectation, perceived quality, perceived value, customer satisfaction
Casidy (2014a)	Linking Brand Orientation with Service Quality, Satisfaction, and Positive Word-of-Mouth: Evidence from the Higher Education Sector	The university students from Australia	Brand orientation, service quality, satisfaction, WOM
Casidy (2014b)	The role of perceived market orientation in the higher education sector	The university students from Australia	Perceived market orientation, satisfaction, post-enrolment communication behavior
Izogo (2015)	Determinants of attitudinal loyalty in Nigerian telecom service sector: Does commitment play a mediating role?	The telecommunication industry in Nigeria	Commitment, service assurance, service reliability
Giner & Rillo (2016)	Structural equation modeling of co-creation and its influence on the student's satisfaction and loyalty towards university	Post graduate student from Spanish University	Student co-creation, satisfaction, service quality, commitment, trust, reputation
Eurico et al. (2015)	A model of graduates' satisfaction and loyalty in tourism higher education: The role of employability	The general study on the tourism and hospitality graduates from Portugal HEI.	Image, expectation, perceived quality, value, satisfaction

1	2	3	4
Annam-devula & Bellam-konda (2016b)	The effects of service quality on student loyalty: the mediating role of student satisfaction	The university students from India	Student satisfaction, service quality
Ali et al. (2016)	Does higher education service quality effect student satisfaction, image, and loyalty?	The international students from Malaysia public university	Service quality, student satisfaction, image
Austin & Pervaiz (2017)	The Relation Between 'Student Loyalty' and 'Student Satisfaction' (A case of College / Intermediate Students at Forman Christian College)	The students from intermediate school in Pakistan	Student satisfaction
Goh, Goh, & Ramayah (2017)	Student Satisfaction and Loyalty in Malaysia Private Higher Education Institutions.	College students from Penang Private Institutions	Perceived Value, fee, service quality, image, trust
Silva et al. 2017	Measurement of perceived service quality in higher education institutions: A review of HEDPERF scale	No target group, it is a research paper only	Service quality, service performance

By taking into account the context of the sub-degree education in HK and the above literature, the researchers identified the core antecedent factors of student loyalty (LOY), including Student Satisfaction (SS), Perceived Service Quality (PSQ) by the students, Student Trust (ST), and Student Commitment (SC). While Articulation Pathway (AP) seemed to be a factor overlooked by most studies, discussion in previous sections of this paper stated that AP is actually essential to HK sub-degree students because most of them wish to be accepted into undergraduate programmes, especially those of UGC nature (Kember, 2010; Wan, 2011). The following sections will discuss each factor in more details.

2.8.1 Student Satisfaction (SS)

Customer Satisfaction, defined as how customers evaluate the value provided by a brand or a company based on the service received, is a subjective emotional response to the customer's experience (Annamdevula & Bellamkonda, 2016b). Casidy (2014b) interpreted customer satisfaction as a post-buying feeling, which can be defined as customer satisfaction in relation to the customer's evaluative, affective, and emotional response to the goods received and service they experienced over a period of time.

With this concept in the HE industry, Ali et al. (2016) claimed that since students are considered as the core customers; their level of satisfaction can be regarded as customer satisfaction. Moreover, a higher satisfaction level will lead to higher retention, enrollment, and graduation rate (Casidy, 2014a). Ali et al. further explained that satisfaction can be viewed as the quality of the programmes, extra-curricular activities and factors related to the institution. It can also be measured by the overall feeling of the students.

Institutions concern about SS because they see it a key factor in attracting students (Austin & Pervaiz, 2017). It is therefore an important performance indicator on student retention, recruitment and reputation (Ng et al., 2015). In addition, a higher satisfaction level will offer a greater competitive advantage and thus guarantee better student recruitment (Casidy, 2014b). The findings from Temizer & Turkyilmaz (2012) revealed that satisfaction is one of the key factors contributing to LOY towards HE industry. More importantly, it positively relates to the students' trust (Rojas-Méndez et al., 2009).

Based on the discussion above, it will be useful for the sub-degree providers to understand the factors that affect SS so as to plan their marketing strategies accordingly and achieve the greatest LOY. Weerasinghe & Fernando (2017) summarized the factors that affected SS from the previous 30 years into two major areas, namely personal and institutional.

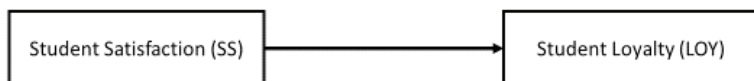
While personal consideration includes elements like students' age & gender, learning preference, academic performance, etc., institutional consideration includes teaching quality, lecturer's feedback, campus facilities in supporting teaching (such as classroom, technical support), etc. (Weerasinghe & Fernando, 2017). To conclude, institutional factors can be interpreted as the service that the institute offers to the students; whereas the service quality perceived by the students will influence both SS and LOY.

Casidy (2014 a) defined SS as the students' short-term attitude to evaluate their learning experience. According to his theory, it is not an easy task to measure SS and assess the service because students have different cultures. Besides, education is a kind of service that is basically defined by service providers. Although there are research studies on SS, the area of SS is a complex concept to be measured as there is in general a lacks consensus on the areas to focus (Annamdevula & Bellamkonda, 2016b; Law, 2013).

SS is the perception of students' positive feeling when using a service (Thomas, 2011). Therefore, the student's study period is important as it can affect SS. Giner & Rillo (2016) gave a more decisive explanation of SS that focused on the subjective assessment by the students themselves or their personal experience during the study periods.

Other researchers also expressed that SS can be seen as a repeated experience during the students' campus life (Hemsley-Brown et al., 2010). When students find the learning environment provided by the institute comfortable, they will show a higher satisfaction level (Ng et al., 2015). The finding aligned with the description by Ali et al. (2016), who suggested that high satisfaction would contribute to student recruitment. To address this element, many institutes try to fill up their student's needs by offering a superior value to achieve a higher satisfaction level (Giner & Rillo, 2016; Ng et al., 2015). In fact, Ng et al. (2015) even emphasized SS as a key antecedent factor of LOY that reflected the importance of SS. The above-mentioned SS was discussed from different perspectives that focused on the HE industry. However, to align with the research objectives of this study, the author will adopt the explanation from Ng et al. (2015) because their research also used sub-degree students in HK as the research targets.

The relationship between SS and LOY is illustrated in the following diagram.



2.8.2 Perceived Service Quality (PSQ)

The difference of a students' expectation on his/her institute and the actual service delivery by the institute is defined as the service quality of the particular institution (Annamdevula & Bellamkonda, 2016b). This definition is somewhat similar to the description provided by Ali et al.

(2016) & Rojas-Méndez et al. (2009) for other service sectors, in which both researchers believed that consumers play a more subjective role in determining the service quality.

Service quality is an important element of a company's competitive advantage, and it is always concerned in service marketing (Al-Maamari & Abdulrab, 2017). Ali et al. (2016) claimed that because quality products or service are usually customer-oriented, they could easily satisfy the needs of their customers. As different industries have their own features, it is therefore not easy to define service quality in a standard format. As Hemsley-Brown et al. (2010) also agreed that as there is no suitable definition for quality; the measurement on quality become more difficult. Owing to the fact that there is no unified framework to assess service quality accurately, the assessment depends largely on the service nature itself. For example, the service quality in the aviation industry can be assessed by the overall features of the product or service delivered to the customers (Wang & Chaipooirutana, 2015), who will come up with their own comments or have their own assessments right after consumption of the product or service. If their evaluation is positive, it means that their satisfaction is also high. Thus, service quality is a major determinant in establishing a successful relationship, which ends up turning into loyalty (Izogo, 2015). That said, Izogo's study focused only on the telecom sector, not on the HE sector. Since the service quality of the HE section is important to the students (customers) and the institutions (organizations) (Ali et al., 2016; Hemsley-Brown et al., 2010), it is therefore worthwhile to set it as one of the major study areas for this research.

Likewise, Hemsley-Brown et al. (2010) also supported the opinion that service quality cannot be measured objectively. Thus, researchers who study service quality suggested to measure the service quality perceived by the consumers, named as Perceived Service Quality (PSQ). It is the difference between service expectation from the customers and their perceptions of actual performance. This suggestion was agreed by Ali et al. (2016) & Rojas-Méndez et al. (2009). Wang & Chaipooirutana (2015) further claimed that service quality is the customers' perception on the products or services received, which means that their subjective judgments on the service quality is important. This concept aligns with the explanation of Ali et al. (2016) & Rojas-Méndez et al. (2009). In fact, Rojas-Méndez et al. (2009) even said PSQ represents an assessment in service excellence globally because it reflects how consumers feels about the products or services. Since, PSQ not

only assists an organization in strengthening its competitive advantage, but also helps in attracting new customers while retaining the current customers, it is more suitable for measuring service quality in HE industry.

Under such circumstances, PSQ in HE industry is particularly important. Since the students' perception of the institutions' service is highly influential on the level of satisfaction, analyzing the students' perception towards the service quality helps the institutes engage students (Ali et al., 2016). Meanwhile, Ali et al. also suggested that service quality in HE industry very much relies on the stakeholders who utilize the service offered by the institutes or universities. As students are undoubtedly the key stakeholders in the HE market, their study experience on various aspects have made up the entire service quality.

Although Annamdevula & Bellamkonda (2016b) pointed out that there is no consensus definition and standardized measuring model on PSQ because different stakeholders have different needs on education, other researchers also provided their views on the PSQ for HE industry. While Izogo (2015) defined perceived quality as an overall assessment made by the students in a particular transaction; he mainly targeted his study on the graduates who work in the telecom service market. Moreover, Dennis et al. (2016) widened the definition of PSQ to also cover graduates in a long-term perspective, as they believe that PSQ is the indicator on the overall performance or excellence by current students and graduates to a higher education institution. On the one hand, the institute's reputation and perceived quality can influence students' study programmes or institution choice in the long run; on the other, Temizer & Turkyilmaz (2012) believed that the PSQ showed more on the short-term response and served as the evaluation of students' recent encounters.

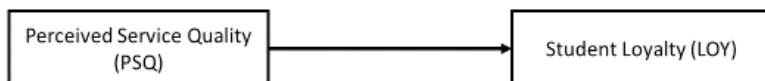
Furthermore, Rojas-Méndez et al. (2009) agreed that service quality is highly composed of human-based interaction, in which employees from the institutions are more influential than those in other service industries. This is because employees, especially teaching staff and programme administrators, have more opportunities to interact with students and provide guidance. These human contacts play an important role in assessing service quality in the HE industry and affect the intended behaviours (Annamdevula & Bellamkonda, 2016b).

As discussed in section 2.8.1, Weerasinghe & Fernando (2017) defined PSQ as an indicator composed of the academic and non-academic attributes. On top of this definition, the academic attributes for business students cover student assessments and learning experiences, with teaching support that fa-

cilitates the student's learning progress. In contrast, the non-academic attributes for business students include a professional and comfortable environment, classroom environment, supporting facilities, employee helpfulness, class size (Yusoff, McLeay, & Woodruffe-Burton, 2015). It seems that many factors need to be considered on the service quality in the HE industry.

Furthermore, Hemsley-Brown et al. (2010) explained that service quality includes school placements, teaching staff & their support, university campus, information delivery, programme quality, university's reputation, classrooms, and curriculum, which directly influence the student satisfaction (SS). Another researcher found that education quality, school reputation, accessibility, location, and academic environment are the factors that tertiary students rank as important (Alves & Raposo, 2010).

To sum up, PSQ is a subjective behavioural response of students towards their institutions. Thus, it is generally agreed that PSQ is assessing the students who utilized service offered by their institutions. This research paper will use PSQ as a measuring construct in the LOY. The relationship between PSQ and LOY is illustrated below.



To measure the PSQ, different researchers adopted their own measuring tools, and the three most commonly used measuring tools are SERVQUAL, SERVPERF and HEDPERF (Silva, de Moraes, Gustavo Herminio Salati Marcondes, Makiya, & Cesar, 2017).

Under the SERVQUAL (SERVrvice QUALity) measuring scale, the academic and non-academic attributes were divided into five quality dimensions, namely tangibility, reliability, empathy, responsiveness, and assurance (Parasuraman, 1995). SERVQUAL scale measures PSQ by focusing on the difference between service performance and consumer's expectation so that a service gap can be identified. If the gap (difference between performances – expectation) shows positive figure, it means that service performance by the organization is higher than its customer's expectation. Likewise, a negative figure means that the customers' expectation is higher and reflected that the organization's service quality failed to satisfy the customers' expectation. SERVQUAL adopted 22 questions that are grouped into the five quality dimensions for measuring the PSQ for each target customer (Silva et al., 2017). The drawback of this tool is that respondents need to fill the question set twice.

Cronin Jr & Taylor (1992) argued that SERVQUAL was not specially designed for the higher education sector, in which some specific area could not be addressed. Moreover, it can be inconvenient to ask the respondents to fill in the same questionnaire twice. They believe that the PSQ can evaluate the customer's perception on the company's service and performance. Although the authors supported the 22 questions from the SERVQUAL, they proposed the five quality dimensions of SERVQUAL would be better to adapt the same measuring tool in one dimension, they devised SERVEPERF (SERVice PERFormance), which is a more specific tool for the higher education sector. Respondents rate on the questions on a scale in order to show their degree of their agreement. The authors believed that as the respondents' evaluation of the questions already indicated the service delivered by the institutes, which was equal to the quality that the students received, it was therefore not necessary to assess the respondents' expectation. As such, the SERVEPERF scale was more practicable in measuring the students' perception of the service quality that they received (Cronin Jr & Taylor, 1992). More importantly, the PSQ also reflected customer satisfaction, which implied loyalty (Silva et al., 2017).

HEDPERF, which was the short form of Higher Education PEREFormance, was developed by Abdullah in 2005 (Silva et al., 2017). This tool was developed based on the SERVEPERF, which was mainly used to measure the PSQ in the HE sector. According to the authors, the measuring scale showed the service quality that was the same as service performance. 41 service performance items (questions) were arranged into six dimensions. The six dimensions were then modified into five dimensions while keeping the 41 service performance items after subsequent studies (Abdullah, 2006). The five dimensions of HEDPERF include: 1) non-academic aspects; 2) academic aspects; 3) reputation; 4) access and; 5) programme issue. Since Abdullah (2006) argued that SERVEPERF and SERVQUAL scales still have their shortcomings, he decided to introduce HEDPERF (Silva et al., 2017).

However, Law (2013) found that three out of the five dimensions from HEDPERF were identified in the exploratory factor analysis to be uncertain on the outcome of PSQ. He then tested the validity of SERVPERF and found all of the dimensions were supported in the exploratory factor analysis. As a result, he suggested that the SERVPERF scale would be more suitable than HEDPERF in measuring PSQ for the tertiary students in terms of reliability and validity, especially in the HK situation. In addition, the scale is relatively simple and there is no overlapping on some

service performance items. After comparing the strengths and weakness of various tools, the SERVPERF scale will be adopted in this study.

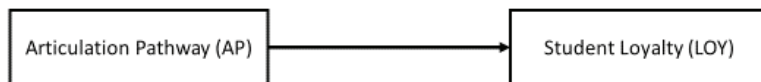
2.8.3 Articulation Pathway (AP)

According to the Endeavour College that “*Articulation is a process that enables students to progress from one completed qualification to another with credit in a defined pathway*”. Under this explanation, the students should be offered an opportunity to transform into another higher level of study when they have attained a certain qualification. Hass (1999) provided a similar explanation in describing that articulation allows graduates to progress from one level of study to another. In addition, articulation is usually understood in the context of upward progression in most case and thus represents opportunities for the learners to upgrade themselves. Haas (1999) emphasized that if a programme is unable to offer articulation plan for the learners, its popularity will be affected compared to another programme that can offer articulation pathway. As a matter of fact, institutes that failed to offer articulation path to their students would also likely to fail in meeting their students’ expectation, particularly the case in HK sub-degree sector. Consequently, the students’ satisfaction (institutional satisfaction) on their institution will also be affected. With the sub-degree students in HK, the researchers will adopt the explanation of AP from Hass (1999) when addressing the following discussion.

As per the discussion in section 2.2, countries all over the world are trying to upgrade the quality of their citizens. Hence, it has become a global trend for institutes to design educational structure in order to provide effective articulation path for students (Chan & Mok, 2001; Haas, 1999). In particular, institutes that concern about their students and take articulation into serious consideration will be appreciated by the students (Yuen, 2015). In the case of HK, the articulation pathway is important to the sub-degree students because many of them wish to pursue higher qualifications (Contributor, 2018; SCMP Editorial, 2006). To retain current students, some programmes would even offer credit transfer to recognize the students’ previous effort and achievements.

Due to the learning environment for the HK sub-degree programme, most of the HK sub-degree students are looking for a higher qualification (Kember, 2010; Wan, 2011). Hence, providing an articulation pathway to the sub-degree students is necessary and would meet their learning expectation. As such, articulation has become a key issue among the sub-degree

students and undoubtedly, an antecedent factor of LOY. The relationship between these two factors is illustrated in the following chart.



2.8.4 Student Trust (ST)

Perin et al. (2012) explained that trust could be understood as a belief, feeling or expectation on a behavioural choice, and it can be understood in two dimensions. The first one is the behaviour of the frontline employees, while the second one is the policies or the managerial styles of a company.

Rojas-Méndez et al. (2009) also showed similar ideas on trust, in which they agreed that trust is a basic element in terms of building loyalty in the business sector such as retail industry, because it leads to success in the company's business strategies.

Due to customer uncertainty and perception of risk, trust is important to an organization. Meanwhile, trust is also an antecedent factor for a company to establish a long-term relationship with its customers (Berry, L. L., 1995).

In the education industry, student trust (ST) refers to students' confidence in their institutes' integrity and reliability. ST can be built up through the student's personal learning experience with the institutions' employees (both teaching and non-teaching employees). LOY will not be built up if students do not trust towards their institutions. Since the sub-degree students in HK are having a poor learning experience from their institutions (either the learning environment or the teaching staff) (SCMP Editorial, 2006; SCMP Editorial, 2014; SCMP Editorial, 2018), which led to a low trust on their institutions. Therefore, the ST explanation from Rojas-Méndez et al. (2009) can be applied in the sub-degree sector in HK.

ST can positively affect student enrollment, student retention and quality perceptions (Ghosh, Whipple, & Bryan, 2001). Rojas-Méndez et al. (2009) showed that the commitment between each other is weakened when there is no trust, especially in the industry that highly depends on the partner relationship, such as the education industry. In addition, to gain the trust from the student, institutions can offer a good learning experience through lecturers and other campus employees (Mulyono, 2016). Therefore, it can be said that commitment and trust are highly inter-related. More importantly, ST will not affect the LOY if the students have no commitment to their institutions (Rojas-Méndez et al., 2009). However,

Hennig-Thurau et al. (2001) discovered that ST did not provide significant impact on LOY. The same comment also suggested by Perin et al. (2012), who found ST positively impacted on the student's commitment in the HE industry. However, their study target was in the university context. Indeed, Mylyono (2016) also discovered that trust is giving a positive influence on commitment. Therefore, it can be noticed that commitment and trust are highly inter-related. The researchers assume that this relationship could be found in the HK sub-degree sector. To prove this, we would take ST and Student Commitment (SC) into consideration. Their relationship to the LOY is illustrated in the following chart.



2.8.5 Student Commitment (SC)

Commitment can be defined as a continuity of relational establishment among each other implicitly or explicitly (Dwyer, Schurr, & Oh, 1987; Izogo, 2015). It is vital to keep a good relationship with the customers (Morgan & Hunt, 1994). They argued that commitment is a core factor in relationship marketing that should be preserved in a long-term relationship with customers (Izogo, 2015).

According to Izogo (2015), commitment is composed of affective commitment and continuance commitments. Both commitments are positively relating to loyalty. Besides, commitment has been found to influence loyalty because interaction between continuance & affective commitment and consumer loyalty are closely interacted to one another. The similar idea was found by Perin et al. (2012), who explained that commitment occurred if people became attached to an organization. Since their focus was on the HE industry, the same concept should be applicable on the sub-degree sector who is regarded as part of the HE sector.

Rojas-Méndez et al. (2009) explained SC as the degree of integration on academic and social perspectives from students in the HE industry. Academic perspective involves participation in institute societies and committees, whereas the social perspective includes friendship and involvement with their fellow students. Thus, commitment can be interpreted as the degree of matching among the student's abilities, skills, the expectations of the institution and institution's demand and value (Rojas-Méndez et al., 2009). Under this definition, students' commitment is determined

by their degree of integration on these areas. When students demonstrated high integration, their commitment to their institution is relatively high and vice versa. This also aligns with the case in HK sub-degree students who expect skill upgrade for getting higher education achievements and good learning experience in their two-years sub-degree journey. Indeed, ST translates into SC when the institution's employees (both teaching and non-teaching) delivered a positive learning experience to the students (Mylyono, 2016; Rojas-Méndez et al., 2009), therefore, the inter-related relationship between ST and SC can be further ensured in the HE industry. Izogo (2015) finally commented that to maintain a valid relationship with the students, commitment is a key element. The relationship of ST, SC and LOY for this research is shown in the following chart.



2.9 Study Purposes and Research Gap

The increasing market orientation in the HE encourages institutions to treat students as customers (Ali & Ahmed, 2018). The critical step is to establish a positive relationship between institutions and learners. To achieve this, institutions are trying to meet students' expectations (Thomas, 2011) in order to ensure student recruitment and student retention (Austin & Pervais, 2017). Thomas (2011) highlighted that more and more universities/ institutions nowadays consider HE as a service industry, leading them to be more market oriented.

Therefore, this research first identifies the factors that affect LOY and then goes into studying the relationship among each factor so that sub-degree providers can understand the whole picture of this topic and design their marketing approaches to sustain their education business.

As per aforementioned discussion, studying LOY in the HE sector is a hot topic for many researchers (Ali et al., 2016; Annamdevula & Bellamkonda, 2016b; Casidy, 2014a; Giner & Rillo, 2016; Ng et al., 2015; Rojas-Méndez et al., 2009; Thomas, 2011). However, most of the researchers only focused their study on the university level (Ali et al., 2016; Annamdevula & Bellamkonda, 2016a; Annamdevula & Bellamkonda, 2016b; Casidy, 2014b; Duarte et al., 2012; Lo, Celia C., 2010; Mang'unyi & Govender, 2014; Ogunnaike, Tairat, & Emmanuel, 2014) or the overall HE sector (Dennis et al., 2016; Eurico et al., 2015; Goh, Goh, & Ramayah, 2017; Lo, 2010; Perin et al.,

2012). By searching from the e-data bases of EBSCOhost; Emerald & ERIC, and in addition to the researchers' understanding, there is currently insufficient quantitative research that focus particularly on studying the LOY at sub-degree level. As this level is one of the connecting channels between secondary education and undergraduate education (Austin & Pervaiz, 2017), it is of an obvious importance. Moreover, sub-degree education also enhances student quality (Austin & Pervaiz, 2017; Lo et al., 2015) in the HE industry. Therefore, studying LOY at the sub-degree education level is necessary, in which the study also provides a complete picture of this area to all stakeholders. Under this circumstance, this study is trying to fill the research gap of insufficient quantitative research on LOY in the HK sub-degree education.

2.10 Research Questions, Hypotheses and Conceptual Framework

As discussed in the previous section, the competition in the HK higher education industry, including the sub-degree sector, has always been fierce. Since the competition among sub-degree providers is high, they must fight for the local market share. As many institutions in other countries suggest enhancing the LOY for gaining a better competition position (DeShields, Kara, & Kaynak, 2005; Perin et al., 2012; Thomas, 2011), the HE sectors in HK will not be an exception especially under the massive marketization since 2000. As mentioned in section 2.9, most of the research that studied LOY in HE industry did not focus on the sub-degree level and there has been so far only very little discussion on LOY in the context of HK sub-degree level from the quantitative aspect, this study wishes to focus on this group of students.

This research also aims at modifying and integrating the RQSL model constructed by Hennig-Thurau et al. (2001) and the model constructed by Rojas-Méndez et al. (2009) on the antecedent factors of LOY in HE. To make the model become more suitable in the local sub-degree education sector of HK, one more factor that has been ignored by many researchers, i.e., articulation pathway (AP), is added for this research to reflect the situation in the HK sub-degree sector. Moreover, it fills the research gap for barely any quantitative studies on this group with the Structural Equation Modeling (SEM) approach. At the same time, it offers a glance to the institution administrators in planning their marketing strategies for serving the students and the institutions. In the following sections, the researchers are going to discuss the relationships between the five factors and student

loyalty (LOY). According to the discussion in section 2.8, the relationships can be classified into three groups namely: 1) relationship among Perceived Service Quality (PSQ), Student Satisfaction (SS) and Student Loyalty (LOY); 2) Relationship among Articulation Pathway (AP), Student Satisfaction (SS) and Student Loyalty (LOY) and; 3) Relationship among Student Satisfaction (SS), Student Trust (ST), Student Commitment (SC) and Student Loyalty (LOY). Of course, these three sets of relationship are inter-related and do affect one another.

2.10.1 Relationship among Perceived Service Quality (PSQ), Student Satisfaction (SS) and Student Loyalty (LOY)

Thomas (2011) mentioned that customer satisfaction and organizational performance positively related to customer loyalty. Once the customers are satisfied with the products or services, they will spread out their experience to others and re-purchase again when necessary, resulting in the built up of loyalty among them.

Undoubtedly, consumers will make up their own judgement or assessment right after their consumption on the product or service, which will contribute to their levels of satisfaction. As discussed in section 2.8.1, customer satisfaction can be regarded as the student's satisfaction to their institution (Ali et al., 2016), the customer satisfaction concepts can therefore be applied to the HE industry. In addition, the researchers also assume that this relationship (SS affects LOY) also can be found in the HK sub-degree sector.

Thus, service quality is a core determinant in developing a relationship, which can be seen as loyalty (Izogo, 2015). Although Izogo's findings were coming from the telecom service sector rather than the HE industry, it revealed that service quality and customer satisfaction are highly related (Law, 2013). In addition, satisfaction can reflect the customer's PSQ appropriately (Hemsley-Brown et al., 2010). Therefore, the level of satisfaction experienced by the customers is important to how they build up their loyalty (Temizer & Turkyilmaz, 2012), which can be measured with different constructs such as customer's experience on the service quality, expectation, the perceived values and evaluation on the service received (Ali et al., 2016). While it was found that PSQ affects both SS and LOY for the HE sector (Rojas-Méndez et al., 2009), the research was primarily conducted in the context of university level at Latin America. We suppose, that the relationship can also be found in the sub-degree education sector in HK and would like to suggest that PSQ

will affect LOY and SS positively on the sub-degree students in HK. Besides, the researchers also wish to discover whether SS gives any mediating effect between PSQ and LOY among the local sub-degree students. To address all these issues, RQs 1 & 2 were derived:

- RQ1: What is the relationship among Perceived Service Quality, Student Satisfaction and Student Loyalty for the sub-degree students in HK?
- RQ2: Does Student Satisfaction mediate between Perceived Service Quality and Student Loyalty for sub-degree students in HK?

To address the above RQs, the following RHs are developed:

- H1: Perceived Service Quality positively influences Student Loyalty for sub-degree students in HK.
- H2: Perceived Service Quality positively influences Student Satisfaction for sub-degree students in HK.
- H3: Student Satisfaction positively influences Student Loyalty for sub-degree students in HK.
- H4: Student Satisfaction mediates between Perceived Service Quality and Student Loyalty for the sub-degree students in HK.

Therefore, the conceptual framework for these research hypotheses is illustrated in (Figure 13):

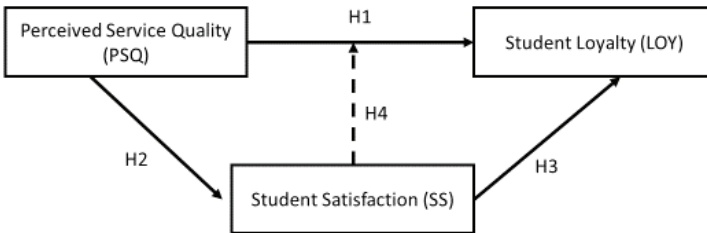


Figure 13. Research Framework among Perceived Service Quality, Student Satisfaction and Student Loyalty

2.10.2 Relationship among Articulation Pathway (AP), Student Satisfaction (SS) and Student Loyalty (LOY)

In HK, students in sub-degree level are eager to look for higher education programmes such as undergraduate degrees (Kember, 2010). Under this circumstance, institutions that offer satisfactory AP to the graduates would receive higher SS from students. This also helps to retain students at the same institute for further studies (Ng et al., 2015). Ng et al. then indicated that institutions that offer APs to students for higher qualification

does not only help to maintain a relatively positive relationship with students, but also improves the LOY among students. The findings proved that AP does have a direct relationship with SS and LOY. Although these relationships were discussed in section 2.8.3, the authors decided to conduct a research in order to empirically test this relationship in the context of sub-degree level in HK.

From the discussion in section 2.5.1, the AP for HK sub-degree student to degree level can be arranged in three channels, namely UGC programmes, LSF programmes and OTU programme.

Among these three APs, UGC programmes are supposed to be more popular than the other two because students believe that the UGC programmes mainly recruit students with outstanding HKDSE achievements. Hence, the UGC programmes endorse the students' academic achievements, thereby giving an advantage for their employment (Leung et al., 2011; Wong et al., 2016).

To guarantee smooth transition from sub-degree to degree programmes, some sub-degree providers have offered one or more articulation pathways to their graduates. However, due to the operation scale, some smaller institutes failed to provide AP to their students. As a result, the SS and LOY of students from these smaller institutes become low. On the contrary, institutes that were able to offer AP have cultivated a higher SS among the students (Wong et al., 2016). This phenomenon showed that AP directly relates SS and LOY (Ng, Peggy, Wong, Lo, & Lee, 2018). Although Bejor (2005) proved that AP has a direct effect on LOY, his study was not in the sub-degree level. With the unique characteristics of the sub-degree students in HK, the researchers of this research would like to discover this relationship and determine whether it also applies to the sub-degree students in HK. As discussed in the previous section, SS displays a positive relationship to LOY. Therefore, how SS mediates between AP and LOY for the sub-degree education level in HK is also the interest of this research. As it was proved above, no researcher has investigated the relation of these three types of AP on SS and LOY quantitatively. Hence, this research wishes to address this problem for the sub-degree providers. Based on the study objectives, the following RQs were derived:

RQ3: What is the relationship among Articulation Pathway, Student Satisfaction and Student Loyalty for sub-degree students in HK?

RQ4: Does Student Satisfaction mediate between Articulation Pathway and Student Loyalty for sub-degree students in HK?

RQ5: Does UGC Articulation Pathway have a greater influence on Student Loyalty and Student Satisfaction than the other two Articulation Pathways for sub-degree students in HK?

With the RQs above, the RHs are derived:

H5: Provision of Articulation Pathway positively influences Student Loyalty for sub-degree students in HK.

To achieve RQ5, three sub-hypotheses are then developed to check the strength of each articulation pathway on LOY through multiple regression.

H5a: Provision of UGC Articulation Pathway has the strongest positive influence on Student Loyalty among the three articulation pathways.

H5b: Provision of OTU Articulation Pathway has the smallest positive influence on Student Loyalty among the three articulation pathways.

H5c: Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.

H6: Provision of Articulation Pathway positively influences Student Satisfaction for sub-degree students in HK.

To achieve RQ6, three sub-hypotheses are then developed to check the strength of each articulation pathway on SS through multiple regression.

H6a: Provision of UGC Articulation Pathway has the strongest positive influence on Student Satisfaction among the three articulation pathways.

H6b: Provision of OTU Articulation Pathway has the smallest positive influence on Student Satisfaction among the three articulation pathways.

H6c: Provision of LSF Articulation Pathway displays a medium positive influence on Student Satisfaction among the three articulation pathways.

H7: Student Satisfaction mediates between Articulation Pathway and the Student Loyalty for sub-degree students in HK.

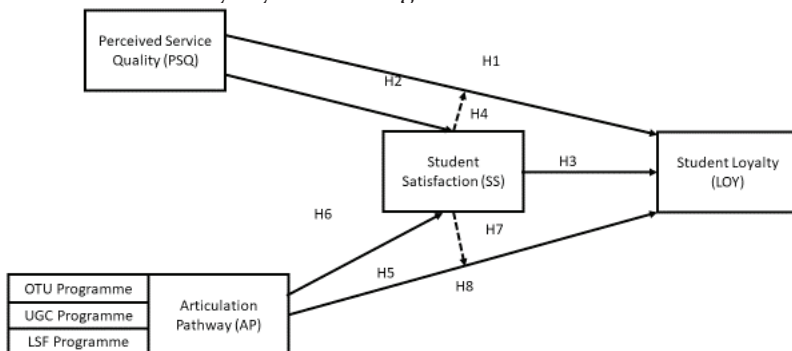


Figure 14. Updated Research Framework

On top of the framework of (Figure 13), the updated research framework that incorporated all the ideas are shown of (Figure 14).

2.10.3 Relationship among Student Satisfaction (SS), Student Trust (ST), Student Commitment (SC) and Student Loyalty (LOY)

Long-term relationship development concentrates on the relationship among satisfaction, trust and commitment (Ismanova, 2019; Setó-Pamies, 2012). According to Rojas-Méndez et al. (2009), LOY will only build up when trust is established between the customers and an organization. Ultimately, customer satisfaction will be transformed into trust (Mulyono, 2016; Rojas-Méndez et al., 2009).

Customer trust widely applies to relational exchange study, including the HE industry (Carvalho & de Oliveira Mota, 2010). When institutions treat students in a consistent approach to handle their complaints and meet their expectation, trust can be established. In fact, this trust relationship is precious and valuable, for it reflects that the students are committed and have developed a sense of belonging with the institutes. This observation is similar to that of Hennig-Thurau et al. (2001), who discovered a positive relationship between trust and emotional commitment in front line employees and further emphasized that commitment will be established when the trust is formed in the consumers' mind. The finding revealed that trust and commitment are related to loyalty development.

According to the discussion of section 2.8.4, LOY will not be connected if the students do not trust their institute. Hence, it is obvious that ST positively impacts student enrollment, student retention and quality perceptions (Ghosh et al., 2001). Moreover, Rojas-Méndez et al. (2009) showed that commitment between each other is weakened when there is absence of trust, especially in the industry that highly depends on the partnership, such as the education industry. The model suggested by Rojas-Méndez et al. (2009) presented satisfaction positively affects trust, which then passes this influence on commitment and finally to loyalty. This contrasts with the previous discussion of direct relationship between satisfaction and loyalty. Therefore, the researchers suppose that trust & commitment will display the influence on loyalty at the sub-degree education in HK, just like the model suggested by Rojas-Mendez et al. (2009). In addition, the relationship among ST, SC and LOY was discussed in section 2.8.5, in which the researchers argue this relationship can also be found among the sub-degree students in HK.

With the above argument, this study comes up with the last RQ and three RHs.

RQ6: What is the relationship of Student Satisfaction, Student Trust, Student Commitment and Student Loyalty for sub-degree students in HK?

H8: Student Satisfaction positively influences Student Trust for sub-degree students in HK.

H9: Student Trust positively influences Student Commitment for sub-degree students in HK.

H10: Student Commitment positively influences Student Loyalty for sub-degree students in HK.

Therefore, the final research framework after incorporating Figure 14 is illustrated in Figure 15.

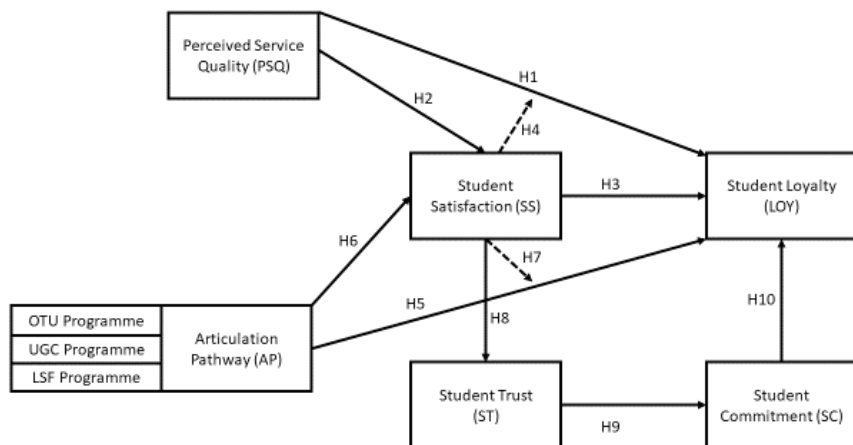


Figure 15. Final Research Framework for This Research

To sum up, this chapter discussed the current situations of sub-degree education in HK and the challenges that the HE system is facing. To identify the relevant areas of focus, the researchers comprehensively reviewed literature from other writers in this topic and discovered a research gap that other writers have yet to explore under the context of the local education environment in HK. Following substantial research on the literature reviewed, a research framework is formulated.

Chapter 3. Methodology

3.1 Introduction

This chapter covered the methodologies adopted for addressing the RQs and RHs. It begins with the research design (philosophies and approaches) based on the research onion in Figure 16 suggested by Saunders, Saunders, Lewis, and Thornhill (2016) (UK Research Writers, 2019), followed by selection of appropriate research approaches for this study and explanation of rationale. Furthermore, questionnaire design, target sample, validity & reliability of the data collected are also explained in this chapter. Meanwhile, some ethical concerns will also be covered towards the end of this chapter. The structure of Chapter 3 is presented in (Figure 17).

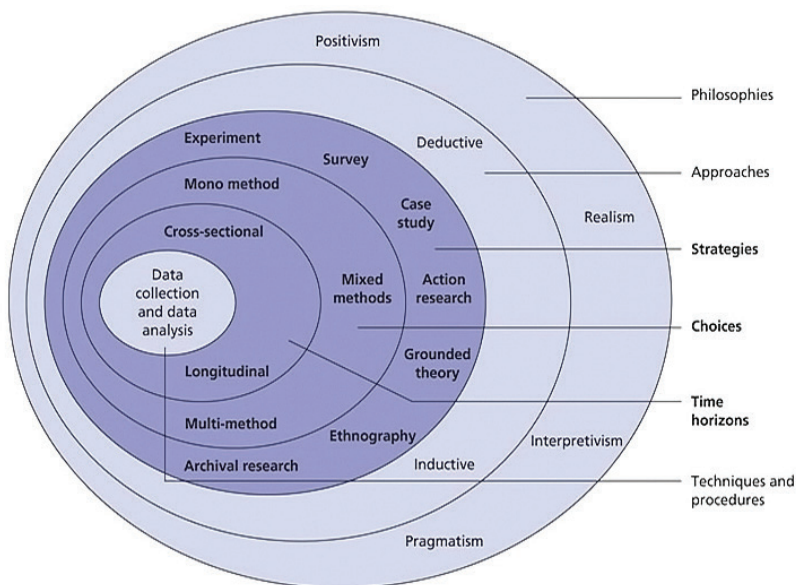


Figure 16. Research Onion

Note. The research design based on the Saunders' Research Onion approach. From *Research methods for business students*, (p128), by Saunders, M., Lewis, P., & Thornhill, A. (2012), Harlow, Essex, England: Pearson Education.

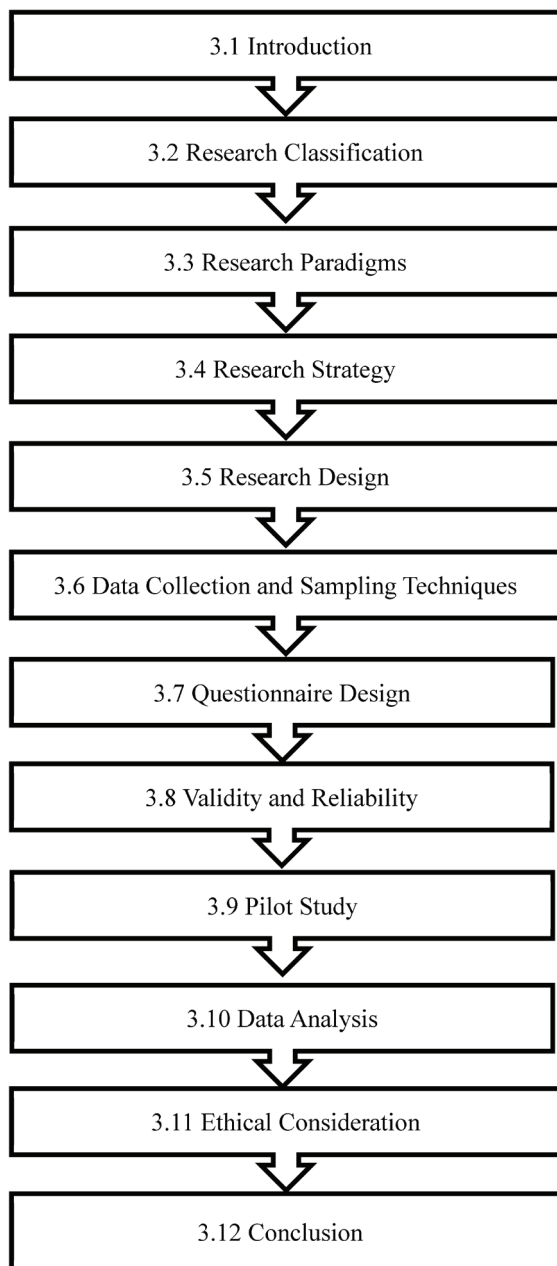


Figure 17. Outline for Chapter 3

3.2 Research Classification

While Graue (2015, p. 5) defined research as “*developing new knowledge or analyze a phenomenon further or approach a completely new one*”, Collis & Hussey (2013, p. 2) also provided a more specific explanation that “*research is a process of inquiry and investigation, systematic and methodical and increase knowledge*”. Under these definitions, business research can be understood as a systematic investigation into a particular issue or problem in a structural and procedural approach in order to find out the answers on the issues or problems (Sekaran & Bougie, 2013).

According to the research purposes, there are three major types of research, namely exploratory, descriptive, and causal research (Graue, 2015; Sekaran & Bougie, 2013). Some other researchers tend to name causal research as explanatory research (Collis & Hussey, 2013; Mayer, 2015).

Exploratory research investigates the research problem when there is an unclear situation or insufficient information from previous studies. With this idea, the exploratory research aims to act as a foundation for an additional research study (Collis & Hussey, 2013). Therefore, exploratory study is needed when additional information is required to develop the theoretical framework. Sekaran & Bougie (2013) viewed that exploratory research mainly relies on secondary research.

By looking into a specific issue to study the phenomena and their occurrence, descriptive research examines the study issue in a deeper way when compared with the exploratory approach. Meanwhile, causal or explanatory research attempts to understand and measure the causal relations for a phenomenon. It mainly establishes variables and finds out the relationship between one factor and the others (Collis & Hussey, 2013). In another view, it tests or measures the effect of other variables when one variable is changed (Sekaran & Bougie, 2013).

As this paper is trying to determine and measure the relationships of LOY and its variables (SS, PSQ, AP, ST & SC), casual research is more suitable for this research. The next step is to discuss the research paradigms for this study.

3.3 Research Paradigms

Research Paradigm is an elementary research structure that leads researchers to conduct their research in a systematic way. According to Collis & Hussey (2013, p. 43), “*research paradigm is a framework that guide researchers to conduct research based on people’s philosophies and their assumptions about*

the world and the nature of knowledge". In view of this, the research paradigm is an overall conceptual framework of the researcher's work, and there are two major researcher's philosophical stances to be considered namely ontology and epistemology (Saunders, Lewis, & Thornhill, 2016).

Broadly speaking, "*ontology means the philosophical assumption on the natural reality*" (Collis & Hussey, 2013, p.47). It is used to test the truth of the information and how to understand its existence. Under this assumption, the most common philosophies are objectivism, constructivism, and pragmatism (Collis & Hussey, 2013; UK Research Writers, 2019).

Epistemology concerns the valid knowledge that is admitted. It includes evaluating the relationship between researchers and the areas they researched (Collis & Hussey, 2013). This can be interpreted by what the information is needed to understand the knowledge and how to acquire that information (Sekaran & Bougie, 2013). With this assumption, two commonly adopted philosophies are positivism and interpretivism (Amaratunga, Baldry, Sarsar, & Newton, 2002; Collis & Hussey, 2013; Saunders et al., 2016; Sekaran & Bougie, 2013; UK Research Writers, 2019; Xinping, 2002).

This research aims at understanding how LOY will be affected by its variables. As valid knowledge is accepted, this research is conducted under the epistemology. The researchers will look into the two philosophies (positivism and interpretivism) under epistemology, and the most suitable research philosophy for this research will be suggested later.

3.3.1 Positivism vs Interpretivism

Positivism assumes that as the study knowledge is an independent issue, positivists like to use a scientific approach to test the phenomena (15 Writers, 2018; UK Research Writers, 2019). Sahay (2016) interpreted in a narrow way and suggested that positivism studies the cause-and-effect relationship of an issue, which involves statistical hypotheses and handling of massive quantitative data to test the relationship among variables. This aligns with the explanation from Collis & Hussey (2013), who believed that knowledge is formulated from positive information, which can be verified in a scientific manner. Thus, positivism research is regarded as an objective methodology. Under this objective measure, detailed description and explanation are the original bases for positivism, and positivists will conduct research with empirical or quantitative study (Collis & Hussey, 2013; Polonsky & Waller, 2018; Saunders et al., 2016). Furthermore, the deductive approach is widely applied in the positivism stance. (Collis & Hussey, 2013).

Table 7. – Comparison of the Two Major Research Paradigms

Authors	Characteristics	Epistemology	
		Positivism	Interpretivism
Collis and Hussey (2014, p.46)	Philosophical Assumption	• Researcher is distant from phenomena under study. • Knowledge comes from objective evidence about observable and measurable phenomena.	• The researcher interacts with the phenomena under study. • Knowledge comes from subjective evidence from participants.
	Approaches	• Quantitative • Objective • Scientific • Traditionalist	• Qualitative • Subjective • Humanist • Phenomenological
	Features	• Use large samples. • Have an artificial location. • Concerned with hypothesis testing. • Produce precise, objective, quantitative data. • Produce results with high reliability but low validity. • Allow results to be generalized from the sample to the population	• Use small samples. • Have a natural location. • Be concerned with generating theories. • Produce “rich”, subjective, qualitative data. • Produce findings with low reliability but high validity. • Allow findings to be generalized from one setting to another similar setting
Easterby-Smith (1991, p. 19)	Philosophical Assumption	• Social structure, social facts. • Quantitative, hypothesis testing.	• Social construction, meanings, qualitative, hypothesis generation.
Saunders et al. (2019)	Features	• Large samples • Quantitative, also can be adopted in qualitative research	• Small samples • Qualitative mainly

Interpretivism is also named as phenomenology (Amaratunga et al., 2002) which is to provide an in-depth knowledge investigation on the phenomena in a subjective way of measure (15 Writers, 2018; Sahay, 2016), in which the researchers will have their own perception of the phenomena

(15 Writers, 2018). It is therefore mostly studied in a qualitative method (Collis & Hussey, 2013; UK Research Writers, 2019) with an inductive approach. This further reflected that the study on a phenomenon could not be observed or measured directly with statistical figures. Although this approach is in-depth, small sample size data can be collected for analysis (Sahay, 2016). A comparison of these two major research paradigms is displayed in (Table 7).

3.3.2 Research Approach

Research approach is divided into inductive and deductive manner according to the research onion. Deductive approach implies that research hypotheses will be created based on the literature review (15 Writers, 2018), with the hypotheses tested under a specific context. Meanwhile, inductive approach represents a new knowledge or theory developed by observations (15 Writers, 2018; Sekaran & Bougie, 2013). Sahay (2016) mentioned that deductive approach would lead to adoption of the quantitative method whereas inductive approach will adopt the qualitative method (Collis & Hussey, 2013; Sahay, 2016; Sekaran & Bougie, 2013). Collis & Hussey (2013) then emphasized that a mixed method can be used. However, it is difficult to determine the research paradigm to be used in the research, for the approach can always move from one mode to another.

3.3.3 Research Philosophy

This research studies the relationship of LOY and its corresponding variables (SS, AP, PSQ, ST and SC) in the Hong Kong sub-degree education sector. The causal relationship among all variables is shown in Figure 15 of this research. With the literature review, 10 research hypotheses and six sub-hypotheses are developed for the variables listed in section 2.10. More importantly, all variables were quantitatively and objectively measured by other researchers under a different context. Thus, positivism is a suitable approach to be adopted for this research. Because the deductive approach be analyzed in different statistical methods, it was suggested for the research hypotheses according to the positivism features. Moreover, this research aims at generalizing the finding for the HK sub-degree education sector, which accounts for a significant population in HE industry. Sufficient sample size should be collected from the population to ensure the reliability and validity of the study.

3.4 Research Strategy

Once the research paradigm and approach have been set, the research strategy needs to be considered for this research. As Mayer (2015) claimed that research methodology is a bridge that connects the philosophy and research method, the paradigm decided the choice of the research method based on the realistic situation (Amaratunga et al., 2002). Under this review, there are two types of approaches to the research strategy, namely quantitative and qualitative approach (Amaratunga et al., 2002; Mayer, 2015; UK Research Writers, 2019).

The quantitative approach responds to the research questions with the quantitative data collected through different statistical analysis techniques (Collis & Hussey, 2013). The quantitative approach is considered a more direct way of data collection, as the statistics and findings can be quantified in numbers (UK Research Writers, 2019). Meanwhile, the qualitative approach addresses the research questions by collecting qualitative data and using interpretative methods (Collis & Hussey 2013). With this approach, data such as opinions and description that are otherwise difficult to analyze can be done with statistical methods without any data processing (UK Research Writers, 2019).

Although these two approaches collect primary data (Newman, Benz, & Ridenour, 1998), the quantitative research assumes that knowledge on reality can be observed. Hence, the data collected is more objective in analyzing the causal relationship among variables. In addition, reliability is highly structured, and sufficient sample size for generalization is necessary (Mayer, 2015). On the contrary, the qualitative approach is more about human views and collects data mostly from field notes and interviews that can be interpreted by descriptive texts. Therefore, the qualitative approach concerns more about the context of the study issues (Mayer, 2015). Qualitative research mainly collects data from focus groups, interviews, projective techniques, and ethnographic methods. All these methods involve the researchers to participate in the data collection process. In comparison, quantitative research mainly adopts questionnaire, observation, and experimental study (Zikmund, Carr, & Griffin, 2013). The comparison and contrast of the two strategies are demonstrated in (Table 8).

Table 8. – Research Strategy Comparison Table

Authors	Quantitative	Qualitative
Sekaran & Bougie (2013)	More deductive Causal relation study Data mainly in numbers and collected via structured questions	More inductive Exploratory studies Data mainly in words and collected via open-end question by interviews, questionnaires and observation,
Collis & Hussey (2013)	Analysis of data using statistical methods. Positivism paradigm Finding in a high degree of reliability Objective and studying the phenomena	Analysis data using the interpretative method. Interpretivism paradigm Finding in a high degree of validity Subjective to understand social or human activities.
Mayer (2015)	Deductive and mainly for theory testing, Positivism	Inductive for theory generation Interpretivism
Amara-tunga et al. (2002)	Concentrate on numbers and represent opinions and concepts	Mainly in words to express reality and explain people in a natural setting.

Because the quantitative approach is more appropriate for positivism and deductive research study (Collis & Hussey, 2013; Mayer, 2015; Sekaran & Bougie, 2013), this study will adopt quantitative approach in view of its suitability. Meanwhile, as the study is trying to find out the causal relationship of LOY with its variables, the quantitative approach can address this situation (Sekaran & Bougie, 2013). In addition, all variables were reviewed and could be quantified and analyzed with statistical methods. Finally, the hypotheses generated in chapter 2 can be tested with sufficient sample size from the population.

3.5 Research Design

The research design basically covers research types and the time horizon (Collis & hussy 2013). According to Fig 16, research strategies / methodologies contain experiment, survey, case study, action research, grounded theory, ethnography, and archival research. Collis and Hussey (2013) suggested to classify the research methodologies into two categories according to the two research paradigms (positivism and Interpretivism). Table 9 exhibited the classification base on the characteristics of each methodology.

Table 9. – Research Methodologies Under the Research Paradigms

Positivism ←————→ Interpretivism	
Experimental Study Survey Cross-sectional Study Longitudinal Study	Hermeneutics; Ethnography Participative inquiry; Action Research Case Study; Grounded Theory Ethnicity Study

Note. Research methodologies under the two major research paradigms. Adapted from *Business research: A practical guide for undergraduate and postgraduate students* (p. 60), by Collis, J., & Hussey, R. (2013), Macmillan International Higher Education.

3.5.1 Research Type

Some researchers supported that the quantitative research can generally be classified into four main types, namely (1) survey; (2) experimental research; (3) correlational research; and (4) causal-comparative research (Bhat, 2018; Sukamolson, 2007; Williams, 2007).

According to Bhat (2018, p.3), survey research is “*the most fundamental tool for quantitative research studies*”. Collis & Hussey (2013) defined survey as a methodology designed to collect data (either first or second-hand) from the identified sample group, from which the results can be generalized for the population to be studied. Hence, the data collected can reflect the characteristics of the population (Williams, 2007). According to Sekaran & Bougie (2013) and Zikmund et al. (2013), a questionnaire is an effective tool for quantitative data collection. Questionnaires can be distributed via online or postal medium by inviting respondents to fill in the questionnaire on their own. Moreover, it can also be conducted through telephone or face-to-face interviews (Bhat, 2018; Williams, 2007).

Experimental research is named as experimentation (Bhat, 2018), which is conducted based on one or more theories that have been proven, with the researchers trying to prove or disprove the statements. With such a property, this methodology is more suitable for research in the area of natural sciences. Collis & Hussey (2013) gave a more direct explanation that experimental study aims at assessing the relationship among variables so that the causal relationships of such variables can be identified. Correlational research assesses the differences in the features of two different study groups (Williams, 2007). The purposes of this research are to test the

variables for any correlation (Bhat, 2018), and the impact of one variable is observed alongside the changes of another variable so that relationships among these variables is recorded. Sometimes, the researchers need to manipulate one variable in order to test the desired result (Bhat, 2018).

The causal-comparative study, also named as quasi-experimental research (Bhat, 2018; Williams, 2007), are mainly used to conclude the cause-effect between variables or whether one variable depends on another (Williams, 2007).

Based on the research onion, either survey or experimental research could be chosen for this study. Due to the difficulty in controlling the confounding factors or some other external variables, business research seldom adopts experimentation (Collis & Hussey, 2013). Furthermore, manipulating one variable in order to identify the correlations is not an objective of this research. Based on the discussion of those methodologies and the RQs of this research, it was determined that the survey approach would be more suitable for this research.

3.5.2 Time Horizon

Time horizon includes cross-sectional design and longitudinal design. According to Saunders et al. (2019), the cross-sectional design refers to the research that is conducted during a particular time frame. Zikmund et al. (2013) further explained that the studied population would be divided into various sample groups, and the researchers would collect data at a particular point of time (i.e., Snapshot of one point of time) (15 Writers, 2018; Zikmund et al., 2013). On the contrary, because data collection in the longitudinal studies focuses on the changes and development of knowledge (Saunders et al., 2019), it normally takes a period of time (Sahay, 2016). It is also worthwhile to take into consideration the consecutive responses from respondents while observing the changes in the study topic over the research period (Zikmund et al., 2013). To simplify the understanding, data collection takes place at cross-sectional studies at one period. For longitudinal studies, data collection is carried out at multiple points in time. Moreover, Collis and Hussey (2013) also explained that cross-sectional studies often use surveys to study economic characteristics, in which many organizations or people would place particular focus on finding the similarities and difference and when there is time constraint or limited resource. In addition, a cross-sectional study is suitable for positivism paradigms. On the other hand,

the longitudinal study allows the researchers to examine the issue of the social, economic, and political context. The sample size is usually smaller because it is easier to negotiate access and produce significant results (Collis & Hussey, 2013).

The positivism paradigm is selected for this study, which suggested the cross-sectional study should apply in the time horizon (Collis & Hussey, 2013). As a result, the researchers need to collect sufficient data from the population (students at HK sub-degree level) in order to meet the requirement of the methodology. Rather than analyzing the changes in those variables, the study aims at identifying the relationship among them. Moreover, due to time limitation, longitudinal study looks impractical for this study. To conclude, the cross-sectional approach is used for this research. Table 10 summarizes all the techniques to be used by the researchers throughout this study.

Table 10. – Research Application for This Research

Research structure	Selection for this study
Research Philosophy	Positivism
Research Approach	Deductive and quantitative
Research strategy	Survey
Time horizon	Cross-sectional

3.6 Data Collection and Analysis

Data collection and analysis help gather data to answer the RQs (Sekaran & Bougie, 2013). Under this section, different kinds of sampling techniques will be compared. Since it is inconvenient and expensive, to measure the population, a sample is needed from the population, especially in business research (Zikmund et al., 2013). According to Zikmund et al. (2013), a sample is a smaller population that helps estimate the unknown characteristics of a population. Collis & Hussey (2013) claimed that a sample is a neutral cluster that represents the population in positivism paradigm and is therefore important for the research. In fact, a number of researchers agreed that collecting data from the population (i.e., census) is very difficult or impossible especially if the population size is big (Creswell & Creswell, 2017; Law & Meyer, 2011; Mayer, 2015; Quinlan, Christna, Babin, Carr, Griffin, & Zikmund, 2019; Sekaran & Bougie, 2013; Zikmund et al., 2013). Under such circumstances, sampling is a solution that reduces time cost and saves troubles. Table 11 illustrates the procedures in selecting samples.

Table 11. – Steps of Sampling Process

Step	Zikmund et al. (2013, p. 388) Creswell & Creswell (2017, p. 177)	Sekaran & Bougie (2014, p. 244)
1.	Define the target population.	Define the population.
2.	Select a sampling frame.	Determine the sample frame.
3.	Determine if a probability or non-probability sampling method will be chosen.	Determine the sampling design. (Including probability and non-probability)
4.	Plan procedure for selecting sampling units.	Determine the appropriate sample size.
5.	Determine sample size.	Execute the sampling process.
6.	Select actual sampling unit.	
7.	Conduct fieldwork.	

As (Table 11) shows that the steps of the sampling process are similar for different researchers. Therefore, this research will follow the steps of Table 11 in selecting the sample.

3.6.1 Define Population

Population stands for a group of people that the researcher would like to study (Sekaran & Bougie, 2013). People across a particular population normally demonstrate a similar set of behaviours (Zikmund et al., 2013). Since the RQs and RHs of this research are designed for the full-time sub-degree students in HK in both AD and HD programmes, the students in these programmes are considered the study population for this research.

3.6.2 Determine the Sample Frame

The sampling frame also named as the working population, which can be understood as a set of sample selection criteria from the population (Zikmund et al., 2013). To compile the requirement of SBS, the main study of this research includes all the sub-degree students in HK as the sample frame for the main empirical study, except those HD business students from IA. The HD business students from IA will be included in the case study. With this arrangement, results comparison can be assessed and tested to see if the research model can be replicated into a particular group of sub-degree students in HK. Meanwhile, the research will adopt non-

probability sampling. Due to concerns on ethical issues, the targeted sample cannot be drawn from the existing situation.

3.6.3 Sampling Techniques

In a population, all subjects have an equal opportunity of being chosen from the identified sample. Such a method is referred to as probability sampling (Sekaran & Bougie, 2013; Zikmund et al., 2013). This should be used when generalizability is important to the study (Sekaran & Bougie, 2013; Strang, 2015). On the contrary, a sample is developed by a non-random process is a non-probability sampling (Sekaran & Bougie, 2013; Zikmund et al., 2013). This can be used when time or other factors are important to the study (Sekaran & Bougie, 2013; Strang, 2015). Creswell & Creswell (2017) mentioned that probability sampling could yield an accurate result, while Sekaran et al. (2016) also commented that probability sampling is often used in survey and experiment research. Table 12 summarizes the major probability sampling and non-probability sampling techniques while Figure 18 exhibits their classification by most of the authors that commonly agreed to the concept.

Table 12. – Common Sample Technique Adopted by Researchers

Authors	Probability	Non-probability
1	2	3
Sekaran et al. (2016)	• Simple random • Systematic random • Stratified random • Cluster sampling	• Quota • Purposive • Volunteer (i.e., snowball and self-selection) and • Haphazard (i.e., convenience)
Zikmund et al. (2013)	• Simple random • Systematic • Stratified • Cluster • Multistage area sample	• Quota • Judgment (similar to Purposive) • Snowball • Convenience
Quinlan et al. (2015)	• Simple random • Systematic sampling • Stratified sample • Cluster sampling	• Quota • Snowball • Convenience
Collis and Hussey. (2013)		• Snowball • Judgmental or purposive • Convenience

1	2	3
Sekaran & Bougie (2016)	• Simple random • Systematic • Stratified • Cluster • Area sampling • Double sample	• Convenience • Purposive (judgment quota)

3.6.4 Rationale for Selecting the Sampling Technique for This Research

In this research, full-time students attending sub-degree programmes are the target population. According to the key statistics from the Committee on Self-financing Post-secondary Education (Concourse), there is a total of 57,800 local full-time sub-degree students (including both first year and second year students) dispersed in around 278 programmes under 14 different disciplines in 23 institutions as of AY2018/19 (Concourse for Self-financing Post-secondary Education, 2020b). A sample can be drawn from this sampling frame. Concerning the SBS requirements in conducting empirical and case studies, the main empirical study of this research will frame all the full-time sub-degree students, except the HD business students from IA who will be reserved for the case study. Owing to the concern of privacy, a contact list of the target population could not be obtained, as no institution will openly publish their student's contact information. Under the time constraints and limited manpower in conducting this study, non-probability sampling will be adopted. The representative of convenience sampling, although requires the least resource, causes the greatest bias among all non-probability sampling techniques (Saunders et al., 2019; Zikmund et al., 2013). Hence, snowball sampling will be used for this research in order to minimize the chance of biased results. In fact, Saunder et al. (2019) also suggested snowball sampling in case target samples cannot be identified or contacted. Cooper et al. (2003) highlighted that snowball sampling is suitable when respondents are difficult to contact. With support from the authors, we will adopt snowball sampling as the research technique for the reasons of (1) low cost (Saunders et al., 2019). (2) simplicity and convenience; (3) gaining acceptable results if samples are carefully selected (Cooper et al., 2003); (4) extremely limited time for conducting the survey due to the outbreak of the coronavirus (COVID-19).

3.6.5 Data Collection

Interviews and questionnaires are more commonly used in business research (Bell et al., 2018; Tharenou, Donohue, & Cooper, 2007). From the views of Sekaran and Bougies (2016), the major data collection method in doing business research include interviews through face-to-face, telephone, computer or other electronic channels, observation, and questionnaires. However, interviews can be time-consuming, more expensive and only collect limited data due to a lack of large sample size (Sekaran & Bougie, 2016; Strang, 2015).

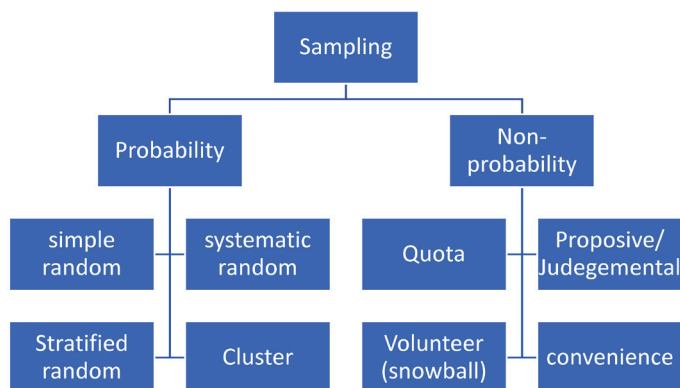


Figure 18. Sampling Techniques

Note. Sampling techniques classification chart. Adopted from *Research methods for business students* (p. 276) by Saunders, M., Lewis, P., & Thornhill, A. (2016), Harlow, Essex, England: Pearson Education

Being a kind of sampling tools completed by the respondents (Bell et al., 2018), questionnaires are the most common tool used to collect the respondents' views in the business research. As a simple and inexpensive research tool, questionnaires can be distributed through mail or online platforms (Bell et al., 2018; Lancaster, 2007; Quinlan et al., 2015).

Tharenou et al. (2007) also explained that questionnaires and interviews are used to collect people's idea and feelings towards an issue or the behaviours (Collis & Hussey, 2013). Hence, questionnaires are suitable to be used in experiment study, correlation study and case study. Likewise, some other authors also pointed out that questionnaires are best to be used in the surveys (Bell et al., 2018; Quinlan et al., 2015; Saunders et al., 2019).

With the amount of data that needs to be collected in a limited time; there is both a lack of manpower and resource to support the data collection process. Moreover, with the social distancing policy launched in view of the COVID-19 epidemic situation, meeting the respondents in person is not recommended. To acquire sufficient quantitative data to test the RHs under the time constraint, a self-completed pre-set questionnaire will be used for this research. Furthermore, since providing convenience to the target respondents (who are all millennials) is critical for getting a high response rate, the snowball technique will be used for the data collection.

After considering all these factors, an internet questionnaire is recommended for data collection. With the help from technology enhancement, e-questionnaires can be hosted in Google form platform and be sent to the target respondents in a short time. In terms of the distribution means, the questionnaire will be sent out via both mobile and email channels because the target group is familiar and comfortable with such technologies. Finally, the target respondents are invited to forward the mobile message or the email to their classmates or schoolmates accordingly.

3.6.6 Data Collection Process

There are altogether 23 institutions in HK that offer 278 different sub-degree programmes (151 HD, 127 AD) in self-financed mode to around 55,319 students (Concourse for Self-financing Post-secondary Education, 2020a). In addition, there are 2,481 students taking UGC-funded full-time sub-degree programmes (5 AD and 15 HD) (University Grants Committee, 2019). The total target population in the AY of 18/19 was about 57,800. To collect data, full-time sub-degree students are invited via the personal network to complete the questionnaire. The students were then asked to invite their schoolmates or classmates to complete the questionnaire. To diversify the data sources and reduce the chance of biased answers in the data collected, the first batch of invited students from the personal network will be composed of different institutions and two types of sub-degree programme in different disciplines.

In HK, there are 14 different disciplines at the self-financed sub-degree sector in AY2018/10 (Concourse for Self-financing Post-secondary Education, 2020). Table 13 illustrates the three largest disciplines. In terms of the number of student enrollment at the sub-degree level, such disciplines include Business and Management, Social Sciences and Services (Hospitality and personal care industry). To ensure proper coverage of views and

opinions, the researchers should try to collect more responses from these three groups of students.

Table 13. – Full-time Locally-accredited Self-financing Post-secondary Programmes Student Enrolment by Area of Study and Training for the AY2018/19

Area of study and training	Sub-de- gree level	Under- graduate	total
Architecture and Town Planning	113	598	711
Arts, Design and Performing Arts	1,855	2,396	4,251
Business and Management”	10,744	6,487	17,231
Computer Science and Information Technology	1,241	661	1,902
Education	1,492	1,285	2,777
Engineering and Technology	1,857	1,410	3,267
Humanities	1,734	553	2,287
Languages and Related Studies	2,555	1,826	4,381
Law	93	–	93
Mass Media and Communications, Journalism and Public Relations	1,588	1,214	2,802
Medicine, Dentistry and Health Sciences	3,209	4,009	7,218
Sciences	1,658	311	1,969
Services (Hospitality and personal care industry)	3,476	441	3,917
Social Sciences	4,177	2,677	6,854
Total	35,792	23,868	59,660

Note. Number of student enrollment for the full-time locally accredited self-financing post-secondary programmes by disciplines for academic year of 2018/19. From Self-financing Post-secondary institutions by Committee on Self-financing Post-secondary Education, 2019, retrieve from: <https://www.cspe.edu.hk/en/Statistics.page#/>!

3.6.7 Target Sample Size

According to Collis & Hussey (2013), a larger sample will give a more accurate statistical analysis and reduce the chance of deviation from the generalization. Sekaran and Bougie, (2013) introduced a population reference table (Appendix C: Sample Size for a Given Population Size) for checking the

appropriate sample size by using the *t*-statistics with 95 percent confidence interval. Since the total population of the HK full-time sub-degree student is about 57,800, the approximate sample size will be around 385 by referring to the table in appendix C. In addition, Sekaran and Bougie (2013) also highlighted that appropriate sample size should fall into 30–500 for most research.

As per the literature review of chapter 2, this research uses SEM, a multivariate analytical technique, to analyze the data, which indicated that the range of sample size for SEM should be 30–460 cases (Wolf, Harrington, Clark, & Miller, 2013). Sekaran & Bougie (2013) also highlighted that the larger sample size that is close to the population, the better normally distribution tendency occurs.

Another approach in determining the sample size can be taken from the study of Zikmund et al. (2013), who suggested that the reference sample size should be taken from the previous similar studies in order to generate a reliable comparison while offering a good reference for inexperienced researchers. Hence, the researchers tried to consolidate some recent studies for making references. Table 14 exhibits the sample size adopted in recent studies on the topic of LOY.

It was found that while sample size ranged from 174–918, convenience sampling technique was the most popular method used. By making reference to the findings, this research aims to obtain around 385 valid responses in order to ensure reliable and valid results.

Table 14. – Sample Size for Recent Studies on Student Loyalty

Authors	No. of sample size adopted.	Sampling Technique	Statistical Approach
Giner & Rillo (2016)	196	Convenience	SEM
Annamdevula & Bellamkonda (2016b)	918	Judgmental	
Eurico et al. (2015)	174	Cluster	
Ardi, Hidayatno, & Zagloel (2012)	251	Convenience	
Casidy (2014b)	258	Convenience	Non-SEM
Balaji, Roy, & Sadeque (2016)	416	Convenience	
Ali et al., 2016	400	Convenience	
Quintal et al. (2012)	528	Focus Group and Random Sampling	

3.7 Questionnaire Design

To address the RQs and RHs, cautions and guidelines in designing the questionnaire need to be considered. Sekaran & Bougie (2013) pointed out that unlike qualitative interviews, questions included in the questionnaires need to be precisely defined; or the researcher will find it difficult or impossible to perform statistical analysis. Meanwhile, data validity & reliability as well as the structure & layout need to be carefully considered when designing questions (Sekaran & Bougie, 2013). Finally, a pilot test needs to be launched before conducting the mass survey.

When constructing the questions, Zikmund et al. (2013) pointed out seven guidelines, which include 1) avoiding complexity in setting the questions by using simple language for the respondents to understand; 2) avoiding leading and loaded questions so the respondents will not be led to give a particular answers; 3) preventing ambiguity so that respondents will not be confused by the questions; 4) avoiding double-barreled items in the questions so that the answers can be analyzed accurately; 5) avoiding assumptions when setting questions so that respondents will not be induced to express attitude on the issues that they had not thought about; 6) preventing difficult questions, and 7) ensuring that the questions can offer variance so as to avoid meaningless answer when doing the statistical analysis. The researchers would follow these guidelines when setting questions for this study.

Owing to the uniqueness of the language environment in HK, that adopts Chinese and English as official languages; students can read and understand both languages. A bilingual (English and Chinese) questionnaire will be designed so that respondents can refer to either one of the languages that they feel comfortable with.

Sousa & Rojjanasirirat, (2011) discussed the importance of back-translation for deriving a reliable and valid measure of the concept of interest. According to Bradley (1994), back-translation can be conducted by someone who has not seen the questionnaires in its original language. Meanwhile, back-translation is defined as “*a procedure whereby a translator interprets or re-translate a document that was previously translated into another language, back to the original language.*” To ensure reliability and validity, the questionnaire will follow this suggestion and have back-translation performed.

Following the Chinese translation completed by the one of the researchers, a Chinese and English translator with over 10 years of transla-

tion experience was invited to cross-check the accuracy and consistency of the translation. The Chinese version of the questionnaires was then reviewed and commented by a university professor who has been teaching English for over 10 years.

3.7.1 Composition of the Questionnaire

The questionnaire contains three parts. While the first part covers the introduction, aims of this study, criteria in using the data, and guidelines for filling the questionnaires, the second part includes the main study for the six variables, which can also be named as constructs. The constructs include 1) PSQ; 2) AP composed of OTU programme, UGC programme and LSF programme; 3) SS; 4) ST; 5) SC and; 6) LOY. The last part of the questionnaire contains the respondents' profiles.

To ensure data reliability and validity, questions for each construct will be adopted from the related studies on the topic of LOY. The questions will be modified for the context of Hong Kong sub-degree education sector. To meet the requirement of SEM analysis, each of the six constructs is measured with multiple questions, and all the questions are well-tested from other surveys. Questions composition for each construct is discussed in section 3.7.2.

3.7.2 Measurement of Construct (Variable)

3.7.2.1 Construct 1: Student Satisfaction (SS). RQ1 of this research is to assess the relationship between LOY and SS. To measure the SS, a total of five questions were modified from two sources: including the studies conducted by 1) Duarte et al. (2012) and; 2) Giner & Rillo (2016). The modified questions (also named as items) are shown in (Table 15).

Table 15. – Student Satisfaction Measurements

Notation	Variable/ Construct	Item	Source
1A	Student Satisfaction (SS)	My institute has met my expectations.	Duarte et al. (2012)
1B		My institute has fulfilled my current needs.	
1C		There is still a gap between my institute and my ideal institute.	
1D		I think I made the right choice in enrolling to this institute.	Giner & Rillo (2016)
1E		In general, I am satisfied with the services provided by this institution.	

3.7.2.2 Construct 2: Student Trust (ST). Four questions were modified from two sources, including the studies conducted by 1) Dennis et al. (2016) and 2) Rojas-Méndez et al. (2009). The four questions are displayed in (Table 16).

Table 16. – Student Trust Measurement

Notation	Variable/Construct	Item	Source
2A	Student Trust (ST)	This institute can be trusted.	Dennis et al. (2016)
2B		This institute has high integrity.	
2C		This institute keeps its promises.	
2D		I am sure that the institute staff are always acting in my best interest.	Rojas-Mendez et al. (2009)

3.7.2.3 Construct 3: Articulation Pathway (AP). Due to the uniqueness of the education system in the local sub-degree sector in HK, the three articulation pathways of OTU, UGC, and LSF offer the sub-degree students in HK with bridging opportunities to study at degree level. The researchers assume that UGC shows a higher LOY than the other two types of APs. In addition, AP also indicates a positive relationship with SS (Lau, 2013; Ma, 2018; Young Post, 2017). Three questions in measuring the AP (combined) have each derived two additional questions that measure each type of AP. Besides, an introductory question is added for giving signals to the respondents on the AP classification at the beginning of the section. Under this discussion, Table 17 illustrates the composition of the questions on this construct. Except for item 3A, all items were modified from Ng et al. (2015) for this study context.

3.7.2.4 Construct 4: Student Commitment (SC). From the literature review, six questions were modified to measure this construct. The contents are based on two studies conducted by 1) Dennis et al. (2016), and 2) Rojas-Méndez et al. (2009). The questions are illustrated in Table 18.

Table 17. – Articulation Pathway Measurement

Notation	Variable/Construct	Item	Source
1	2	3	4
3A		I understand the difference among 1. overseas top-up degree, 2. government-funded degree and 3. local self-financed degree programme	

1	2	3	4
3B	AP(OUT)	My institute provides a clear articulation pathway to overseas top-up degree programmes.	Ng et al. (2015)
3C		My institute provides a clear credit transfer/ module exemption to overseas top-up degree programmes.	
3D	AP (UGC)	My institute provides a clear articulation pathway to government-funded degree programmes.	
3E		My institute provides a clear credit transfer/ module exemption to government-funded degree programmes.	
3F	AP (LFS)	This institute provides a clear articulation pathway to local self-financing top-up degree programmes.	
3G		This institute provides a clear credit transfer/module exemption to local self-financing top-up degree programmes.	
3H	Overall AP	In general, my institute provides a clear articulation pathway.	
3I		My institute provides an overall clear credit transfer/module exemption for articulation.	
3J		I think my institute provides articulation pathway is important to me.	

Table 18. – Student Commitment Measurement

Notation	Variable/Construct	Item	Source
4A	Student Commitment (SC)	I am very committed to this institute.	Dennis et al. (2016)
4B		This institute is very important to me.	
4C		I really care about this institute.	
4D		I believe that this institute deserves my effort to maintain the relationship in the future.	
4E		I felt very attached to my institute.”	Rojas-Mendez et al. (2009)
4F		I am very happy to become a member of this institute.	

3.7.2.5 Construct 5: Perceived Service Quality (PSQ). This study will apply SERVEPERF, a tool specifically designed for measuring the PSQ in the higher education sector (Cronin & Taylor, 1992; Li, 2013). The 22 questions for measuring the PSQ were modified from Li (2013) and are shown in (Table 19).

Table 19. – Perceived Service Quality Measurement

Notation	Variable / Construct	Questions	Source
5A	PSQ	The institute has modern teaching equipment.	Li (2013)
5B		Materials associated with the service at the institute are visually appealing.	
5C		The operating hours of the institute are convenient for students.	
5D		Whenever you have a problem, the institute always solves it with a sincere attitude.	
5E		The institute performs the service right for the first time.	
5F		The institute provides its services at the time it promises to do so.	
5G	PSQ	Employees of the institute give your prompt service.	Li (2013)
5H		Employees of the institute are always willing to help you.	
5I		Employees of the institute are never too busy to respond to your requests.	
5J		The behaviour of employees of the institute instils confidence in students.	
5K		Employees of the institute are consistently courteous with you.	
5L		Employees of the institute have the knowledge to answer your questions.	
5M		The institute gives you individual attention.	
5N		Employees of the institute understand your specific needs.”	
5O		The institute has your best interest at heart.	
5P		In general, the institute provides high-quality support service to students.	

3.7.2.6 Construct 6: Student Loyalty (LOY). To measure this construct, three questions were modified from the two studies conducted by 1) Duarte et al. (2012) and 2) Ali et al. (2016). The questions are illustrated in (Table 20).

Table 20. – Student Loyalty Measurement

Notation	Variable/Construct	Item	Source
6A	Student Loyalty (LOY)	I will recommend this institute to my friends and family members.	Duarte et al. (2012)
6B		I am proud to be able to study at this institute.	
6C		I will study at the same institute if I want to start a new course.	Ali et al. (2016)

3.7.2.7 Profile of the Respondents. This information is used to understand the background of the respondents and help to carry out the corresponding statistical analysis later. Nine demographic questions will be used to collect the respondents' background data such as 1) Gender; 2) Age; 3) Types of the current sub-degree programmes; 4) Operation mode of the programmes; 5) Articulation path to their sub-degree programmes; 6) Work background before taking sub-degree programmes; 7) Year of study; 8) Institute, and 9) Discipline. Details of each question are presented in (Table 21).

3.7.3 Measurement Scales

Measurement scales refer to types of scale and responses. Cooper et al. (2003) suggested that constructs from business research usually measure the behaviours, knowledge, and attitudes of the respondents. Hence, measurement refers to data collection in the numeric form so that different statistical analysis can be performed (Adams et al., 2007; Sekaran & Bougie, 2013). Nominal, Ordinal, Interval and Ratio are the four types of measurement scales commonly used (Adams et al., 2007; Sekaran & Bougie, 2016).

Table 21. – Profile of Respondents

Notation	Details	Measures
1	2	3
7A	Gender	Male
		Female

1	2	3
7B	Age	17 or below
		18–20
		21–23
		24 or above
7C	Type of Sub-degree programme	Higher Diploma
		Associate degree
7D	Operation Mode of the Programme	Government funded programme
		Self-financed programme
7E	Articulate to your sub-degree programme from	DSE
		PYJ
		DFS/ DVE/Diploma
		Pre-AD
		Others: _____
7F	Before I enrolled this programme, I have _____ work experience	Full-time
		Part-time
		Full-time and part-time
		No work experience
7G	Year of study	1
		2
7H	Institution	Caritas institutions (Bianchi College of Careers/ Institute of community education/ institute of Higher Education)
		Community College of City University/ UOW College HK (CC of CityU)
		Community college from HK Baptist University (Academy of Film/ College of International Education/ School of Continuing Education) (CC of HK BU)
		HK Community College (under the HK Polytechnic University) HK CC (Under HK PU)
		HK Institute of Vocational Education / HK Design Institute (under VTC) HKIVE/ HKDI (Under VTC)
		Other: please specify _____

1	2	3
71	Specialism	Architecture and Town Planning
		Arts, Design and Performing Arts
		Business and Management
		Computer Science and Information Technology
		Education
		Engineering and Technology
		Humanities
		Languages and Related Studies
		Law
		Mass Media and Communications, Journalism and Public Relations
		Medicine, Dentistry and Health Sciences
		Sciences
		Hospitality and Related Services
		Social Sciences
		Other: please specify _____

Since the questions are adapted/modified from the previous studies and Likert scale is used due to the ordinal data; all questions/items (except the respondent's profile) will use a 7-point Likert scale, in which 1 stands for strongly disagree; 2 stands for not very disagree; 3 stands for somewhat disagree; 4 stands for neutral; 5 stands for somewhat agree; 6 stands for agreed and 7 stands for strongly agree.

Möttus et al. (2012) claimed that owing to the high degree of autonomy and differing recent history, HK-Chinese are responding self-rated questions differently from the Mainland Chinese who like to use smaller values to represent the most positive tendency. Moreover, sub-degree students in HK are familiar with filling in Student Feedback Questionnaires (SFQ) at the end of each semester, in which most institutions are using larger numbers to represent the more positive level. For the case of IA, the SFQ from IA even did not explain the meaning of values 2–6 as the students are used to recognize this two-bipolar scale by giving higher value to represent their stronger intention.

In addition, most of the quantitative research papers that focus on HK sub-degree education are also using larger numbers to represent the more positive levels and some of these papers also did not explain the meaning

of value 2–6 (Ng et al., 2018; Ng et al., 2015; Wong et al., 2016). Hence, the researchers has also adopted this approach.

Chisnall (1997) and Maeda (2015) explained that the Likert Scale is designed to measure attitudes of the respondents. The scale, containing two bipolar adjective items without numerical means, is an indicator of the respondents' favorable levels when compared to the maximum possible scores of all statements for the item. In addition, the Likert Scale is commonly used in business research because it provides relatively reliable and simpler descriptions in presenting the degree of respondents' preference based on intangible items such as feelings and attitudes in the statistical mode.

Meanwhile, in terms of the questionnaire samples of the following papers, all the researchers presented the value of two-extreme (Strongly agree and strongly disagreed) and skipped the values in between this range to bipolar.

- i. Strategic enrolment management (SEM) in self-financed higher education of Hong Kong: evaluation and measurement by Ng, Peggy & Galbraith, 2016.
- ii. Does Higher education service quality effect student satisfaction, image and loyalty by Ali, Zhou, Hussain, Nair, & Ragavan (2016, p. 79).
- iii. Student satisfaction with Canadian music programmes: the application of the American Customer Satisfaction Model in higher education by Alexander Serenko in 2011, p 288.
- iv. Linking Brand Orientation with Service Quality, Satisfaction, and Positive Word-of-Mouth: Evidence from the Higher Education Sector by Riza Casidy (2014).

3.8 Data Validity and Reliability

For quantitative research, it is suggested to test data goodness (Sekaran & Bougie, 2013; Zikmund et al., 2013) to ensure that the measuring instrument developed for this study is suitable for representing the study concepts (Sekaran and Bougie, 2013). A number of studies have claimed that data validity and reliability need to be assessed in order to have a good measurement (Adams et al., 2007; Beins & McCarthy, 2017; Collis & Hussey, 2013; Leavy, 2017; Saunders et al., 2019; Tharenou et al., 2007; Zikmund et al., 2013). Sekaran and Bougies (2013) explained that data validity refers to the accuracy of the measuring tools used in the research

while reliability stands for the consistency of the measuring result given by these tools in different attempts. Similar explanation was also made by Leavy (2017) and Zikmund et al. (2013), who explained that validity refers to whether the study concepts are accurately measured, whereas reliability refers to whether study concepts have stability and consistency measures. To ensure accuracy of the findings, both the data validity and reliability for this research will be checked. The detailed approach will be discussed in Chapter 4.

3.9 Pilot Study

A pilot test is necessary before sending the questionnaires to respondents (Adams et al., 2007; Cooper et al., 2003; Lancaster, 2007; Leavy, 2017). The pilot test can revise or fine-tune the questionnaire to avoid unexpected problems before the respondents answer the questions (Saunders et al., 2019; Sekaran & Bougie, 2013). Zikmund et al. (2013) explained that pilot test is a small-scale data collection from the respondents who shows similar traits as the target respondents before conducting the full study.

The number of people that a pilot test needs to recruit relies very much on the RQs, research size, and available resource (such as time and money) of the researcher. However, Sekaran & Bougie (2016) suggested that a minimum number of 10 is necessary for a pilot test. Hence, this study has invited 15 full-time sub-degree graduates to participate in the pilot test in order to fulfil the minimum requirement on the number of study subjects.

The comments received from the pilot test are exhibited below:

- The length of the questionnaire is too long, which will demotivate the respondents in answering questions.
- The sentences of some items are a bit too long. Target respondents lost patience in reading those long sentences.
- Questions for AP are quite similar. It would be helpful by adding one introductory question before asking the views on the three articulation pathways.
- Better place Chinese question first and followed by the English version.
- In the Likert scale of 1–7, it would be more appropriate to rate the most positive response as 7. By doing so, the respondents will understand the meaning of other values even when no indication is given.
- For Q.1C, respondents from the pilot test suggested using “gap” to indicate the expectation distance between the students and the institution because it is their peer-language which make them understand the question easier.

The researchers addressed all the comments received from the pilot test and revised some questions in a simpler tone, local peer language and shorter phrases. It is suggested that simple and straightforward questions can minimize errors and misunderstanding of the respondents when answering questions (Ghauri, Grønhaug, & Strange, 2020). It is also worthwhile to note that response rate will decrease by 0.5 percent with each additional question and will further drop by five percent for each additional page of questions (Heberlein & Baumgartner, 1978). Furthermore, response rate is even lower for online questionnaires (Sekaran & Bougie, 2016). Since there are 61 questions including profiling information on the respondents, 53 questions were selected for empirical research in order to enhance the response rate. Nevertheless, this also meets the minimum requirement for SEM. A sample of the final questionnaire is shown in Appendix D.

3.10 Data Analysis and Presentation

This section will discuss the techniques, including descriptive statistics, inferential statistics, reliability test, SEM, and multiple regression employed for this research.

3.10.1 Descriptive Statistics

While exploratory data analysis widely uses diagrams or charts to present the ideas, descriptive statistics mostly allow the researchers to describe variables with numbers collected from the survey (Sekaran & Bougies 2013). Zikmund et al. (2013) explained that descriptive statistics mainly summarizes the data collected and describe it in a simple and understandable tone. In addition, descriptive statistics are used to describe data collected for a particular sample study (Urdan, 2016). It is a tool that assists the researcher to understanding and organize the data collected in a meaningful way (Beins & McCarthy, 2017). Sekeran & Bougies (2013) emphasized that central tendency and data dispersion are the two most common calculations for the descriptive statistics.

Central tendency, such as mean, median and mode, describes the data distribution (Cooper et al., 2003; Sekaran & Bougie, 2013; Spatz & Johnston, 1997). A meaningful data presentation is deemed to have been obtained when the data value is under the normal distribution. Otherwise, the outlier or skewed distribution factors should be taken into consideration (Spatz & Johnston, 1997; Urdan, 2016).

Dispersion stands for the spread of the data collected in a distribution, and the most common types of dispersion are range, variance, and standard deviation (Cooper et al., 2003; Urdan, 2016). Standard deviation is the most widely used descriptive statistics because it summarizes the data variation within the distribution. The larger the standard deviation value, the bigger the data dispersion (Beins & McCarthy, 2017).

The data collected for this study is presented in different ways; for example, the respondent profile is presented in numerical and graphical forms, whereas frequency tables or charts are used to present categorical data. For the construct measurement with the Likert scales, series of descriptive statistics (mean, frequency, standard deviation, etc.) are conducted for this study. The correlation among variables is studied and presented so that the relationship among each construct for this study can be studied in a more in-depth manner. It can also test the strength and direction of each variable.

3.10.2 Inferential Statistics

Inferential statistics is another branch of statistics that mainly aims at generalizing the traits and features of the population by analyzing the data collected from the samples (Saunders et al., 2019; Urdan, 2016). Inferential statistics are used to examine the hypotheses of the study so that the reliability on the population can be projected (Creswell & Creswell, 2017; Walliman, 2018). Based on the findings, the researcher can calculate how probable the sample result can be obtained by chance from the actual population. Hence, the larger the sample size, the more accurate it is to represent the target population (Saunders et al., 2019).

ANOVA, *t*-test, regression, and correlations are applied for the inferential statistics because they are easy to understand (Urdan, 2016). Among these tests, the *t*-test is used to compare how significantly different are the mean values between two sample groups (Collis & Hussey, 2013; Urdan, 2016). For testing the variance among three or more groups from the sample, ANOVA can be used (Saunders et al., 2019; Spatz & Johnston, 1997). ANOVA uses *F*-value to present the variance within and between groups. Three conditions must be met for using one-way ANOVA, which include 1) the data is not related to the other groups in which the data value should be independent; 2) the data is normally distributed, and 3) data variance should be the same in each group. This study aims at identifying the variance of LOY among four different groups of students from differ-

ent working backgrounds before they take up their sub-degree studies. It involved LOY and work background as two variables, in which the work background of respondents can be classified into different groups and the ANOVA test can therefore be conducted.

Regression is mainly used to project the behaviours of a variable based on another variable identified from the information acquired (Beins & McCarthy, 2017). Therefore, it assesses the relationship of a cause and effect between dependent and independent variables (Saunders et al., 2019). Correlation mainly tests the direction and association of two quantitative variables that are widely used in business research (Collis & Hussey, 2013). Since the correlation between two variables can be positive or negative, the coefficient of correlation is between -1 and $+1$. In fact, correlation can also be in a liner or non-liner relationship (Beins & McCarthy, 2017; Saunders et al., 2019). To this end, this study aims to identify the cause and effect of three types of APs on 1) SS and 2) LOY. As more than one independent variable existed, multiple regression was suggested.

Concerning the RQs that aim at discovering the relationships on the dependent variable (LOY) and its independent variables, the cause-effect, and correlations among the variables need to be investigated. Moreover, this study also aims at generalizing the characteristics of full-time sub-degree students in Hong Kong. As a result, related inferential tests, i.e., SEM, Multiple regression, and ANOVA, will be performed.

3.10.3 Reliability Test

Cronbach alpha coefficient from the inter-item is the most frequently used calculation (Sekaran & Bougie, 2013; Tharenou et al., 2007; Zikmund et al., 2013). This value ranges from 0 to 1: the higher the coefficient value, the higher the reliability (Tharenou et al., 2007). In general, if alpha coefficient gives a figure larger than 0.7, the data reliability is considered high. Meanwhile, coefficients that provide the range within 0.6–0.7 are considered to have fair reliability, whereas coefficient below 0.6 implies poor reliability (Sekaran & Bougie, 2016; Tharenou et al., 2007; Zikmund et al., 2013).

3.10.4 Structural Equation Modeling (SEM)

Urdan (2016) explained that SEM is a statistical analysis that testifies how well the research model organized by the researcher and those variables fits with the observed data. SEM is a 2nd generation statistical analysis approach (Lowry & Gaskin, 2014) that involves at least one independent

and one dependent variables (Tharenou et al., 2007). As SEM combines multiple regression and factor analysis; the direct effect and indirect (mediating) effect of the relationship between variables can be investigated for the model (Tharenou et al., 2007). Moreover, SEM provides the flexibility of modelling by including unobserved variables, so that researchers can develop their own framework to cover both seen and unseen variables in their research models. It helps to explain the relationship between multiple variables (Kevin & Macintosh D. O’Gorman (Robert), 2015). Likewise, SEM can also identify latent variables within the research model (Hair, Joseph, Sarstedt, Ringle, & Gudergan, 2018). As such, the SEM approach is widely adopted in contemporary business research and social science (e.g., consumer behaviour, marketing, and management issue) in the last decade (Kevin & Macintosh D. O’Gorman (Robert), 2015). To apply SEM, Tharenou et al. (2007) outlined the following three criteria:

- 1) A comprehensive study and theory on the variables have been tested.
- 2) The measured latent constructs should not be over 20.
- 3) Sample size should not be less than 100 (researchers are suggested to have larger samples).

The research framework of this study is composed of five independent variables (PSQ, SS, AP, ST, and SC) and one dependent variable (LOY); with the total constructs kept within 20. The relationship among each variable has been discussed with the support of relevant literature reviews. Based on the argument of literature reviews, hypotheses were developed for this research. Finally, the sample size of this study targets around 385 in order to fulfil the SEM requirements. To conclude, SEM is applied in analyzing the main hypotheses of this research (more discussion in section 4.3).

3.10.5 Multiple Regression

To evaluate the six sub-hypotheses on both the main and case studies (compare the degree of influence of the three types of APs on LOY and SS), the coefficient determination of a variable enables a researcher to assess the strength of this independent variable on a dependent variable (Saunders et al., 2019). Urdan (2016) mentioned that regression is commonly used in social science and can also help to identify the strongest and most important independent variable that significantly impacts the dependent variable from the multiple regression (Listen Data, 2020). Therefore, multiple regression serves the purpose for these six sub-hypotheses.

3.11 Ethical Consideration

This research is mainly conducted with a cross-sectional time horizon, with data collection for the main study by quantitative approach. In the case study, data collection adopted a mix (quantitative and qualitative) approach in order to replicate the research framework from the main study and acquire an in-depth understanding of the case study (HD business students from IA). Therefore, this research will seek ethical permission from the respondents and the permission from respective programme leaders in case student contact is needed.

Although the questionnaire will be distributed through the online platform, the researchers will invite some target respondents to distribute the questionnaire to their classmates or friends. The purposes and objectives of the study will be explained to those respondents. In addition, the purposes and objectives of the study will also clearly be stated at the beginning of the questionnaire so that all respondents can decide whether to answer the questionnaire. When the respondents have completed the questionnaire, a pop-up message will notify their consent in participating in this research study. To provide privacy and confidentiality, respondents are strictly anonymous.

For the qualitative interview in the case study, verbal consents from the interviewees and their respective programme leaders need to be obtained before commencing the interview. The purposes and objectives in conducting the interviews will be explained to all parties concerned. They can express their ideas at their own will and can refuse to answer any question. Besides, no sensitive and misleading questions will be asked during the interviews. The contact of the interviewer will be provided to them for any necessary clarification. Finally, all raw data will be saved in a spreadsheet file, with a password set to protect the file and enhance the security. The file will be kept by the researchers for seven years after submission of the research.

3.12 Conclusion

The research design and its methodologies have been thoroughly discussed in this chapter. To sum up, this study adopts positivism as the research philosophy and deductive research approach as the means to collect information. While the RQs and their RHs will use quantitative survey in cross-sectional time horizon, online questionnaires will be sent out for data collection. Approximately 385 valid responses aim to collect data

by snowball, non-probability sampling technique for the main empirical study, and around 150 useful responses (with the same approach) in the case study. Before the actual survey takes place, a pilot test is carried out to enhance data reliability. Data analysis on the validity, reliability, SEM, and multiple regression are then reviewed for this research. Also, qualitative interviews will be applied to the case study in order to explore the issue in a more in-depth manner. Finally, ethical issues in conducting this research and data privacy have all been discussed.

Chapter 4. Research Findings

4.1 Introduction

According to the previous description in literature review and methodology, SEM (Structural Equation Modeling) is mainly adopted for the main RHs, with multiple regression and ANOVA test used to check some sub-hypotheses. The section on data analysis is divided into three sections that include SEM analysis, multiple regression analysis, and ANOVA test. The preliminary data analysis of all descriptive statistics on the respondents' profile is presented by tables whereas the reliability analysis and correlation among variables are computed and described to address the research objectives. Figure 19 illustrates the content of this chapter.

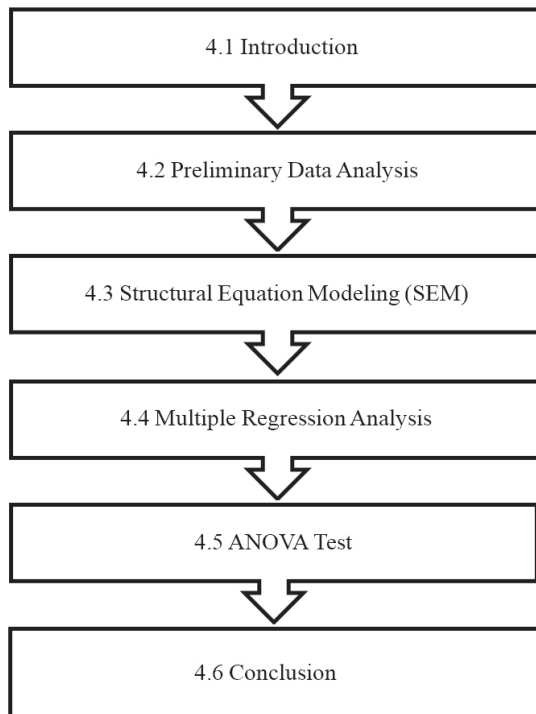


Figure 19. Outline for Chapter 4

4.1.1 Overview of the Survey Detail

The questionnaire is hosted in Google form platform, and the link of the questionnaire is sent to target respondents, who are invited to fill in the questionnaire and encouraged to forward the link to their classmates and friends who are currently studying sub-degree programme in HK. By encouraging their classmates and friends to fill in the questionnaire, a snowball effect is created. The questionnaire was hosted for around three weeks from 27 June 2020 to 16 July 2020. Finally, 389 respondents answered the questionnaire. As the number is slightly higher than the target (385 responses); the results generated is sufficient to undergo the relevant analyses, particularly SEM.

Table 22. – Labels of All Constructs

Construct	Item	Label
Student Satisfaction (SS)	1A	SS_1A
	1B	SS_1B
	1C	SS_1C
	1D	SS_1D
	1E	SS_1E
Student Trust (ST)	2A	ST_2A
	2B	ST_2B
	2C	ST_2C
	2D	ST_2D
Articulation Pathway (AP)	3A	AP_3A
	3B	AP_3B
	3C	AP_3C
	3D	AP_3D
	3E	AP_3E
	3F	AP_3F
	3G	AP_3G
	3H	AP_3H
	3I	AP_3I
	3J	AP_3J
Student Commitment (SC)	4A	SC_4A
	4B	SC_4B
	4C	SC_4C
	4D	SC_4D
	4E	SC_4E
	4F	SC_4F

Construct	Item	Label
Perceived Service Quality (PSQ)	5A	PSQ_5A
	5B	PSQ_5B
	5C	PSQ_5C
	5D	PSQ_5D
	5E	PSQ_5E
	5F	PSQ_5F
	5G	PSQ_5G
	5H	PSQ_5H
	5I	PSQ_5I
	5J	PSQ_5J
	5K	PSQ_5K
	5L	PSQ_5L
	5M	PSQ_5M
Student Loyalty (LOY)	5N	PSQ_5N
	5O	PSQ_5O
	5P	PSQ_5P
	6A	LOY_6A
	6B	LOY_6B
	6C	LOY_6C

There are six constructs in the survey, including Student Satisfaction (SS), Student Trust (ST), Articulation Pathway (AP) which covers OTU, UGC and LSE, Student Commitment (SC), Perceived Service Quality (PSQ) and Student Loyalty (LOY). Each construct is measured by several items, which were rated by the 7-point Likert scale. The labels of all the constructs in the questionnaire are exhibited in Table 22.

4.2 Preliminary Data Analysis

Since the respondents may make mistakes when filling in the questionnaire, it is necessary to perform preliminary data screening and cleaning (Lancaster, 2007) before any data analysis. This process helps to identify and correct the errors. Since, each online question is defaulted to “must answer” before submission, any incomplete questionnaire is not identified in this survey. Moreover, multiple answers in each question are not allowed. No out-of-range responses were found among the 44 items, and no irregularity response was obtained from the respondents. As all 389 responses are usable and valid for all statistical tests, data screening and cleaning is relatively easy in this survey. The descriptive analysis of the 44 items is then summarized in Table 23.

Table 23. – Descriptive and Frequency Analysis
of 44 Items for the Main Study

Item	Frequency of each value							Mean	S. D
	1	2	3	4	5	6	7		
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
SS_1A	1.8%	2.6%	12.6%	24.7%	34.2%	18.0%	6.2%	4.656	1.256
SS_1B	0.3%	5.1%	11.6%	24.2%	35.7%	16.2%	6.9%	4.663	1.239
SS_1C	12.6%	16.2%	24.9%	22.9%	14.1%	8.2%	1.0%	3.386	1.489
SS_1D	1.8%	3.3%	7.7%	28.0%	26.7%	21.3%	11.1%	4.828	1.343
SS_1E	0.8%	5.4%	11.3%	23.7%	33.2%	18.3%	7.5%	4.676	1.294
ST_2A	2.8%	4.4%	9.8%	24.7%	32.9%	18.5%	6.9%	4.638	1.347
ST_2B	2.6%	5.7%	11.3%	26.7%	27.5%	19.3%	6.9%	4.566	1.386
ST_2C	2.3%	4.6%	11.8%	29.1%	28.5%	16.7%	6.9%	4.548	1.338
ST_2D	2.8%	6.4%	10.5%	27.8%	26.0%	17.5%	9.0%	4.560	1.439
AP_3A	0.8%	2.1%	8.2%	14.9%	28.0%	20.8%	25.2%	5.306	1.382
AP_3B	1.8%	7.7%	15.4%	23.1%	29.8%	14.9%	7.2%	4.450	1.402
AP_3C	3.3%	5.9%	14.1%	30.6%	27.0%	13.6%	5.4%	4.344	1.364
AP_3D	2.6%	3.3%	13.4%	22.1%	26.0%	21.3%	11.3%	4.748	1.439

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
AP_3E	2.1%	3.3%	11.8%	28.5%	30.1%	16.2%	8.0%	4.617	1.312
AP_3F	1.8%	3.3%	12.3%	26.0%	26.5%	17.2%	12.9%	4.751	1.402
AP_3G	2.1%	3.1%	11.3%	34.5%	25.5%	13.9%	9.8%	4.589	1.328
AP_3H	2.1%	2.8%	11.3%	24.9%	32.4%	18.5%	8.0%	4.702	1.304
AP_3I	3.6%	4.1%	13.6%	28.3%	29.6%	12.3%	8.5%	4.470	1.399
AP_3J	0.8%	1.8%	5.4%	20.1%	25.7%	21.3%	24.9%	5.319	1.346
SC_4A	5.9%	7.2%	17.5%	30.1%	22.4%	9.3%	7.7%	4.144	1.504
SC_4B	5.4%	9.0%	15.4%	27.8%	24.4%	10.3%	7.7%	4.185	1.522
SC_4C	5.9%	9.0%	15.9%	30.6%	22.1%	8.7%	7.7%	4.111	1.518
SC_4D	4.4%	6.2%	13.6%	30.9%	21.6%	14.9%	8.5%	4.378	1.486
SC_4E	8.2%	9.0%	17.5%	29.3%	17.5%	12.6%	5.9%	4.003	1.577
SC_4F	6.7%	6.7%	12.6%	28.0%	23.4%	14.1%	8.5%	4.311	1.569
PSQ_5A	1.5%	5.4%	7.7%	26.0%	26.0%	24.9%	8.5%	4.781	1.357
PSQ_5B	1.5%	4.4%	10.0%	29.8%	26.5%	18.8%	9.0%	4.676	1.335
PSQ_5C	2.1%	4.6%	9.8%	31.9%	25.2%	18.5%	8.0%	4.609	1.344
PSQ_5D	3.1%	5.7%	12.6%	28.8%	27.5%	12.6%	9.8%	4.488	1.432
PSQ_5E	3.6%	5.1%	13.4%	30.9%	27.8%	11.6%	7.7%	4.396	1.393
PSQ_5F	2.3%	4.4%	15.2%	30.1%	25.7%	14.1%	8.2%	4.478	1.367
PSQ_5G	1.5%	4.1%	13.6%	23.7%	32.1%	14.9%	10.0%	4.656	1.353
PSQ_5H	0.8%	3.1%	9.5%	24.2%	29.3%	20.1%	13.1%	4.907	1.319
PSQ_5I	3.3%	3.6%	9.3%	24.4%	28.5%	15.2%	15.7%	4.794	1.486
PSQ_5J	1.8%	4.4%	11.6%	24.4%	30.9%	15.4%	11.6%	4.707	1.385
PSQ_5K	3.1%	2.6%	8.0%	22.6%	29.3%	20.3%	14.1%	4.900	1.424
PSQ_5L	1.3%	2.8%	6.9%	20.6%	32.4%	20.6%	15.4%	5.033	1.329
PSQ_5M	3.6%	5.4%	13.6%	28.8%	27.5%	12.6%	8.5%	4.429	1.426
PSQ_5N	3.1%	3.6%	13.4%	29.1%	26.7%	13.6%	10.5%	4.558	1.416
PSQ_5O	6.2%	7.5%	15.9%	29.6%	21.6%	12.1%	7.2%	4.180	1.526
PSQ_5P	2.1%	3.6%	14.1%	29.8%	27.8%	14.4%	8.2%	4.537	1.333
LOY_6A	5.7%	6.7%	16.7%	28.5%	23.4%	11.6%	7.5%	4.219	1.504
LOY_6B	8.2%	10.0%	19.8%	25.5%	19.3%	9.5%	7.7%	3.969	1.614
LOY_6C	8.2%	10.8%	19.8%	25.5%	16.5%	10.8%	8.5%	3.974	1.652

Note. Number of responses = 389

According to the table, most of the respondents gave ratings of 4 or 5, while 1 and 7 were relatively less frequently chosen. This represented that most of the items were distributed normally with different degrees of skewness. The graphical charts for all the items illustrated in appendix E also demonstrated this tendency. By excluding the mid-point value (4),

the percentage of values 5–7 is relatively higher than that of values 1–3, which means that respondents showed a higher tendency to agree on the items mentioned in the questionnaire (except SS_1C; SC-4E; LOY_6B and LOY_6C). Since this research will conduct inferential analysis (SEM/ Multiple Regression/ ANOVA), the descriptive analysis will not provide too much insight on the hypotheses. The researchers will then conduct a more in-depth discussion on inferential analysis.

4.2.1 Analysis of Respondents' Profiles

The respondents' profiles were summarized and tabulated in Table 24, with corresponding charts referred to as Appendix F. For the main study, a total of 389 completed responses were received.

As shown in Table 24, over 50 percent of the respondents were female (56 percent), who accounted for a slightly more than half of the respondents in this study. The remaining 44 percent of the respondents were male.

For the age distribution, around 60 percent of the respondents fall into the age group of 18–20, followed by 32 percent in the age group of 21–23. Approximately eight percent of the respondents aged of 24 or above, and only less than one percent of the respondents were 17 or below. The findings are reasonable because most of the students in HK finish their secondary education at the age of 18 in HK. Moreover, respondents at the age of 24 or above had acquired certain amount of work experience (either part-time or full-time) before commencing their sub-degree studies.

Table 24. – Profiles of the Respondents

Domain	Category	%	N
1	2	3	4
Gender	Male	44	171
	Female	56	218
	Total	100	389
Age Groups	17 or below	0.5	2
	18–20	59.9	233
	21–23	31.6	123
	24 or above	8	31
	Total	100	389
Types of sub-degree programmes	Higher Diploma	58.6	228
	Associate Degree	41.4	161
	Total	100	389

Operational mode	Government-funded	43.4	169
	Self-financed	56.6	220
	Total	100	389
Articulation pathway to the sub-degree programmes	DSE	61.4	239
	PYJ	6.4	25
	DFS/DVE/DIP	29.1	113
	Pre-AD	1.8	7
	Others	1.3	5
	Total	100	389
Work experience before enrolling into sub-degree programme	Full-time only	4.1	16
	Part-time only	70.7	275
	Full-time and part-time	9.8	38
	No work experience.	15.4	60
	Total	100	389
Year of study	Year 1	62	241
	Year 2	38	148
	Total	100	389
Name of the institutes	Caritas Institute	2.5	10
	CC of CityU	7.7	30
	HKU space	20.8	81
	CC from HKBU	9	35
	HKCC (under the HK PU)	22.6	88
	HKIVE / HKDI (under VTC)	32.4	126
	Others	4.9	19
	Total	100	389
Disciplines	Art and Design	7.5	29
	Science and IT	24.4	95
	Health Care and Health Science	3.9	15
	Social Science and Humanities	11.6	45
	Business & Management	23.4	91
	Hospitality and Tourism	20.6	80
	Education	6.1	24
	Others	2.5	10
	Total	100	389

The distribution on the different types of sub-degree programme shows that around 59 percent of the respondents are studying HD, while the rest of the respondents are studying AD (41 percent). Regarding the modes of programme operation, nearly 57 percent of the respondents are studying self-financed sub-degree programmes, whereas around 43 percent of

the respondents are studying in government-funded programmes. These findings are considered logical as there are fewer government-funded programmes in comparison (Concourse for Self-financing Post-secondary Education, 2020).

Regarding the source of progression pathways into sub-degree programmes, DSE (61.5 percent) and DFS (29 percent) are the two major routes for the students to get into the sub-degree programmes.

Over 80 percent of the respondents have some work experience before enrolling into the sub-degree programmes. Table 24 indicates that around 71 percent of the respondents have had part-time work experience, while around 10 percent of the respondents have gained both part-time and full-time work experience. Meanwhile, approximately four percent of the respondents had full-time work experience before studying their sub-degree programmes. The remaining 15.4 percent of the respondents have had no work experience before starting their sub-degree programmes. The results reflected that it is very common for the respondents to have part-time jobs before commencing their studies in the sub-degree programmes. As many DSE students and DFS students had a long summer break before actually starting their studies in the sub-degree programmes, most of them would look for part-time jobs to enrich their exposure. Hence, many of them have had certain amount of work experience before commencement of their studies in the sub-degree programmes.

Among the 389 respondents, around 62 percent (241 respondents) are currently in year 1, while 38 percent (148 respondents) are at their second year of study, which is also the final year for a regular sub-degree programme.

In addition, most of the respondents (32.4 percent) are studying in the HK Institute of Vocational Education / HK Design Institute (under VTC) or HK IVE/ HK DI (Under VTC), whereas the HK Community College (under the HK Polytechnic University) and HKU SPACE Community College (under The University of HK) made up the second and third sources of the respondents, which accounted for 22.6 percent and 20.8 percent respectively.

Regarding the disciplines of their study, most of the respondents are studying Science & IT, Business & Management and Hospitality & Tourism, which accounted for 24 percent, 23 percent, and 20 percent respectively.

4.2.2 Data Reliability Test for The Main Study

Since 44 questions (excluding the profile questions) are adopted to measure six variables, data reliability test should be performed for checking the internal consistency (Huck, 2012) to ensure that the scales applied in the items are consistent, suitable, and can provide reliable results.

Reliability analysis can be reflected by Cronbach's Alpha value (Collis & Hussey, 2013; Kline, 2005; Strang, 2015). This alpha coefficient is a value between 0 to 1 (Saunders et al., 2019). According to Kline (2005), the Cronbach's Alpha (α) values of 0.9 or above could be considered highly reliable, while values higher than 0.8 is good. Meanwhile, values below 0.7 should not be considered. Several research studies (Ali et al., 2016; Ardi et al., 2012; Casidy, 2014a; Serenko, 2011) on LOY also adopted the same criterion in evaluating data reliability. With the SmartPLS3.0, the Cronbach's Alpha (α) value of all latent variables was presented in Table 25.

Based on Table 25, all latent variables exhibit a value from 0.92 (LOY) to 0.969 (PSQ); which are all over 0.9 and able to meet the benchmark. Hence, the internal consistency and reliability for the scales can be considered high and thus can be accepted.

Table 25. – Reliability Analysis on Items and Measuring Scales

Latent Variable	Mean	Standard Deviation	Cronbach's Alpha (α)
AP	4.730	1.405	0.927
LOY	4.054	1.596	0.920
PSQ	4.633	1.407	0.969
SC	4.189	1.535	0.965
SS	4.442	1.430	0.928
ST	4.578	1.379	0.940

4.2.3 Correlation Analysis of the Data for the Empirical Study

Creswell & Creswell (2017) and Saunders et al. (2019) explained that correlation is about measuring the change of one variable on another variable's change in order to observe the cause-and-effect between them, by mainly measuring the linear relationship among the variables.

The correlation coefficient values range from +1 to -1 (Collis & Hussey, 2013; Saunders et al., 2019; Sekaran & Bougie, 2013). While positive values represent positive correlation, +1.0 describes the perfect positive correlation of the two variables and vice versa. The value of 0 represents no correlation, which implies that the two variables are perfectly independent (Beins

& McCarthy, 2017; Saunders et al., 2019). Saunders et al. (2019) suggested correlation values that fall between 0.5 to 1 represents a strong correlation, whereas values of 0.35–0.49 and 0.1–0.34 represent a moderate and weak correlation with the values respectively. With the help of the Excel ToolPak, the bivariate relationships among all the variables are calculated with the values presented in Table 26. The correlation coefficient figures are higher than 0.5 for all variables, which implies that the bivariate relationships between all variables are high and positively correlated. In addition, 5 pairs of variables have shown a substantial positive relationship: 1) LOY and SC (0.891); 2) PSQ and ST (0.827); 3) PSQ and SC (0.819); 4) LOY and PSQ (0.813); and 5) SS and ST (0.81). Although a high correlation coefficient can reflect a strong correlation between these two variables; it did not indicate a causal impact (Huck, 2012). To understand the causal relationship and the impacts, SEM, an advanced statistical analysis technique, is used in order to discover the causal relationship of all variables for this research model.

Table 26. – Correlation Matrix among Variables

	AP	LOY	PSQ	SC	SS	ST
AP	1.000					
LOY	0.611	1.000				
PSQ	0.652	0.813*	1.000			
SC	0.574	0.891*	0.819*	1.000		
SS	0.563	0.712	0.729	0.729	1.000	
ST	0.600	0.727	0.827*	0.768	0.810*	1.000

Note. *Substantial positive relationship

4.3 Structural Equation Modeling (SEM)

SEM includes two different techniques: Covariance Based (CB-SEM) and Partial Least Square (PLS-SEM). CB-SEM is mainly used to confirm the theory where the PLS-SEM is used to develop theory under exploratory studies. Among these two techniques, PLS-SEM is widely used in SEM (Astrachan, Patel, & Wanzanried, 2014). Meanwhile, SmartPLS3.0, the latest software, is adopted for the PLS-SEM analysis.

According to Hair et al. (2017), PLS-SEM is suggested when the theory is less developed and emphasizes more on the exploratory research than the confirmatory one. Moreover, PLS-SEM is especially suitable for serving research purposes when:

- 1) *“The aim of the research model is to predict key target constructs.*

- 2) *Formatively measured constructs are part of the structural model.*
- 3) *The structural model is complex (many constructs and many indicators)*
- 4) *Relatively small sample size*
- 5) *Data is not normally distributed and*
- 6) *The plan is to use latent variable scores in subsequent analyses.”*

(Hair Jr et al., 2016, p. 23)

This research aims to study the antecedent factors that affect LOY and the relationship among all the factors at the sub-degree level in HK. It is more of an exploratory approach, while predicting constructs are the key driver constructs in this research. Moreover, the theoretical framework extends the study of other studies on LOY (Ali et al., 2016; Annamdevula & Bellamkonda, 2016b; Kashif, Ramayah, & Sarifuddin, 2016; Perin et al., 2012; Quintal, Wong, Sultan, & Wong, 2012; Rojas-Méndez et al., 2009). Besides, to use PLS-SEM, the sample size needs to meet a minimum of 100. Since the sample size for this research is 389, it fulfills the requirement of PLS-SEM, which is suggested to use for this study under such conditions.

Systematic evaluation of PLS-SEM should undergo two stages (Hair Jr et al., 2016, pp. 9–10), namely Measurement Model (MM) and Structural Model (SM). MM illustrates the way to assess the constructs by indicators that stand for the question items. MM can be further categorized into reflective MM and formative MM. Reflective MM (RMM) means all items in the research model that can reflect the same construct. Hence, the indicators of the respective construct should correlate with each other, which means that all items are interchangeable. Alternatively, it can be understood that when a single item is removed from the construct, the meaning will remain the same. On the contrary, formative MM (FMM) does not required presence of correlated indicators.

Since all variables (constructs) in this research are measured by their corresponding indicators and the characteristics of each construct are represented or explained by the corresponding indicators, the model in this research is considered a kind of reflective measurement.

4.3.1 Reflective Measurement Model

Before performing RMM, each construct needs to verify the data reliability and validity, so that suitable support will be provided for the latent variables. Hair Jr et al. (2016) further explained the two stages of performing PLS-SEM, which are summarized in Table 27.

Table 27. – Systematic Evaluation of PLS-SEM

Stage 1: Evaluation of the Reflective Measurement Models (RMM)
• Internal consistency (Cronbach's alpha, composite reliability) • Convergent validity (indicator reliability, Average Variance Extracted) • Discriminant validity (Fornell-Larcker checking and Cross-loading checking)
Stage 2: Evaluation of the Structural Model (SM)
• Coefficients of determination (R^2) • Predictive relevance (Q^2) • Size and significance of path coefficients • f^2 effect sizes • q^2 effect sizes

Note. The steps in performing the PLS-SEM. Adapted from *A primer on partial least squares structural equation modeling (PLS-SEM)*, (p.106), by Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M., 2016, Sage publications.

4.3.1.1 Outer Loading of Each Item. Before performing the actual analysis by the PLS-SEM, preliminary factor loading of each item should be investigated. Hair et al. (2016) suggested the items to be deleted if the outer loading value is below 0.7, which is a figure that implies the item is not statistically significant, this concept was also supported by Arteaga-Sánchez, Belda-Ruiz, Ros-Galvez, & Rosa-Garcia (2020) and Pedro, Leitão, & Alves (2020). Table 28 has summarized the outer loading value of each item with the SmartPLS3.0 software.

Table 28. – Factor Loading for Each Item

Construct	Items	Loading Value
1	2	3
SS	SS_1A	0.925
	SS_1B	0.897
	SS_1C	0.132
	SS_1D	0.888
	SS_1E	0.915
ST	ST_2A	0.927
	ST_2B	0.952
	ST_2C	0.937
	ST_2D	0.865

Construct	Items	Loading Value
1	2	3
PSQ	PSQ_5A	0.775
	PSQ_5B	0.841
	PSQ_5C	0.815
	PSQ_5D	0.865
	PSQ_5E	0.872
	PSQ_5F	0.882
	PSQ_5G	0.810
	PSQ_5H	0.797
	PSQ_5I	0.748

1	2	3
AP	AP_3A	0.574
	AP_3B	0.719
	AP_3C	0.773
	AP_3D	0.839
	AP_3E	0.870
	AP_3F	0.828
	AP_3G	0.867
	AP_3H	0.865
	AP_3I	0.862
	AP_3J	0.543
SC	SC_4A	0.924
	SC_4B	0.927
	SC_4C	0.947
	SC_4D	0.892
	SC_4E	0.930
	SC_4F	0.917

1	2	3
PSQ	PSQ_5J	0.843
	PSQ_5K	0.769
	PSQ_5L	0.782
	PSQ_5M	0.861
	PSQ_5N	0.821
	PSQ_5O	0.823
	PSQ_5P	0.904
LOY	LOY_6A	0.925
	LOY_6B	0.942
	LOY_6C	0.919

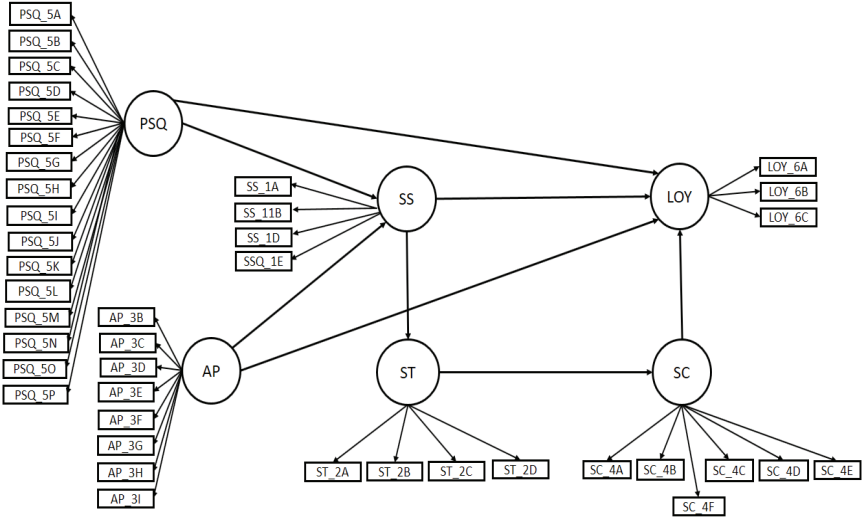


Figure 20. New Path Model for PLS-SEM Analysis

As the outer loading values of item 1C, 3A, and 3J are smaller than the indicated value (0.7), these three items are taken out for the following PLS-SEM analysis. Figure 20 presents the updated research model after these three items have been removed, whilst (Table 29) shows the updated values.

Table 29. – New Factor Loading Value

Construct	Items	Loading Value	Construct	Items	Loading Value
SS	SS_1A	0.925	PSQ	PSQ_5A	0.775
	SS_1B	0.899		PSQ_5B	0.841
	SS_1D	0.888		PSQ_5C	0.816
	SS_1E	0.915		PSQ_5D	0.865
ST	ST_2A	0.927		PSQ_5E	0.872
	ST_2B	0.952		PSQ_5F	0.882
	ST_2C	0.937		PSQ_5G	0.810
	ST_2D	0.865		PSQ_5H	0.797
AP	AP_3B	0.723		PSQ_5I	0.748
	AP_3C	0.788		PSQ_5J	0.843
	AP_3D	0.839		PSQ_5K	0.769
	AP_3E	0.880		PSQ_5L	0.782
	AP_3F	0.829		PSQ_5M	0.861
	AP_3G	0.875		PSQ_5N	0.821
	AP_3H	0.862		PSQ_5O	0.823
	AP_3I	0.874		PSQ_5P	0.904
SC	SC_4A	0.924	LOY	LOY_6A	0.925
	SC_4B	0.927		LOY_6B	0.942
	SC_4C	0.947		LOY_6C	0.919
	SC_4D	0.892			
	SC_4E	0.930			
	SC_4F	0.917			

4.3.1.2 Internal Consistency. According to Hair Jr et al. (2016), internal consistency is usually determined by Cronbach's alpha. However, the number of items may lead to underestimation. Hence, Composite Reliability (CR) is suggested for internal consistency (Hair et al., 2017; Peterson & Kim, 2013). Just like Cronbach's alpha, CR also ranges from 0–1, with the larger CR value gives a stronger reliability level (Hair Jr et al., 2016). Most of the researchers basically agreed that 0.7 is a critical value for CR (Arteaga-Sánchez et al., 2020; Lee, Daisy, Ng, & Bogomolova, 2020; Pedro et al.,

2020; Peterson, 1994). A CR value ranged between 0.6 and 0.7 is regarded as acceptable, whereas values below 0.6 show that internal consistency is weak. The CR values of all variables are presented in Table 30, which shows that all values are over 0.7. These figures have proven that internal consistency reliability is considered acceptable for this research.

4.3.1.3 Convergent Validity. It can be evaluated by the outer loadings of each indicator (also named as item) and the Average Variance Extracted (AVE) (Hair Jr et al., 2017). The indicator reliability is statistically significant when the outer loading value is 0.708 or above. The indicator can be considered to have been removed from the scale if the value is between 0.4–0.7. For values below 0.4, the indicator should be dropped from the construct (Hair Jr et al., 2016). Square the value of the outer loading will obtain the corresponding indicator reliability (Hair Jr et al., 2016). If the figure of indicator reliability is higher than 0.5, it is considered statistically significant. Table 32 shows that all outer loading values are over 0.708. The indicators' reliability figures are all over 0.5. Thus, all indicators are statistically significant, and no more items need to be dropped from the measuring scale.

Table 30. – Reflective Measurement Model Test Result

Latent Variable	Item/ Indicator	Loading	Indicator reliability	<i>t</i> -value*	CR	AVE	Discriminant validity
1	2	3	4	5	6	7	8
SS	SS_1A	0.925	0.8553	106.133	0.949	0.822	Yes
	SS_1B	0.899	0.8078	69.450			
	SS_1D	0.888	0.7884	70.757			
	SS_1E	0.915	0.8364	92.893			
ST	ST_2A	0.927	0.8598	101.698	0.957	0.848	Yes
	ST_2B	0.952	0.9070	177.389			
	ST_2C	0.937	0.8785	125.099			
	ST_2D	0.865	0.7480	43.041			
AP	AP_3B	0.723	0.5233	22.413	0.948	0.698	Yes
	AP_3C	0.788	0.6213	30.429			
	AP_3D	0.839	0.7047	43.809			
	AP_3E	0.880	0.7739	62.598			
	AP_3F	0.829	0.6871	29.878			
	AP_3G	0.875	0.7651	54.217			

1	2	3	4	5	6	7	8
AP	AP_3H	0.862	0.7437	35.778	0.948	0.698	Yes
	AP_3I	0.874	0.7631	49.133			
SC	SC_4A	0.924	0.8531	101.463	0.972	0.852	Yes
	SC_4B	0.927	0.8594	81.208			
	SC_4C	0.947	0.8972	152.462			
	SC_4D	0.892	0.7955	69.693			
	SC_4E	0.930	0.8648	99.381			
	SC_4F	0.917	0.8401	83.864			
PSQ	PSQ_5A	0.775	0.6010	33.173	0.972	0.683	Yes
	PSQ_5B	0.841	0.7074	43.437			
	PSQ_5C	0.816	0.6651	39.981			
	PSQ_5D	0.865	0.7491	55.349			
	PSQ_5E	0.872	0.7597	60.208			
	PSQ_5F	0.882	0.7775	64.792			
	PSQ_5G	0.810	0.6555	30.222			
	PSQ_5H	0.797	0.6349	30.930			
	PSQ_5I	0.748	0.5590	21.295			
	PSQ_5J	0.843	0.7102	29.853			
	PSQ_5K	0.769	0.5909	28.878			
	PSQ_5L	0.782	0.6115	30.073			
	PSQ_5M	0.861	0.7409	58.084			
	PSQ_5N	0.821	0.6735	38.556			
	PSQ_5O	0.823	0.6767	39.676			
	PSQ_5P	0.904	0.8176	82.213			
LOY	LOY_6A	0.925	0.8563	80.090	0.950	0.863	Yes
	LOY_6B	0.942	0.8874	127.856			
	LOY_6C	0.919	0.8441	80.979			

Note: * *t*-value: 95% significant level

AVE value should be evaluated to examine the convergent validity at the construct level. The AVE value should be 0.5 or above, which explains that a particular construct has achieved 50 percent variance among its indicators. Values below 0.5 represent the items that demonstrate greater variance in error (Hair, Joseph F., Sarstedt, Ringle, & Gudergan, 2018). Table 32 shows that all the constructs have the AVE values from

0.638 (PSQ) to 0.863 (LOY), which are larger than the critical value of 0.5. Thus, the AVE is established for all the constructs. Under this circumstance, all the indicators' reliability and AVE are supported, which reveals that the convergent validity of this research is also supported.

4.3.1.4 Discriminant Validity. Used to examine “*how a particular construct is distinct from other constructs*” (Hair et al., 2016, p115). The discriminant validity examination contains two measures – the first one is to check the cross-loading of each item, followed by the Fornell-Larcker Criterion.

Hair Jr et al. (2016, p. 115), stipulated that “*an indicator's outer loading on the associated construct should be greater than any of its cross-loading on other constructs*”. Cross-loading values that are larger than the indicator's outer loading, will result in discriminant validity. The cross-loading checking for this research is illustrated in (Table 31).

According to (Table 31), the outer loading values of the 41 indicators are higher than their cross-loading values. The indicator of SS_1A, for example, has the highest loading value (0.925) to its corresponding constructs of SS. Meanwhile, the cross-loading value of SS_1A on other constructs (ST, AP, SC, PSQ and LOY) are in the range of 0.491–0.74, which are all smaller than 0.925.

Table 31. – Cross Loading for Each Construct

	SS	ST	AP	SC	PSQ	LOY
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
SS_1A	0.925	0.740	0.491	0.678	0.662	0.656
SS_1B	0.899	0.722	0.536	0.611	0.651	0.598
SS_1D	0.888	0.695	0.488	0.662	0.642	0.651
SS_1E	0.915	0.777	0.528	0.691	0.689	0.673
ST_2A	0.762	0.927	0.528	0.690	0.745	0.639
ST_2B	0.772	0.952	0.559	0.747	0.785	0.710
ST_2C	0.760	0.937	0.581	0.708	0.774	0.676
ST_2D	0.687	0.865	0.543	0.681	0.745	0.653
AP_3B	0.432	0.461	0.723	0.400	0.472	0.426
AP_3C	0.458	0.459	0.788	0.481	0.503	0.521
AP_3D	0.447	0.478	0.839	0.423	0.521	0.462
AP_3E	0.511	0.535	0.880	0.481	0.574	0.519
AP_3F	0.446	0.492	0.829	0.484	0.544	0.504

1	2	3	4	5	6	7
AP_3G	0.488	0.553	0.875	0.512	0.577	0.556
AP_3H	0.514	0.540	0.862	0.540	0.608	0.550
AP_3I	0.458	0.481	0.874	0.500	0.546	0.527
SC_4A	0.706	0.777	0.561	0.924	0.782	0.827
SC_4B	0.688	0.707	0.537	0.927	0.746	0.811
SC_4C	0.691	0.709	0.538	0.947	0.757	0.848
SC_4D	0.666	0.702	0.524	0.892	0.742	0.777
SC_4E	0.648	0.663	0.484	0.930	0.745	0.822
SC_4F	0.636	0.689	0.533	0.917	0.765	0.846
PSQ_5A	0.615	0.660	0.592	0.633	0.775	0.624
PSQ_5B	0.639	0.721	0.632	0.701	0.841	0.702
PSQ_5C	0.653	0.695	0.615	0.657	0.816	0.662
PSQ_5D	0.633	0.733	0.563	0.703	0.865	0.707
PSQ_5E	0.666	0.731	0.578	0.724	0.872	0.720
PSQ_5F	0.679	0.775	0.602	0.754	0.882	0.757
PSQ_5G	0.570	0.619	0.480	0.626	0.810	0.625
PSQ_5H	0.487	0.617	0.474	0.593	0.797	0.593
PSQ_5I	0.444	0.576	0.369	0.590	0.748	0.553
PSQ_5J	0.561	0.690	0.504	0.688	0.843	0.650
PSQ_5K	0.485	0.610	0.454	0.574	0.769	0.547
PSQ_5L	0.501	0.609	0.409	0.550	0.782	0.528
PSQ_5M	0.661	0.697	0.588	0.755	0.861	0.755
PSQ_5N	0.544	0.624	0.502	0.633	0.821	0.652
PSQ_5O	0.671	0.741	0.574	0.799	0.823	0.784
PSQ_5P	0.720	0.772	0.594	0.765	0.904	0.777
LOY_6A	0.714	0.734	0.591	0.827	0.810	0.925
LOY_6B	0.646	0.684	0.563	0.844	0.762	0.942
LOY_6C	0.621	0.604	0.546	0.811	0.689	0.919

The next step of the discriminant validity assessment is to check the Fornell-Larcker Criterion. The rationale to evaluate the Fornell-Larcker is to test whether a construct shares more variance with its indicators instead of other constructs. If the square root values of AVE give a greater value

than the construct's correlation with other constructs, discriminant validity is said to be established or the assessment has failed. (Table 32) presents the relationships among all the constructs.

Table 32. – Fornell-Larcker Criterion Table

	AP	LOY	PSQ	SC	SS	ST
AP	0.835					
LOY	0.611	0.929				
PSQ	0.652	0.813	0.827			
SC	0.574	0.891	0.819	0.923		
SS	0.563	0.712	0.729	0.729	0.907	
ST	0.600	0.727	0.826	0.768	0.810	0.921

Note: 1. The diagonal value shows the square root of AVE; 2. Other values show the correlation values

According to (Table 32), all the square root values of AVE are larger than the correlations of their corresponding constructs in this research model. For instance, the AVE's square root value of AP (0.835) is greater than the correlation value (range from 0.563–0.652) of its corresponding constructs (LOY, PSQ, SC, SS, ST).

To conclude, cross-loadings and Fornell-Larcker Criterion of this research have met the requirement of discriminant validity criteria. Thus, the researchers can conclude by establishing that the discriminant validity for this study is established. All test results for RMM of this research are summarized in Table 32.

4.3.2 Structural Model (SM)

The RMM assessed the reliability and validity of the constructs, while the SM is to analyze the path of this research model. This evaluation reflects the accuracy of the research model by estimating the constructs (Hair Jr et al., 2016, p. 190). SM assessment contains six steps. While the first is the collinearity issues of the SM, the second one is path coefficient of the SM; the third and fourth ones are the coefficient of determination (R^2) and its effect size (f^2), and the fifth and sixth ones are predictive relevance (Q^2) and its effect size (q^2) respectively (Hair et al., 2017).

4.3.2.1 Collinearity Evaluation among Predictors. Collinearity (or multicollinearity for more than two variables) occurs when the predicted variables are strongly correlated to each another (Saunders et al., 2019). Hence, it is hard to evaluate the effect of an individual variable. According to Hair

Jr et al. (2017), collinearity will create an unreliable inferential result. Thus, the collinearity issue needs to be examined for this research. The value of Variance Inflation Factor (VIF) in each predictor item reflects the degree of the collinearity, and the VIF value should be under 5 (Hair Jr et al., 2017) in order to avoid the collinearity issue. By referring to the research model, two groups of constructs need to be assessed for the collinearity, which include 1) PSQ, SS, AP, SC as the predictors of LOY and 2) PSQ, AP as the predictors of SS. Although ST is the predictor of SC and SS is the predictor of ST, the collinearity issue should not exist because there is only one predictor for each construct. Table 33 exhibits the VIF findings by SmartPLS3.0.

Table 33. – Collinearity Examination (VIF Value)

	AP	LOY	PSQ	SC	SS	ST
AP		1.794			1.741	
LOY						
PSQ		3.854			1.741	
SC		3.434				
SS		2.460				1.000
ST				1.000		

According to this table, the collinearity issue does not exist because all VIF values smaller than the reference figure of 5 in these two groups of constructs.

4.3.2.2 Path Coefficient. The path coefficient reflects the significance and relevance of each path in the SM. By referring to the unified weight in linear regression, it explains the causal relationship between variables under the SEM approach. Path coefficient also exhibits the hypothesized relationship among constructs (Garson, 2013). Hair et al. (2017) mentioned that -1 to $+1$ is the path coefficient range, and a strong positive relationship exists when the coefficient is close to $+1$. On the contrary, a strong negative relationship is found when the coefficient is close to -1 . Likewise, values that are close to 0 represents an insignificant or weak relationships.

Bootstrapping calculation is “*a statistical calculation by creating replicated data that the samples are drawn from the data are then being replaced*” (Tabachnick, Fidell, & Ullman, 2007, p. 143). The calculation can be performed by SmartPLS3.0 and can obtain the empirical t -value, which allows the researcher to test the coefficient significance of each path of the research model (Hair et al., 2017). More importantly, PLS-SEM does not require a normally distributed data set. Hence, a non-parametric bootstrap technique is used. The bootstrapping analysis creates a sampling distribution

to fit the collected data (Hair et al., 2017). Since PLS-SEM does not specify data distribution, the bootstrapping technique can be conducted for latent variables' standard error (Ali, F., Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018). For this research, 5,000 bootstrapping samples are used because they are widely used in business research (Arteaga-Sánchez et al., 2020; Lee et al., 2020; Pedro et al., 2020). Table 34 exhibits the path coefficients, *t*-value, and the significance of each path.

Table 34. – Path Coefficients of Structural Model

Hypothesis	Path	Path coefficient (β)	<i>t</i> -value	Critical value	Statistically significance (Y/N)	<i>p</i> -Value	Critical value	Statistically significance (Y/N)
H1	PSQ→LOY	0.181	3.939	1.96	Y	0.000	$p < 0.001$	Y***
H2	PSQ→SS	0.630	14.072	1.96	Y	0.000	$p < 0.001$	Y***
H3	SS→LOY	0.054	1.319	1.96	N	0.187	$p < 0.01$	N
H5	AP→LOY	0.087	2.643	1.96	Y	0.008	$p < 0.01$	Y**
H6	AP→SS	0.152	3.188	1.96	Y	0.001	$p < 0.01$	Y***
H8	SS→ST	0.810	40.316	1.96	Y	0.000	$p < 0.001$	Y***
H9	ST→SC	0.768	28.607	1.96	Y	0.000	$p < 0.001$	Y***
H10	SC→LOY	0.653	15.826	1.96	Y	0.000	$p < 0.001$	Y***

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.1$

Based on (Table 34), most of the path model relations are statistically significant, at various significant levels, except the path of SS → LOY, which has *t*-values that are larger than the critical value (1.96) and all *p*-values are below the critical value. The results also support H1: PSQ positively influences LOY ($\beta = 0.181$, $t = 3.939$, $p < 0.001$), H2: PSQ positively influences SS ($\beta = 0.630$, $t = 14.072$, $p < 0.001$), H5: AP positively influences LOY ($\beta = 0.087$, $t = 2.643$, $p < 0.01$), H6: AP positively influences SS ($\beta = 0.152$, $t = 3.188$, $p < 0.01$), H8: SS positively influences ST ($\beta = 0.810$, $t = 40.316$, $p < 0.001$), H9: ST positively influences SC ($\beta = 0.768$, $t = 28.607$, $p < 0.001$), and H10: SC positively influences LOY ($\beta = 0.653$, $t = 15.826$, $p < 0.001$).

Since H3 is not supported, the path is statistically insignificant, H4 and H7 (the mediating effect of SS between PSQ and LOY and the mediating effect of SS between AP and LOY) also failed to support this research model. Figure 21 illustrates the findings of the SM.

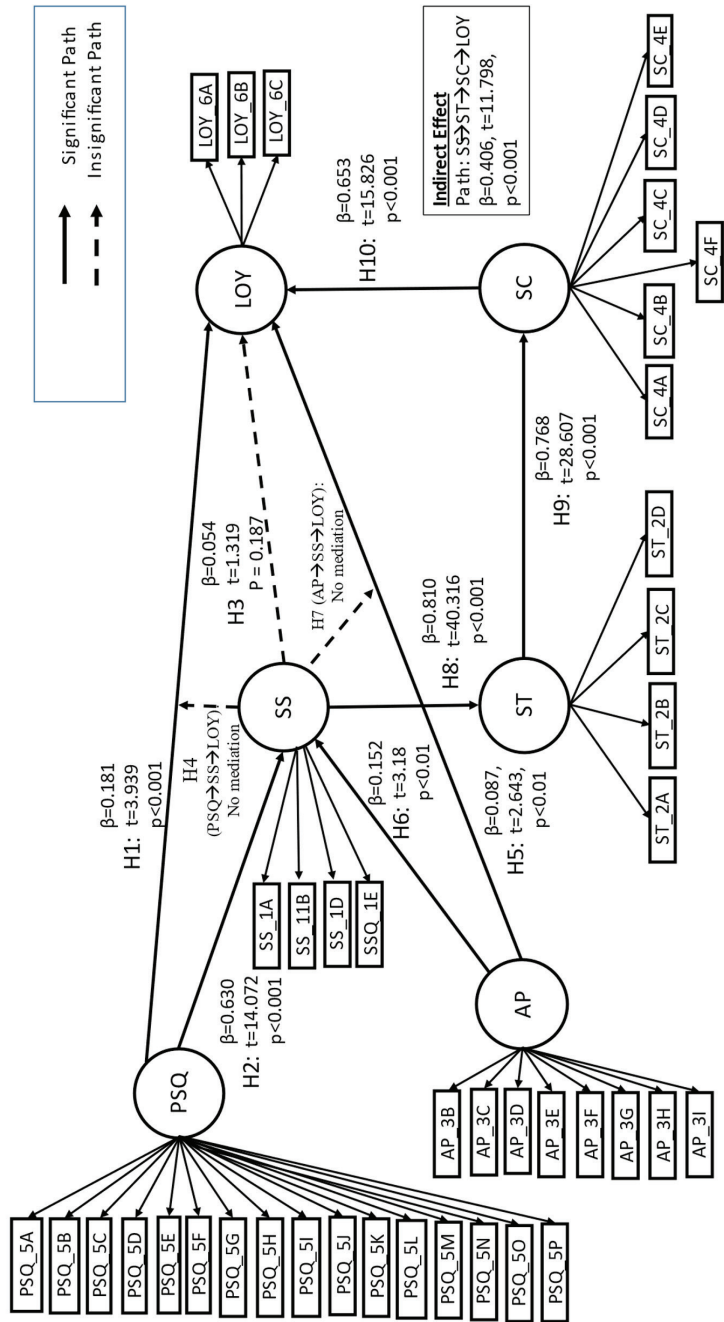


Figure 21. Results of PLS-SEM Analysis

4.3.2.3 Coefficient of Determination (R^2). The R^2 measures the predictive accuracy of the model (Hair Jr et al., 2016), with the value range of the R^2 set between 0 to 1 (Hair et al., 2016). The larger the value, the greater the predictive accuracy power of the latent variable. An acceptable level of the R^2 value is 0.25 (Ali et al., 2018; Hair Jr et al., 2016), while 0.75 represents the predictive accuracy is substantial. Likewise, 0.5 and 0.25 stand for a moderate and weak accuracy respectively (Henseler, Ringle, & Sinkovics, 2009). The R^2 values for this research are exhibited in (Table 35). The model of this study demonstrates a moderate to substantial predictive capacity, especially the predictive accuracy of LOY, in which the R^2 value shows 0.821.

Table 35. – R^2 for This Research Model

Latent variable	R Square (R^2)	Predictive Accuracy
LOY	0.821	Substantial
SC	0.589	Moderate
SS	0.545	Moderate
ST	0.655	Substantial

4.3.2.4 Effect Size (f^2) of Coefficient of Determination (R^2). Hair et al. (2017) argued that the coefficient of the determinant (R^2) would change if an exogenous construct (predictive construct) is missing. Therefore, the missing construct whether brings a significant effect on the endogenous constructs or needs to be considered and is referred to as the effect size: (f^2) value. Cohen (1988) explained that the f^2 value of 0.02, 0.15, and 0.35 demonstrate weak, moderate, and strong effects of the exogenous construct respectively, whereas values below 0.02 indicate no effect. Table 36 exhibits the f^2 value of each exogenous latent variable, all of these are larger than 0.02, except SS → LOY (0.007) that is far below the critical value.

Table 36. – Effect Size (f^2) for The Research Model

Latent Variable	LOY	SC	SS	ST
AP	0.024		0.029	
LOY				
PSQ	0.047		0.502 (large)	
SC	0.692 (large)			
SS	0.007 (no effect)			1.901
ST		1.434		

4.3.2.5 Predictive Relevance (Q^2). Apart from the R^2 , Predictive Relevance can also be used to examine the Stone-Geisser's Q^2 value (Geisser, 1974; Stone, 1974). When Q^2 value is larger than 0, the reflective endogenous latent variable shows predictive relevance on an exogenous variable (Hair et al., 2016 p. 202). In contrast, the Q^2 value of 0 or smaller indicates weak or no predictive relevance. The Q^2 value can be obtained by the blindfolding procedures for a specified omission distance D with a value between 5–10 (Hair Jr et al., 2016). Table 37 presents the findings from the blindfolding analysis. From (Table 37), all Q^2 values of the path model are larger than 0, which indicates that this research model exhibits predictive relevance.

Table 37. – Q^2 and q^2 Value for This Research Model

$\square$	SSO	SSE	$Q^2 = (1 - \text{SSE} / \text{SSO})$	$q^2 = \frac{(Q^2_{\text{included}} - Q^2_{\text{excluded}})}{(1 - Q^2_{\text{included}})}$
AP	3112.000	3112.000		
LOY	1167.000	350.958	0.701	
PSQ	6224.000	6224.000		
SC	2334.000	1173.579	0.497	0.683
SS	1556.000	865.200	0.444	0.860
ST	1556.000	697.996	0.552	0.493

Note: The blindfolding setting with the omission distance of $D = 7$

4.3.2.6 Effect Size (q^2) of Predictive Relevance (Q^2). Same as the effect size (f^2) for assessing R^2 , the effect size (q^2) for the relative influence of predictive relevance (Q^2) in the path model should be compared (Hair Jr et al., 2016). q^2 values of 0.02, 0.15, and 0.35 demonstrated weak, moderate, and strong effects of exogenous variable respectively. This reference is also the same as the f^2 . Table 39 exhibits the result of the effect size (q^2) for endogenous construct (LOY) with respect to all relationships of its predictor constructs. All the q^2 values are greater than 0.35, indicating a strong predictive relevance for the endogenous construct.

4.3.3 Moderation and Mediating Effect from the Model

The cause-effect relationship of PLS-SEM path model can help to explain the exogenous variables that directly affect the endogenous variable. Having said that, there is always an indirect relationship among variables (i.e., a third variable may indirectly affect the first two variables). Hair Jr

et al. (2016) reflected that there are two most prominent cases (mediation and moderation) for this kind of affection.

When a new variable is introduced into a study, it can be described as the relationship between the dependent and independent variables, which is explained as moderation. Since the path model for this study has already fixed all the variables, moderation will not be conducted for this study.

Mediation refers to a variable that intervenes the relation between two other related variables (Hair Jr. et al., 2016). This intervention relation demonstrated in (Figure 22) explains the mediating effect between these two variables. From this figure, c represents the direct relationship between X and Y , whereas the products of a and b means the total indirect relationship between this X and Y . Therefore, the total effect between these two variables is the sum of indirect and direct impact.

Furthermore, different types of mediating effect can be identified by analyzing the path coefficient among all three variables (independent, mediator and dependent variables). As (Figure 23) exhibits the process of determining the mediation effect in different scenarios, the researchers will adopt the criteria to identify the types of mediation and corresponding impact on this research model.

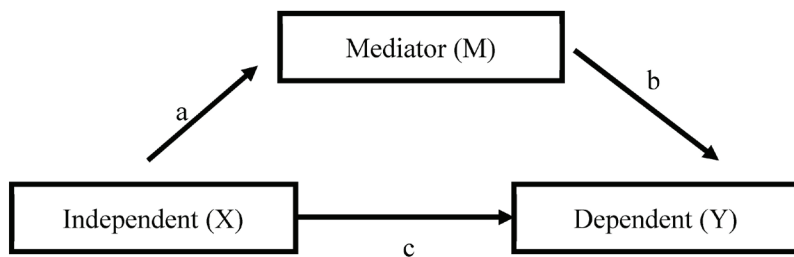


Figure 22. Mediation Model

Note. Mediation relationship among variables. Adapted from Reconsidering Baron and Kenny: Myths and truths about mediation analysis, by Zhao, Lynch Jr, & Chen (2010), *Journal of Consumer Research*, 37(2), 197–206

By referring to the research model on (Figure 15), four direct paths that affect the LOY can be seen, which include: 1) PSQ to LOY, 2) AP to LOY, 3) SS to LOY, and 4) SC to LOY. The significance of direct effects along the paths is illustrated in (Table 36), which shows that the significant value (p -value) of $SS \rightarrow LOY$ is larger than 0.05 at the 95 percent significant interval and reveals that this path (SS to LOY) is statistically insignificant. As

a result, the path is not supported by the model. For the other three paths, the p-values are all lower than the critical p-value at 95 percent significant level. As the direct effect for these three paths is statistically significant; the paths are supported by the model. Table 38 summarizes the direct effect on Student Loyalty of each path.

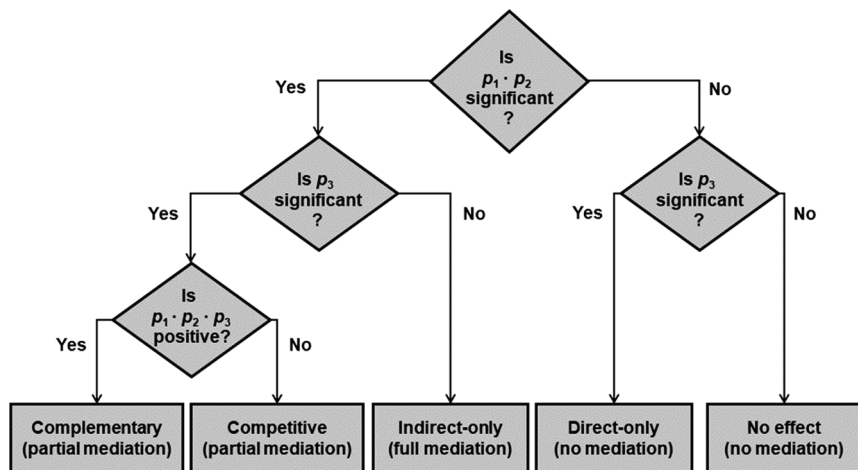


Figure 23. Mediation Analysis Flowchart

Note. Diagnosis flowchart of the mediation. Adapted from *A primer on partial least squares structural equation modeling (PLS-SEM)* (p. 233), by Hair Jr et al., 2016, Sage publications

Table 38. – The Direct Effect on Student Loyalty of Each Path

Path no.	Direct Path	Direct effect	95% confidence interval of the direct effect	t-value (O/STDEV)	p-Values	Sig-nificance (p < 0.05)	Path Sup-port
1.	PSQ→LOY	0.181	[0.088, 0.268]	3.939	0.000	Yes	Yes
2.	AP→LOY	0.087	[0.025, 0.155]	2.643	0.008	Yes	Yes
3.	SS→LOY	0.054	[-0.023,0.137]	1.319	0.187	NO	Not sup-port
4.	SC→LOY	0.63	[0.573, 0.737]	15.826	0.000	Yes	Yes

Meanwhile, there are three indirect paths that affect the LOY, namely 1) $AP \rightarrow SS \rightarrow LOY$; 2) $PSQ \rightarrow SS \rightarrow LOY$ and 3) $SS \rightarrow ST \rightarrow SC \rightarrow LOY$. Owing to the insignificant path of $SS \rightarrow LOY$ (refer table 38), the indirect effect of paths 1 and 2 are not supported, and only the indirect effect of path 3 is established. Table 39 summarizes the mediating effect (indirect effect) of the three paths for this research model.

To sum up, as paths 1 and 2 showed no mediation on LOY, AP and PSQ cannot transmit an indirect effect to LOY via SS. However, the path model for this research illustrated that AP and PSQ can still demonstrate an indirect impact on LOY along the path of $SS \rightarrow ST \rightarrow SC \rightarrow LOY$. This feature from the path model endorses that SS cannot directly affect LOY, while SS can pass the positive influence on ST and SC and finally to the LOY.

Table 39. – Indirect Effect on Student Loyalty

Path no.	Indirect Path	Indirect effect	95% confidence interval of the direct effect	t-value (O/STDEV)	p-value	Significance ($p < 0.05$)	Mediation
1	$AP \rightarrow SS \rightarrow LOY$	NA	NA	NA	NA	NA	No mediation ($SS \rightarrow LOY$ does not support)
2	$PSQ \rightarrow SS \rightarrow LOY$	NA	NA	NA	NA	NA	No mediation ($SS \rightarrow LOY$ does not support)
3	$SS \rightarrow ST \rightarrow LOY$	0.406	[0.342, 0.477]	11.798	0.000	Yes	Indirect only (full mediation)

In addition, the path model reveals that ST is mediating between SS & SC, whereas SC is also mediating ST & LOY because the p-values from the direct path coefficients of $SS \rightarrow ST$; $ST \rightarrow SC$, and $SC \rightarrow LOY$ illustrate statistically significant results (by referring to Table 36, all the p-values are smaller than 0.001). Since the mediating effects of $SS \rightarrow SC$ & $ST \rightarrow LOY$ are not the study scope of this research, focuses can be placed on the mediating effect of these two paths in future studies.

4.3.4 Summary of the PLS-SEM Model

By investigating the relations of LOY and its antecedent factors (PSQ, SS, AP, ST, and SC) in HK sub-degree education, this research aims to find out the relationships among these antecedent factors. 10 main RHs and six sub-hypotheses have been developed in chapter 2 to answer all the RQs. PLS-SEM is used to evaluate the main RHs, with the findings concluded in (Table 40).

Table 40. – Summary of the PLS-SEM Evaluation

Hypothesis	Path	Path coefficient	t-value	p-value	Result
H1	PSQ → LOY	0.181	3.939	0.000***	Support
H2	PSQ → SS	0.630	14.072	0.000***	Support
H3	SS → LOY	0.054	1.319	0.187	Not support
H5	AP → LOY	0.087	2.643	0.008**	Support
H6	AP → SS	0.152	3.188	0.0014**	Support
H8	SS → ST	0.810	40.316	0.000***	Support
H9	ST → SC	0.768	28.607	0.000***	Support
H10	SC → LOY	0.653	15.826	0.000***	Support
H4	SS mediates between PSQ and LOY				
	AP → SS	0.630	14.072	0.000	Support
	SS → LOY	0.054	1.319	0.187	Not support
H7	SS mediates between AP and LOY				
	AP → SS	0.152	3.188	0.0014	Support
	SS → LOY	0.054	1.319	0.187	Not support

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

According to Table 40, all paths, except H3 (SS → LOY), are supported at one percent significant level, which shows that the hypotheses of H1/H2/H5/H6/H8/H9/H10 are all supported. As the path of SS → LOY showed statistical insignificant, H3 was not supported by the theoretical framework. Consequently, the mediating effect of SS between PSQ → LOY (H4) and SS between AP → LOY (H7) also failed. In short, SS has no mediating impact in this research model.

4.4 Multiple Regression

Apart from the main hypotheses, this research also aims at determining the individual effects of the three major types of APs on LOY and SS for the sub-degree programme providers so that the importance of each AP on LOY and SS of the sub-degree students can be understood. Six sub-hypotheses have been developed and will be evaluated in this section.

As per the discussion in Chapter 2, there are three major APs for sub-degree graduates in HK, namely: 1) OUT programmes, 2) UGC programmes, and 3) LSF programmes (Concourse for Self-financing Post-secondary Education, 2019 a).

To evaluate these sub-hypotheses, the discussion in Chapter 3 suggested using multiple linear regression. Views from respondents of the three APs have been collected from the questionnaires, with questions adapted and modified from Ng et al. (2015). Questions AP_3B and AP_3C testify the views of sub-degree students on OTU programme, questions AP_3D and AP_3E target on the views of sub-degree students on the UGC programme, and questions AP_3F and AP_3G are used to collect views of sub-degree students on LSF. In order to conduct multiple linear regression, the data must fulfil the following assumptions (Saunders et al., 2019):

- i. Meets the minimum sample size.
- ii. Shows linear relation between independent and dependent variables.
- iii. Data values of dependent and independent variables show equal variance (also known as homoscedasticity) or no heteroscedasticity,
- iv. Collected data of all variables are normally distributed.
- v. No multicollinearity between independent variables

Therefore, the data used for multiple regression need to be used to validate these five assumptions before conducting the multiple regression analysis.

4.4.1 Minimum Sample Size

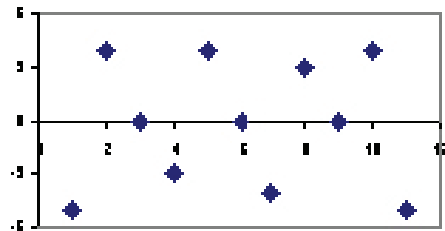
According to Saunders et al. (2019), the minimum sample size for conducting multiple regression can be computed in accordance with the following equation.

Sample size = $50 + (8 \times \text{number of independent variables})$

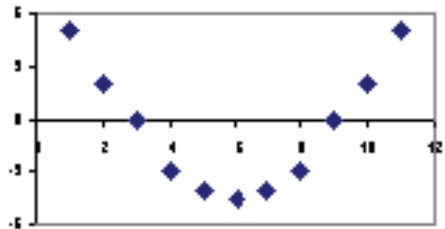
As RQ3 wishes to determine the effect of the three independent variables OTU, UGC and LSF on LOY and SS. As a result, the minimum sample size for this analysis is 74. Since 389 samples are collected, the sample size is sufficient for this test.

4.4.2 Linear Relationship Between Independent Variable and Dependent Variable

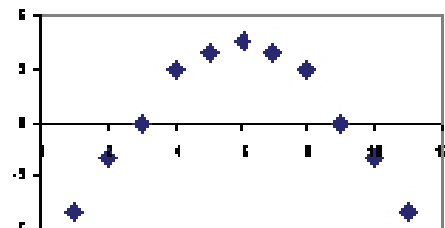
The linear relation between independent and dependent variables can be validated by the residual plots (Saunders et al., 2019) which is a graphical presentation of the residual value (y -axis) against its independent variable (x -axis) (Stat trek.). If the residual dots randomly fall onto the horizontal axis without showing an obvious pattern, the data has satisfied the requirement for linear regression analysis. Figure 24 exhibits some references for the pattern of residual dots.



i) Random Pattern



ii) Non-random: U-shape



iii) non-random: inverted U

Figure 24. Pattern of Residual Plots

Note. Reference of the Residual plots in different scenario. Adopted from Stat Trek, n.d., <https://stattrek.com/statistics/dictionary.aspx?definition=residual%20plot>

With the help of the Excel ToolPak, the residual plots of OTU, UGC, and LSF on the LOY are prepared and illustrated in (Figures 25, 26, and 27) respectively.

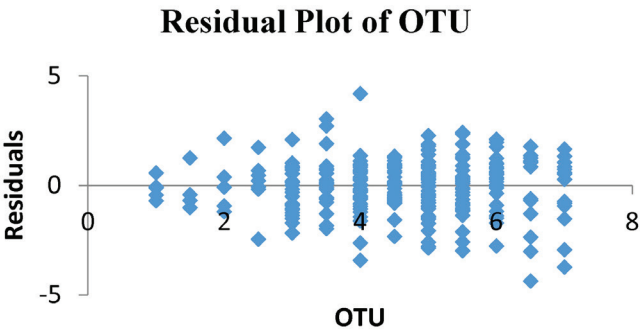


Figure 25. Residual Plot of OTU on LOY

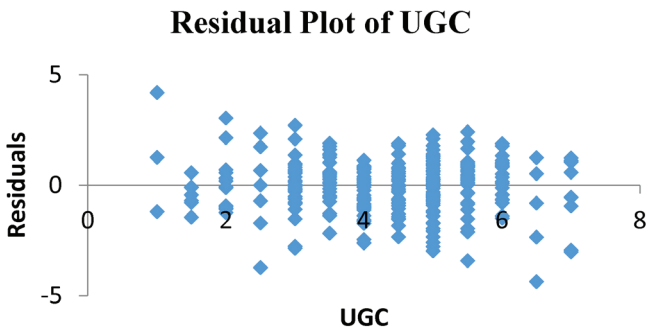


Figure 26. Residual Plot of UGC on LOY

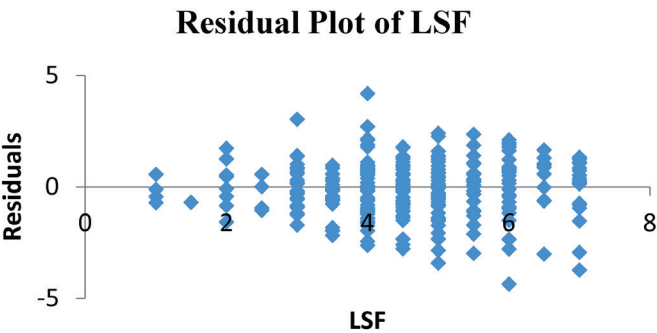


Figure 27. Residual Plot of LSF on LOY

The residual plots of OTU, UGC, and LSF on the SS are prepared and illustrated in Figures 28, 29, and 30 respectively.

Residual Plot of OTU

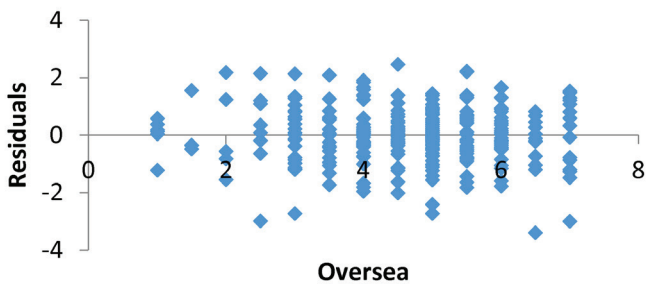


Figure 28. Residual Plot of OTU on SS

Residual Plot of UGC

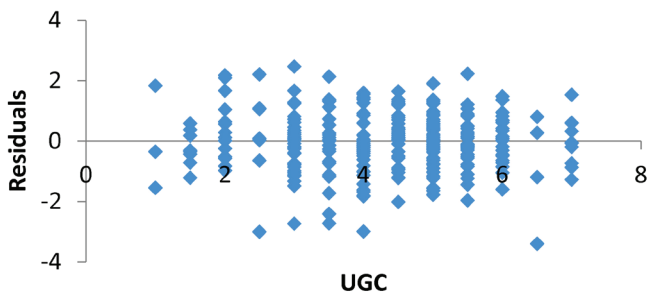


Figure 29. Residual Plot of UGC on SS

Residual Plot of LSF

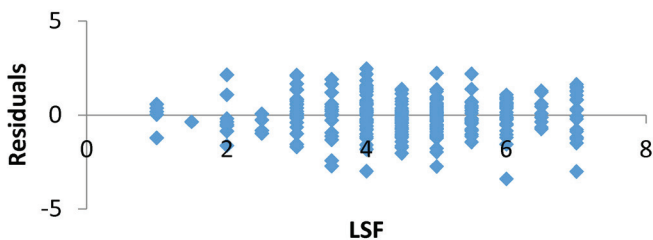


Figure 30. Residual Plot of LSF on SS

All six figures demonstrate that the residuals are randomly dispersed around the horizontal x -axis. Hence, a linear relationship of these three independent variables on LOY and SS are established.

4.4.3 Homoscedasticity of the Data

The third assumption, data homoscedasticity, checks the data value of dependent and independent variables all have equal variance. Homoscedasticity refers to the condition when residuals are drawn from a population that has constant variance (Frost, 2017). On the contrary, heteroscedasticity occurs when data has no constant variance. In a residual plot against the fitted value, the values of dependent variables (LOY and SS, in this case) can assess data heteroscedasticity (Prabhakaran, 2017). Prabhakaran, (2017) further explained that if the points on the plot show a random dispersal and display a flat trend line along the x -axis, there should be no heteroscedasticity. Likewise, a cone-shaped pattern or trend pattern identified from the plot illustrates that the data has the heteroscedasticity issue (Tabachnick, Fidell, & Ullman, 2007). Figures 31 and 32 present the residual plots against the fitted value of LOY and SS, respectively.

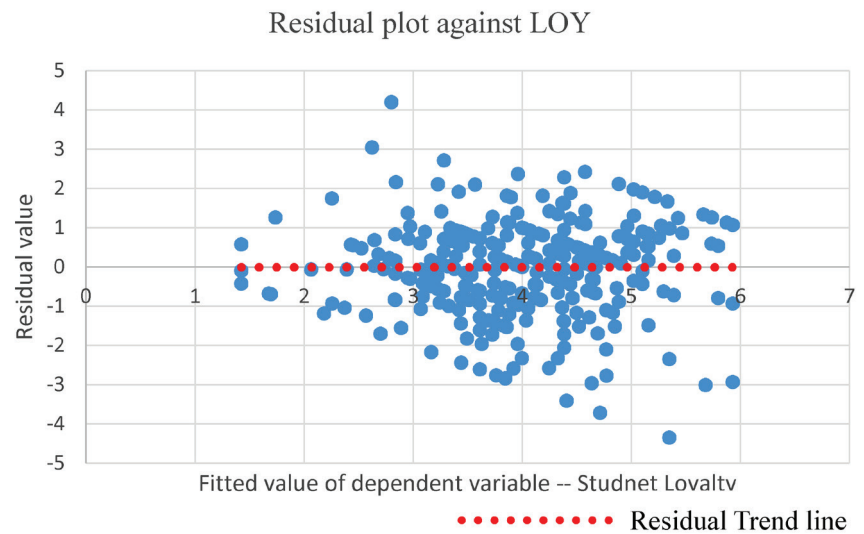


Figure 31. Residual Plot against LOY

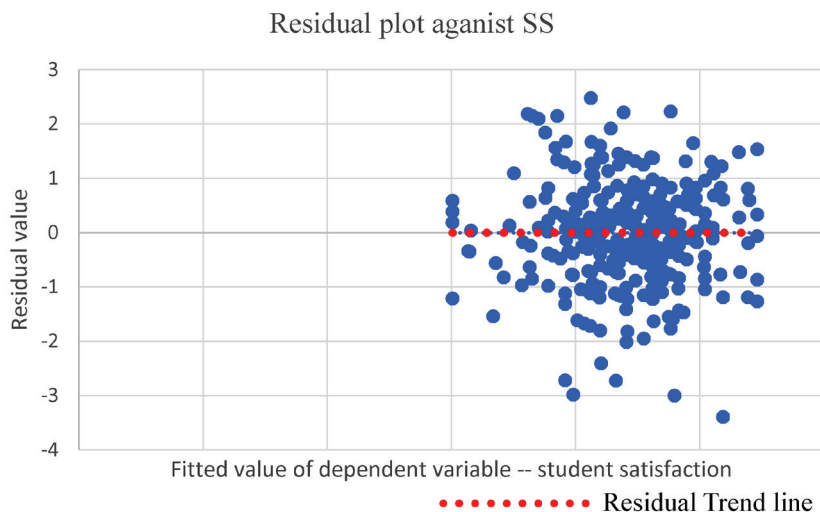


Figure 32. Residual Plot against SS

As shown in the two figures above, most of the residual values are equally dispersed in the chart when the fitted values (dependent variables) increased. Besides, a flat trend line (red dots) can be drawn. It can be concluded that the data has shown no heteroscedasticity. A moderate homoscedasticity is exhibited in the data set.

4.4.4 Data Distribution

Another assumption for the multiple regression is the values of dependent, and independent variables are normally distributed. To test this, the values of skewness and kurtosis from the descriptive analysis can be used as referred (Sekaran & Bougie, 2013). Skewness evaluates if the data collected for a variable is symmetrically distributed whereas Kurtosis can measure if the distribution is too steep or flat (Sekaran & Bougie, 2013). Hair et al. (2017) expressed that when skewness and kurtosis are zero, the variables will distribute normally. If the value is close to zero, it means that the data tends to show a normal distribution pattern. Hair et. al. further suggested that a range between +1 to -1 is considered normal distribution of the data set.

According to the descriptive data analysis in (Table 41), the skewness and kurtosis values of all variables fall into this range. Hence, the data for all the variables can be considered normally distributed.

Table 41. – Descriptive Analysis for Multiple Regression

	SS	LOY	OTU	UGC	LSF
Mean	4.441645	4.054087	4.682519	4.397172	4.669666
Standard Error	0.051051	0.07499	0.066129	0.06572	0.065209
Median	4.4	4	5	4.5	4.5
Mode	4	4	5	5	4
Standard Deviation	1.00689	1.479024	1.304276	1.296195	1.286129
Sample Variance	1.013828	2.187513	1.701137	1.680121	1.654129
Kurtosis	0.374262	-0.42964	0.002428	-0.21969	-0.05992
Skewness	-0.2876	0.010673	-0.35323	-0.20399	-0.13983
Range	6	6	6	6	6
Minimum	1	1	1	1	1
Maximum	7	7	7	7	7
Sum	1727.8	1577.04	1821.5	1710.5	1816.5
Count	389	389	389	389	389

4.4.5 Multicollinearity among Variables

Saunders et al. (2019) claimed that multicollinearity made it difficult to evaluate the influence of each independent variable. They then suggested a correlation coefficient of 0.9 or above to show the substantial collinearity issue. Meanwhile, they also recommended to remove this variable. However, the correlation coefficient of 0.8 should be used as the cut off value (Berry, W. D., Feldman, & Stanley Feldman, 1985; Vatcheva, Lee, McCormick, & Rahbar, 2016).

As the correlation between all variables is below 0.8 according to the correlation analysis depicted in (Table 42), the multicollinearity assumption is met. Lastly, (Table 43) has summarized all the assumptions checking results.

Table 42. – Correlation Matrix for Multiple Regression

	SS	LOY	OTU	UGC	LSF
SS	1				
LOY	0.692133	1			
OTU	0.407919	0.504357	1		
UGC	0.436552	0.515494	0.631222	1	
LSF	0.426209	0.560167	0.603388	0.785047	1

Note: 2 tailed with $p < 0.01$ at 99% significant level

Table 43. – Result of the Multiple Regression Assumptions.

Assumption	Condition	Test result
Sample size	Meet the min sample size of 74	Supported
Linearity between IV and DV	Residual plot shows randomly dispersed	Supported
Homoscedasticity	Residual value equally disperses along with the plot	Supported
Data distributes normally	Both coefficients of skewness and kurtosis are close to zero	Supported
Multicollinearity between IVs	Correlation coefficients between IVs are all within the threshold	Supported

4.4.6 Strength of Different Articulation Pathways on Student Loyalty

Multiple regression analysis on the strength of the three APs (independent variables) on LOY (dependent variable) will be discussed in this section, while the strength of the three APs on SS will be further explored in the next section.

The following theoretical hypotheses for AP and LOY have been re-capped again before further analysis commences on the multiple regression analysis.

H5: Provision of Articulation Pathway positively influences Student Loyalty for sub-degree students in HK.

H5a: Provision of UGC Articulation Pathway has the strongest positive influence on Student Loyalty among the three articulation pathways.

H5b: Provision of OTU Articulation Pathway has the smallest positive influence on Student Loyalty among the three articulation pathways.

H5c: Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.

The regression model is illustrated below to address these sub-hypotheses:

$$\text{Regression model: } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

where:

$$Y = \text{LOY}$$

$$X_1 = \text{articulation pathway to UGC}$$

$$X_2 = \text{articulation pathway to OTU}$$

$$X_3 = \text{articulation pathway to LSF}$$

$\beta_1, \beta_2, \beta_3$ = coefficient of the effect size that the independent variables (different APs) on the dependent variable (LOY).

ε = error term

To test H5 and its sub-hypotheses, the following statistical hypotheses are set.

Statistical hypotheses for H5:

$H_0: \beta_1 = \beta_2 = \beta_3 = 0$ (the three APs combined has no relationship with the LOY)

H_1 : minimum one β coefficients is not equal to 0.

Statistical hypotheses for H5a:

$H_0: \beta_1 = 0$ (UGC is not a useful predictor of LOY)

$H_1: \beta_1 \neq 0$ (the β_1 coefficient of UGC is not equal to 0)

Statistical hypotheses for H5b:

$H_0: \beta_2 = 0$ (OTU is not a useful predictor of LOY)

$H_1: \beta_2 \neq 0$ (the β_2 coefficient of OTU is not equal to 0)

Statistical hypotheses for H5c:

$H_0: \beta_3 = 0$ (LSF is not a useful predictor of LOY)

$H_1: \beta_3 \neq 0$ (the β_3 coefficient of LSF is not equal to 0)

Table 44 exhibits the summary output for the multiple regression analysis of the three articulation pathways to student loyalty.

Table 44. – Summary Output for the Multiple Regression Analysis of the Three Articulation Pathways to Student Loyalty

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.6008
R Square	0.3609
Adjusted R Square	0.3559
Standard Error	1.1870
Observations	389

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	306.3204	102.1068	72.4716	0.0000
Residual	385	542.4348	1.4089		
Total	388	848.7552			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%
Intercept	0.5148	0.2486	2.0710	0.0390	0.0261	1.0036	0.0261
OTU	0.1138	0.0787	1.4458	0.1490	-0.0409	0.2685	-0.0409
UGC	0.3894	0.0776	5.0161	0.0000	0.2367	0.5420	0.2367
LSF	0.2702	0.0615	4.3936	0.0000	0.1493	0.3912	0.1493

According to the results obtained from (Table 44), the coefficients of determination (R^2) and adjusted R^2 are 0.361 and 0.356 respectively. The results reflect that around 36 percent of the variance in the LOY could be interpreted. The results show that the regression model has provided a moderate degree of goodness of fit.

The F -test result is 72.47, with a p -value of 0.0000 (p -value < 0.001 at one percent significant level). The result, while illustrating that this regression is statistically significant, also reveals the probability of occurrence by chance was below 0.001. Hence, the null hypothesis (H_0) for $H5$ can be rejected, while the three articulation pathways have been positively predicting the LOY level. This result is the same as the finding from PLS-SEM.

While the t -value of OTU is 1.4458, the p -value is 0.149, which is larger than 0.05 at five percent significant level. Hence, the finding is statistically insignificant. Meanwhile, the null hypothesis of $H5b$ can be accepted, which indicates that there is no evidence the OTU that contributes information in predicting LOY. It is also true that nearly all sub-degree providers are now offering various OTU programmes. As a result, sub-degree students do not treat it as a must for them to choose their sub-degree programmes.

While the t -value of UGC is 5.0161, the p -value is 0.0000, which is smaller than 0.001 at one percent significant level. Hence, the result is statistically significant, and the null hypothesis of $H5a$ cannot be accepted. It indicates that the UGC top-up degree programmes are positively predicting the level of LOY with other independent variables constant.

While the t -value of LSF is 4.3936, the p -value is 0.0000, which is smaller than 0.001 at one percent significant level. Hence, the result is statistically significant, and the null hypothesis of $H5c$ cannot be accepted. It indicates that the LSF is positively predicting the level of LOY with other independent variables constant.

According to Princeton (2017), the coefficient sign of the independent variable tells the effect to its dependent variable (i.e., positive coefficient

that explained the independent variable gives a positive impact to its dependent variable and vice versa for the negative sign). Furthermore, the coefficient value of the independent variable represented the strength (effect size) of that variable on the dependent variable. The coefficient also expresses the expected change of the dependent variable when one unit of independent variable increased under the situation when all other independent variables are constant.

The fact that the coefficient of UGC (0.3894) is greater than the coefficient of LSF (0.2702) revealed that UGC is playing a stronger prediction effect than LSF individually in the regression model. Hence, the effect order for the three APs on the LOY for this regression model is $UGC > LSF$, while there is no evidence to support the assumption that OTU can influence LOY.

4.4.7 Strength of Different Articulation Pathways on Student Satisfaction

This section analyzes the relations between the three types of APs and SS by the multiple regression analysis. The following theoretical hypotheses for APs and SS are recapped.

H6: Provision of Articulation Pathway positively influences Student Satisfaction for sub-degree students in HK.

H6a: Provision of UGC Articulation Pathway has the strongest positive influence on Student Satisfaction among the three articulation pathways.

H6b: Provision of OTU Articulation Pathway has the smallest positive influence on Student Satisfaction among the three articulation pathways.

H6c: Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.

The regression model for these sub-hypotheses is then illustrated as below:

$$\text{Regression model: } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where

$Y = \text{LOY}$

$X_1 = \text{articulation pathway to UGC}$

$X_2 = \text{articulation pathway to OTU}$

$X_3 = \text{articulation pathway to LSF}$

$\beta_1, \beta_2, \beta_3 = \text{coefficient of the effect size that the independent variables (different APs) on the dependent variable (SS).}$

$\varepsilon = \text{error term}$

To test H6 and its sub-hypotheses, the following statistical hypotheses are set.

Statistical hypotheses for H6:

$H_0: \beta_1 = \beta_2 = \beta_3 = 0$ (the three APs combined has no relationship with SS)

H_1 : minimum one β coefficient is unequal to 0.

Statistical hypotheses for H6a:

$H_0: \beta_1 = 0$ (UGC is not a useful predictor of SS)

$H_1: \beta_1 \neq 0$ (the β_1 coefficient of UGC is not equal to 0)

Statistical hypotheses for H6b:

$H_0: \beta_2 = 0$ (OTU is not a useful predictor of SS)

$H_1: \beta_2 \neq 0$ (the β_2 coefficient of OTU is not equal to 0)

Statistical hypotheses for H6c:

$H_0: \beta_3 = 0$ (LSF is not a useful predictor of SS)

$H_1: \beta_3 \neq 0$ (the β_3 coefficient of LSF is not equal to 0)

Table 45 exhibits the summary output for the multiple regression analysis between the three articulation pathways to student satisfaction.

Table 45. – Summary Output for the Multiple Regression Analysis of the Three Articulations Pathways to Student Satisfaction

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.47906					
R Square	0.2295					
Adjusted R Square	0.2235					
Standard Error	0.88726					
Observations	389					

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	90.2784	30.0928	38.2258	0.0000
Residual	385	303.0869	0.7872		
Total	388	393.3653			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2.5132	0.1858	13.5253	0.0000	2.1479	2.8786
OTU	0.1447	0.0588	2.4601	0.0143	0.0291	0.2604
UGC	0.1481	0.0460	3.2205	0.0014	0.0577	0.2385
LSF	0.1284	0.0580	2.2132	0.0275	0.0143	0.2425

According to the results from Table 45, the coefficients of determination (R^2) and adjusted R^2 are 0.2295 and 0.2235 respectively, which reflect that around 23 percent of the variance in the SS can be interpreted. The finding indicate that this regression model gives a moderate degree of goodness of fit.

The F -test result is 38.2258, with its p -value 0.0000 (p -value < 0.001 at one percent significant level). The result illustrates that this regression is statistically significant, also reveals the probability of occurrence by chance was below 0.001. Thus, the null hypothesis (H_0) for $H6$ can be rejected, and the three articulation pathways combined are positively predicting the student loyalty level. This result is the same as the finding from PLS-SEM.

While the t -value of UGC top-up degree is 3.2205, the p -value is 0.0014, which is smaller than 0.01 at a five percent significance level. Thus, it is statistically significant and rejects the null hypothesis of $H6a$. This indicates that UGC top-up degree programmes are positively predicting the level of SS with other independent variables constant.

While the t -value of OTU is 2.4601, and the p -value is 0.0143, which is smaller than 0.05 at five percent significant level. Thus, it is statistically significant, and the null hypothesis of $H6b$ cannot be accepted. The finding indicates that OTU is positively predicting the level of SS with other independent variables constant.

While the t -value of LSF is 2.2132, the p -value is 0.0275, which is smaller than 0.05 at five percent significant level. Thus, it is statistically significant, and the null hypothesis of $H6c$ cannot be accepted. It indicates LSF is positively predicting the level of SS with other independent variables constant.

Since the coefficient of UGC (0.1481) is greater than the coefficients of OTU (0.1447) and LSF (0.1284), it revealed that UGC is playing a more substantial prediction effect than OTU and LSF individually in the regression model. Meanwhile, the coefficient of OTU is larger than that of LSF, which explains that OTU plays a more substantial prediction effect. Hence, the effect order for the three APs on the SS for this regression is $UGC > OTU > LSF$.

4.5 ANOVA Statistics Test

Researchers often conduct t -test for evaluating the significant difference if there are only two groups of variables. ANOVA will be adopted when there are more than two groups (Field, Andy, 2013). Spatz (2011) mentioned that ANOVA is an inferential statistical test widely accepted by

researchers for business studies. According to Sekaran & Bougie (2013), two ANOVA tests are mainly used (One-way ANOVA, which is used for homogenous variance and Robust Welch ANOVA, which is used for heterogeneous variance). Besides, unequal sample sizes between groups that are still acceptable, particularly the One-way ANOVA test, provided equal variances in the groups (Keppel, 1993).

As discussed in section 3.10.2 of Chapter 3, this research aims at focusing on the working background of the students before they take up their current sub-degree programme and determine if there is any difference on the LOY. The situation involves two variables (dependent variable is LOY, whereas the independent variable is work background). In order for the ANOVA test to be conducted, the respondents are classified into four groups: 1) Students who have gained full-time work experience before taking up their current sub-degree programmes (FT); 2) Students who have gained both full-time and part-time work experience before taking up their current sub-degree programmes (FTnPT); 3) Students who have gained part-time work experience before taking up their current programmes (PT), and 4) Students who have no work experience before taking up their current sub-degree programmes (NE).

To decide on the type of ANOVA test to be used, the researcher first needs to conduct Levene's test on the equal variance of the dataset among groups. When p -value of the Levene's test is larger than the threshold ($p > 0.05$, five percent significant level), then the null hypothesis of all groups has equal variance that cannot be rejected. Since this finding implies that equal variance among groups exists, one-way ANOVA test needs to be adopted because the homogenous condition is met. Otherwise, Robust Welch ANOVA should be conducted due to the heterogeneous dataset and rejected null hypothesis (Field, Andy P. & Field, 2013).

For One-way ANOVA test, when p is smaller than 0.05 at five percent significant level, the null hypothesis of all groups has the same mean that cannot be accepted. It also confirmed that at least one group of the variable mean is different from other groups (Vik, 2014). Hence, the post-hoc test (Tukey HSD) of One-way ANOVA needs to be performed in order to identify a particular group of variables that is different from other groups when analyzing the group mean value (Field & Field, 2013).

For the Robust Welch ANOVA test, the null hypothesis cannot be accepted if p is smaller 0.05 at five percent significant level. This represents a minimum of a group of variable mean differences from the other groups

(Vik, 2014). The post hoc test (Games-Howell test) of Robust Welch ANOVA needs to be performed in order to identify a particular group of variables consisted of the group mean, which is different from other groups. Figure 33 illustrates the selection of ANOVA test to be used under different situations.

As discussed, this study aims at exploring if there is any difference in the students' working background before they took up studies in the sub-degree programmes on the LOY. If the working background affects the LOY, the sub-degree programme providers can design relevant initiatives on the students according to their work background so that resources can be used effectively.

Based on the questionnaire of respondents' profile 7F, four groups of working background can be identified from the respondents: 1) FT; 2) FT-nPT; 3) PT, and 4) NE. Besides, Question 6A-6C from the questionnaire were adopted from Giner & Rillo (2016) for measuring the LOY. The 389 respondents are classified into 4 distinct groups with different work backgrounds. Before the Levene's test & the corresponding ANOVA tests, the descriptive data by Excel ToolPak is presented in the (Table 46).

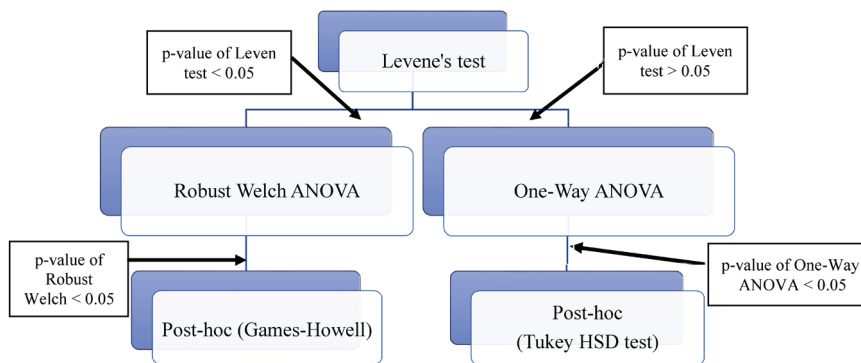


Figure 33. – Summary of the ANOVA Test Flow

Table 46.– Descriptive Analysis for Student Loyalty

	FT	FT n PT	PT	NE
1	2	3	4	5
Mean	4.27125	4.193421	3.943127	4.4165
Standard Error	0.262172	0.260598	0.089239	0.187132
Median	4	4.165	4	4.67

1	2	3	4	5
Mode	4	5	4	4.67
Standard Deviation	1.048687	1.606432	1.479855	1.44952
Sample Variance	1.099745	2.580623	2.18997	2.101108
Kurtosis	2.057421	-0.34427	-0.46846	-0.53357
Skewness	1.094129	0.012755	0.022536	-0.0771
Range	4.33	6	6	5.67
Minimum	2.67	1	1	1.33
Maximum	7	7	7	7
Sum	68.34	159.35	1084.36	264.99
Count	16	38	275	60
Confidence Level (95.0%)	0.558806	0.528021	0.17568	0.374451

To perform the Levene's test on the variable variance, statistical hypotheses are set as follow:

$$H_0: \sigma_{FT}^2 = \sigma_{FT\ PT}^2 = \sigma_{FT}^2 = \sigma_{NE}^2$$

H_1 : Not all variances are equal.

Table 47 displays the results of the Levene's test on LOY.

Table 47. – Result of Levene's Test on Student Loyalty

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.096417	3	1.032139	1.316197	0.268727	2.628088
Within Groups	301.9102	385	0.784182			
Total	305.0066	388				

Levene's test ($F [3, 385] = 1.32, p > 0.05$) shows that the p -value (0.27) is larger than the threshold 0.05. Hence, H_0 can be accepted. The assumption that the four groups of students with different work experience had equal variance suggested that One-way ANOVA should be used to check any difference in the means of the four student groups on LOY. Hence, the following statistical hypotheses are listed for One-way ANOVA test:

$$H_0: \mu_{FT} = \mu_{FT\ & PT} = \mu_{PT} = \mu_{NE}$$

H_1 : All means are not equal.

The test result is presented in (Table 48). As the p -value (0.12) is greater than the critical value (0.05), the null (H_0) hypothesis is accepted. This means that the respondents' work background in the four groups have no significant difference in LOY ($F [3, 385] = 1.96, p > 0.05$). Under this

situation, there is no need to conduct the post-hoc (Tukey HSD) test to testify the effect between groups.

The work background is consistently recognized as a factor in making people more mature (Bedford, 2017; POWELL & LUZZO, 1998) so that their attitudes on LOY could be understood. It is found that the work background of HK sub-degree students does not cast a statistically significant difference on the LOY towards their institutes. Hence, the sub-degree programme providers can treat all students equally when launching the LOY measures.

Table 48. – One-way ANOVA Test Summary

SUMMARY						
Groups	Count	Sum	Average	Variance		
FT	16	68.34	4.27125	1.099745		
FT n PT	38	159.35	4.193421	2.580623		
PT	275	1084.36	3.943127	2.18997		
NE	60	264.99	4.4165	2.101108		

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	12.7587	3	4.252898	1.95858	0.119716	2.628088
Within Groups	835.9965	385	2.171419			
Total	848.7552	388				

4.6 Conclusion of the Main Study

To conclude, this chapter has performed a series of statistical evaluation on all the hypotheses. First of all, the profile of the respondents, data reliability and correlation analysis are checked and discussed. This chapter then assessed the RQs and its corresponding RHs (particularly the 10 main hypotheses) by conducting PLS-SEM evaluation. Except one path (SS → LOY), findings on RMM and SM are supported. Thus, it provides good support for the overall theoretical framework. The failed path (SS → LOY) revealed that SS does not mediate between PSQ & LOY or between AP & LOY. This suggested that sub-degree students will only show positive loyalty to their institutions when SC exists so that SS can only affect the LOY via the path from SS → ST → SC → LOY.

The next step is to evaluate the sub-hypotheses by multiple regression. All data assumptions are verified before the test. With the test results, UGC plays a vital role in LOY and SS compared to the other two APs (OTU and LSF).

Finally, the ANOVA test on the respondent's work background before studying the sub-degree programme is evaluated, and it is found work experience depicts no statistical significance on the LOY. All the tests' results were exhibited in the (Table 49).

Table 49. – Evaluation Result of All Hypotheses

Hypothesis Number	Hypotheses	Test tool	Tested Result
H1	Perceived Service Quality positively influences Student Loyalty for sub-degree students in HK.	PLS-SEM	Supported
H2	Perceived Service Quality positively influences Student Satisfaction for sub-degree students in HK.		Supported
H3	Student Satisfaction positively influences Student Loyalty for sub-degree students in HK.		Not supported
H4	Student Satisfaction mediates between Perceived Service Quality and Student Loyalty for sub-degree students in HK.		Not supported
H5	Provision of Articulation Pathway positively influences Student Loyalty for sub-degree students in HK.		Supported
H6	Provision of Articulation Pathway positively influences Student Satisfaction for sub-degree students in HK.		Supported
H7	Student Satisfaction mediates between Articulation Pathway and Student Loyalty for sub-degree students in HK.		Not supported
H8	Student Satisfaction positively influences Student Trust for sub-degree students in HK.		Supported
H9	Student Trust positively influences Student Commitment for sub-degree students in HK.		Supported
H10	Student Commitment positively influences Student Loyalty for sub-degree students in HK.		Supported

Sub-hypotheses			
H5a	Provision of UGC Articulation Pathway has the strongest positive influence on Student Loyalty among the three articulation pathways.	Multiple Regression	Supported
H5b	Provision of OTU Articulation Pathway has the smallest positive influence on Student Loyalty among the three articulation pathways.		Not supported
H5c	Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.		Supported
	Effect size (Strength): UGC>LSF		
H6a	Provision of UGC Articulation Pathway has the strongest positive influences on Student Satisfaction among the three articulation pathways.		Supported
H6b	Provision of OTU Articulation Pathway has the smallest positive influences on Student Satisfaction among the three articulation pathways.		Supported
H6c	Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.		Supported
	Effect size (Strength): UGC > OTU > LSF		

ANOVA test:	
Hypothesis statement:	There is no difference regarding the impact of work background on student loyalty among the sub-degree students in HK.
Hypothesis:	$H_0: \mu_{FT} = \mu_{FT \& PT} = \mu_{PT} = \mu_{NE}$ H_1 : All means are not equal.
Finding:	LOY ($F [3, 385] = 1.96, p > 0.05$)
Conclusion:	$p > 0.05$; therefore, H_0 is accepted and revealed no mean difference between groups. Respondents' work background has no statistical effect on Student Loyalty

Chapter 5. Case Study

5.1 Introduction

In this chapter, the results obtained from a particular group of sub-degree students in HK will be used to test whether the main empirical research model can be replicated. Firstly, background information of the selected institute will be provided for the case study. Since the case study mainly echoes the main empirical study, the same quantitative research and theoretical framework will be adopted. To thoroughly analyze the case, a qualitative interview is applied to discover the analysis in more details and provide a comparable result. Owing to the use of the same approach and research framework, the theoretical hypotheses will also be the same, but in the context of the case study. Hence, the same questionnaire was distributed to the targeted respondents for evaluating the same research model. Under this circumstance, the data collected will be analyzed with the same statistical methods adopted in Chapter 4, including data reliability & validity verification, SEM, multiple regression, and ANOVA test. The qualitative interview is then discussed for triangulation. A final comparison between the case and the main empirical test will give a clear picture of the study. (Figure 34) exhibits the flow of this chapter.

5.2 Introduction on the Case Study

According to the literature review on Chapter 2, 21 institutes in HK offer sub-degree programmes (Concourse for Self-financing Post-secondary Education, 2020 d). Some of these institutes provide both AD and HD programmes, while some provide only one type of sub-degree programmes (Appendix A and B illustrated the landscape). As, HK is an Asia financial center with many business activities that require elites to run the operation, different kinds of business management training are needed for the youngsters. As a result, the population of students studying business and management is the highest among other disciplines (10,398 out of the 36,027, account for 29 percent of the total sub-degree student population in AY2019/20) (Concourse for Self-financing Post-secondary Education, 2020). This case study aims at collecting information from students currently attending business

and management programmes at the sub-degree level to offer some referencing data for the sub-degree providers.

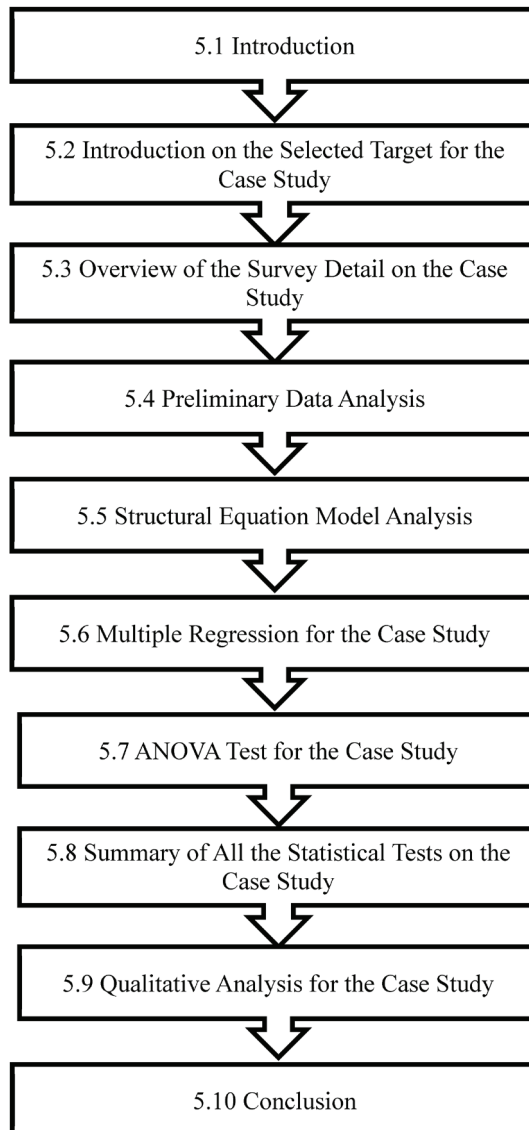


Figure 34. Outline for Chapter 5

The selected institute, Institute A (IA), is a local sub-degree institution that only provides HD sub-degree programmes to vocationally prepare students for the job market after graduation. As one of the leading HD sub-degree programme providers in HK, IA is of a scalable size that can offer different HD programmes covering many disciplines, including business and management. Currently, around 2,000 business and management study places (approximately 19 percent) out of the total 10,398 study places are offered by IA (internal figure from IA). To fulfil the students' needs and align with HK government's policy, articulation pathways to different types of top-up degree programme are also available for IA graduates so that the institute itself can be competitive in the sector of sub-degree higher education. Business students from IA can be contacted more directly for views and comments due to the network of the researchers. Since this group of students is playing a significant role in the sub-degree sector, their views are valuable.

Five campuses of IA are currently offering subjects in the Business discipline. With the verbal consent of the programme leaders from the IA business discipline, students from three campuses covering all the business programmes can be contacted and invited to fill in the questionnaire for this case study.

To ensure the comments from the business and management students of IA will not be involved in the main study, these students are isolated from the rest of the other sub-degree students in the study so that the data will not be affected and correlated.

With an aim to enable graduates to achieve higher education achievement under the life-long learning initiative, HD graduates from IA can progress to UGC-funded degree programme via non-JUPUS application. Students may be exempted for some modules and may enter directly the second or third year of a particular degree programmes. Alternatively, HD graduates can apply for vocationally oriented degree programmes offered by IA's own local self-financed institution. More so, graduates can apply for admission into the final year of overseas top-up degree programmes offered in HK. Hence, HD programmes from IA are well-recognized. The website of IA also mentioned that over 3,000 HD graduates were successfully admitted to full-time degree programmes in AY2018/19. According to one programme leader of IA's business discipline, over 50 percent of the HD business graduates were admitted to different degree programmes, while around 48 percent of the graduates entered the job market in AY2018/19.

5.3 Overview of the Survey Details on the Case Study

Although the case study has the same RQs as the main study, it has changed its context to HD business students at IA. Therefore, RQs for the case study (shown in the following table) are amended accordingly:

- RQ1: What is the relationship among the Perceived Service Quality, Student Satisfaction and Student Loyalty for HD business students in IA?
- RQ2: Does Student Satisfaction mediate between Perceived Service Quality and Student Loyalty for HD business students in IA?
- RQ3: What is the relationship among Articulation Pathway, Student Satisfaction and Student Loyalty for HD business students in IA?
- RQ4: Does Student Satisfaction mediate between Articulation Pathway and Student Loyalty for HD business students in IA?
- RQ5: Does UGC Articulation Pathway have a greater influence on Student Loyalty and Student Satisfaction than the other two Articulation Pathways for HD business students in IA?
- RQ6: What is the relationship of Student Satisfaction, Student Trust, Student Commitment and Student Loyalty for HD business students in IA?

With these six RQs, the following RHs and sub-hypotheses are derived and presented in (Table 50).

The same questionnaire is used in the case study so that a comparable result and analysis with the main study can be made. In view of the Covid-19 pandemic that has made it barely possible to conduct the survey in-classes or through face-to-face interviews, online questionnaires seem to be the best solution. While being consistent with the same method of the main research, questionnaires can also minimize bias in data collection. The questionnaire was hosted in the google form platform, with the link to the questionnaire sent to the target respondents under the assistance of respective programme leaders. While anonymity of the respondents was still strictly abided by, all students were informed that it was completely voluntary for them to fill in the questionnaires per their own will. To align with the main study approach, the questionnaire was also hosted for around three weeks. Finally, 149 valid respondents were recruited to fill in the online questionnaire.

Since the questionnaire for the case study is identical to the main study, the constructs and their corresponding item numbers are also the same as the main study.

Table 50. – Research Hypotheses for the Case Study

Num-ber	Hypotheses
H1	Perceived Service Quality positively influences Student Loyalty for HD business students in IA.
H2	Perceived Service Quality positively influences Student Satisfaction for HD business students in IA.
H3	Student Satisfaction positively influences Student Loyalty for HD business students from IA.
H4	Student Satisfaction mediates between Perceived Service Quality and Student Loyalty for HD business students in IA.
H5	Provision of Articulation Pathway positively influences Student Loyalty for HD business students in IA.
H5a	– Provision of UGC Articulation Pathway has the strongest positive influences on Student Loyalty among the three articulation pathways.
H5b	– Provision of OTU Articulation Pathway has the smallest positive influences on Student Loyalty among the three articulation pathways.
H5c	– Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.
H6	Provision of Articulation Pathway positively influences Student Satisfaction for HD business students in IA.
H6a	– Provision of UGC Articulation Pathway has the strongest positive influences on Student Satisfaction among the three articulation pathways.
H6b	– Provision of OTU Articulation Pathway has the smallest positive influences on Student Satisfaction among the three articulation pathways.
H6c	– Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.
H7	Student Satisfaction mediates between Articulation Pathway and the Student Loyalty for HD business students in IA.
H8	Student Satisfaction positively influences Student Trust for HD business students in IA.
H9	Student Trust positively influences Student Commitment to HD business students in IA.
H10	Student Commitment positively influences Student Loyalty for HD business students in IA.

5.4 Preliminary Data Analysis

Just like the main study, only fully completed online questionnaires will be processed. Hence, no incomplete questionnaire was identified. Besides, multiple answers on the same question were not allowed. However, to ensure the respondents are all studying HD business programme in IA, responses for question 7H (name of respondent's institute) and 7I (respondent's discipline) in the profile section were kept in record for cross-checking purposes. Finally, 12 respondents were found not studying at IA or not studying business discipline during the data screening process. Their feedback will be excluded from data analysis. Apart from this, no out-of-range responses was identified among the 44 items and no other irregularity response was collected from the respondents. Finally, 149 questionnaires are usable and valid for the statistical tests after data screening. Table 51 summarized the item's descriptive analysis.

According to the table, most of the respondents gave ratings of 4 or 5, while 1 and 7 were relatively less frequently chosen. This represented that most of the items were distributed normally with different degrees of skewness. By excluding the mid-point value of 4, the percentage of values 5–7 is relatively higher than that of values 1–3, which means that respondents showed a higher tendency to agree with the items mentioned in the questionnaire (except SC-4E; LOY_6B and LOY_6C). The data pattern is similar to the main study.

Since item 1C, 3A and 3J were proven to have a higher loading in the main study, these three items would be removed from the case study so that the same statistical approaches will be kept to ensure the consistency.

Table 51. – Descriptive and Frequency Analysis for the Case Study

Item	Frequency of each value							Mean	S. D
	1	2	3	4	5	6	7		
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
SS_1A	1.3%	2.7%	12.1%	28.9%	36.2%	14.1%	4.7%	4.6	1.2
SS_1B	0.0%	6.7%	12.1%	29.5%	36.9%	10.1%	4.7%	4.5	1.2
SS_1C									
SS_1D	2.0%	3.4%	9.4%	33.6%	24.8%	21.5%	5.4%	4.6	1.3
SS_1E	0.7%	4.0%	11.4%	30.9%	32.2%	16.8%	4.0%	4.6	1.2
ST_2A	2.0%	4.7%	13.4%	27.5%	35.6%	13.4%	3.4%	4.4	1.2
ST_2B	2.0%	6.0%	10.1%	33.6%	28.9%	16.8%	2.7%	4.4	1.2

1	2	3	4	5	6	7	8	9	10
ST_2C	1.3%	6.0%	11.4%	36.2%	29.5%	12.1%	3.4%	4.4	1.2
ST_2D	2.0%	6.7%	13.4%	32.9%	24.2%	14.8%	6.0%	4.4	1.3
AP_3A									
AP_3B	1.3%	7.4%	9.4%	26.2%	36.2%	14.8%	4.7%	4.5	1.3
AP_3C	1.3%	4.7%	10.7%	32.2%	34.9%	12.8%	3.4%	4.5	1.2
AP_3D	1.3%	2.7%	13.4%	31.5%	30.2%	16.1%	4.7%	4.5	1.2
AP_3E	1.3%	1.3%	12.8%	38.3%	32.2%	11.4%	2.7%	4.4	1.1
AP_3F	0.7%	2.7%	13.4%	30.9%	32.2%	14.8%	5.4%	4.6	1.2
AP_3G	0.7%	2.7%	10.7%	39.6%	30.9%	11.4%	4.0%	4.5	1.1
AP_3H	1.3%	3.4%	7.4%	32.9%	32.2%	18.8%	4.0%	4.6	1.2
AP_3I	2.7%	2.0%	14.8%	36.2%	27.5%	12.8%	4.0%	4.4	1.2
AP_3J									
SC_4A	2.0%	8.7%	19.5%	33.6%	24.2%	4.7%	7.4%	4.1	1.3
SC_4B	2.7%	8.7%	14.8%	36.2%	23.5%	8.7%	5.4%	4.2	1.3
SC_4C	2.7%	10.1%	17.5%	33.6%	23.5%	8.1%	4.7%	4.1	1.3
SC_4D	0.7%	5.4%	14.8%	34.9%	16.1%	21.5%	6.7%	4.5	1.3
SC_4E	4.7%	8.7%	18.8%	33.6%	17.5%	12.8%	4.0%	4.0	1.4
SC_4F	2.0%	7.4%	12.8%	34.9%	22.8%	13.4%	6.7%	4.4	1.4
PSQ_5A	0.7%	8.1%	9.4%	29.5%	30.9%	16.8%	4.7%	4.5	1.3
PSQ_5B	0.7%	6.7%	8.7%	36.2%	28.9%	13.4%	5.4%	4.5	1.2
PSQ_5C	1.3%	3.4%	11.4%	41.6%	20.1%	17.5%	4.7%	4.5	1.2
PSQ_5D	3.4%	7.4%	15.4%	32.2%	26.9%	10.1%	4.7%	4.2	1.3
PSQ_5E	4.0%	5.4%	13.4%	35.6%	24.8%	10.7%	6.0%	4.3	1.4
PSQ_5F	0.7%	7.4%	14.1%	35.6%	26.2%	12.1%	4.0%	4.3	1.2
PSQ_5G	1.3%	4.7%	14.8%	28.9%	32.9%	12.8%	4.7%	4.4	1.2
PSQ_5H	0.7%	4.7%	12.1%	31.5%	30.9%	13.4%	6.7%	4.5	1.2
PSQ_5I	3.4%	6.7%	8.1%	32.2%	27.5%	12.1%	10.1%	4.5	1.4
PSQ_5J	1.3%	4.7%	13.4%	32.2%	25.5%	16.8%	6.0%	4.5	1.3
PSQ_5K	2.7%	2.7%	8.1%	32.2%	28.9%	15.4%	10.1%	4.7	1.3
PSQ_5L	0.7%	5.4%	7.4%	27.5%	32.2%	17.5%	9.4%	4.8	1.3
PSQ_5M	2.7%	6.0%	14.1%	37.6%	22.2%	12.1%	5.4%	4.3	1.3
PSQ_5N	2.0%	4.7%	14.8%	41.6%	19.5%	10.1%	7.4%	4.3	1.3
PSQ_5O	3.4%	6.7%	14.1%	39.6%	20.1%	10.1%	6.0%	4.2	1.3
PSQ_5P	1.3%	4.0%	13.4%	37.6%	26.2%	12.8%	4.7%	4.4	1.2

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
LOY_6A	2.7%	6.0%	20.8%	31.5%	27.5%	6.7%	4.7%	4.1	1.3
LOY_6B	4.7%	12.1%	20.1%	29.5%	21.5%	7.4%	4.7%	3.9	1.4
LOY_6C	4.0%	10.1%	20.1%	31.5%	18.8%	8.1%	7.4%	4.0	1.5

Note. Number of responses = 149

5.4.1 Respondents' profile for the case study

Respondents' profile for the case study is illustrated in Table 52. The respondents' profiles from the main study are also listed for easier comparison.

Table 52. – Profile Analysis of Respondents

Domain	Category	N (case study)	% (Case study)	% (Main study)
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Gender	Male	61	41	44
	Female	88	59	56
	Total	149	100	100
Age Group	17 or below	1	0.7	0.5
	18–20	81	54.4	59.9
	21–23	53	35.6	31.6
	24 or above	14	9.4	8
	Total	149	100	100
Types of sub-degree programme	Higher Diploma	149	100	58.6
	Associate Degree	0	0	41.4
	Total	149	100	100
Operational mode	Government funded.	12	8	43.4
	Self-financed	137	92	56.6
	Total	149	100	100
Articulation pathway to the sub-degree programme	DSE	57	38.3	61.4
	PYJ	2	1.3	6.4
	DFS/DVE/DIP	90	60.4	29.1
	Pre-AD	0	0	1.8
	Others	0	0	1.3
	Total	149	100	100
Work experience before the enrolled sub-degree programme	Full-time only	11	8	4.1
	Part-time only	105	70	70.7
	Full-time and part-time	18	12	9.8
	No work experiences.	15	10	15.4
	Total	170	100	100

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Year of study	Year 1	107	72	62
	Year 2	42	28	38
	Total	149	100	100
Name of the institute	Caritas Institute	0	0	2.5
	CC of CityU	0	0	7.7
	HKU space	0	0	20.8
	CC from HKBU	0	0	9
	HKCC (under the HKPU)	0	0	22.6
	HKIVE / HKDI (under VTC)	149	100	32.4
	Others	0	0	4.9
	Total	149	100	100
Specialism	Art and Design	0	0	7.5
	Science and IT	0	0	24.4
	Health care and Health Science	0	0	3.9
	Social science and Humanities	0	0	11.6
	Business & Management	149	100	23.4
	Hospitality and Tourism	0	0	20.6
	Education	0	0	6.1
	Others	0	0	2.5
	Total	149	100	100

When compared to the main study, the percentage composition of Gender, Age Group, work experience before the enrolled sub-degree programme, and year of study from the case study all show similar percentage composition as the main study. While articulation pathway to the sub-degree programme, types of sub-degree programme and operational mode show a disperse percentage composition from the main study. The dispersion can be interpreted by making reference to the following reasons.

As IA is one of the major Diploma of Foundation Study (DFS) providers in the market, there are undoubtedly more feeders to IA's corresponding HD programmes. In addition, since the target respondents for the case are HD Business students from IA; it is therefore reasonable to have 100 percent of the target respondents from HD in the case study. Meanwhile, nearly 90 percent of the BA programmes offered by IA are self-financing. Hence, the operational mode shows that almost 90 percent of the respondents come from self-financing HD business programmes.

5.4.2 Reliability Analysis of the Data for the Case Study

Just like the main study, data reliability and correlation among each variable should be checked (Saunders et al., 2019) before the SEM, multiple regression, and ANOVA evaluations. For convenient comparison, all the reference conditions are the same as in the main study.

With the SmartPLS3.0, the Cronbach's Alpha figures of the main and case study are presented in (Table 53). According to this table, the α values for the case study lie between 0.925 (SS) to 0.974 (PSQ), which are all higher than 0.9. Hence, the data for the case study are deemed to be reliable at the preliminary stage. In addition, when compared to the main study, all variables, except SS, show a higher α in the case study. The internal consistency reliability for the scales is considered high and can therefore be accepted.

Table 53. – Comparison of Reliability Analysis between the Main Study and the Case Study

Latent Variable	Cronbach's Alpha (α) (Case Study)	Cronbach's Alpha (α) (Main Study)
AP	0.935	0.927
LOY	0.941	0.920
PSQ	0.974	0.969
SC	0.966	0.965
SS	0.925	0.928
ST	0.951	0.940

5.4.3 Correlation Analysis of the Data for the Case Study

The bivariate relationships among all the variables are calculated with the values displayed in Table 54. All correlation coefficients are larger than 0.5, which means that the bivariate relationships among all variables are highly and positively correlated. Besides, three pairs of variables have exhibited a substantial positive relationship: 1) LOY and SC (0.870); 2) PSQ and SC (0.845); 3) LOY and PSQ (0.841), these three pairs of variables also demonstrated a strong positive correlation in the main study.

Table 54. – Correlation Matrix among Variables for Case Study

	AP	LOY	PSQ	SC	SS	ST
1	2	3	4	5	6	7
AP	1.000					

1	2	3	4	5	6	7
LOY	0.664	1.000				
PSQ	0.674	0.841*	1.000			
SC	0.597	0.870*	0.845*	1.000		
SS	0.594	0.648	0.669	0.695	1.000	
ST	0.619	0.676	0.779	0.764	0.782	1.000

Note. *Substantial relationship

5.5 Structural Equation Modeling (SEM) for the Case Study

Since PLS-SEM is adopted to assess all the main hypotheses for the case study, the same RMM procedures and the corresponding statistical thresholds for all the tests are also applied in the case study.

5.5.1 Reflective Measurement Model (RMM)

Table 55 summarizes the outer loading value of each item. As all items are over the threshold of 0.7, they are all accepted. In addition, CR value of internal consistency, AVE value of convergent validity and the discriminant validity evaluation are also tabulated in Table 55.

According to this table, all CR values are greater than 0.7, which means that the internal consistency reliability is considered high for the case study. The outer loading of all indicators is over 0.708 and the indicator reliability illustrates 0.5 or above. It represented that all indicators are statistically significant at five percent significant level. Moreover, the case study's convergent validity is supported because all constructs give an AVE value that is higher than the threshold of 0.5, indicating that the variance on constructs has achieved 50 percent.

Since the indicators' cross-loading values are greater than its cross-loading on other constructs (Table 56 exhibits the findings) and the square root of AVE for all constructs are larger than their correlation with other constructs (Table 57 displays the result), the discriminant validity criteria for the case study are met. Therefore, the researchers concluded that the RMM for this case study evaluation is all established. Table 55 summarizes the test results of RMM.

Table 55. – Reflective Measurement Model Test Result

Variable	Item	Loading	Indicator reliability	t-value*	CR	AVE	Discriminant validity
SS	SS_1A	0.922	0.850924	62.733	0.947	0.817	Yes
	SS_1B	0.879	0.772532	31.370			
	SS_1D	0.889	0.790907	45.507			
	SS_1E	0.924	0.85324	63.414			
ST	ST_2A	0.945	0.893818	84.048	0.964	0.871	Yes
	ST_2B	0.948	0.898797	86.293			
	ST_2C	0.934	0.8721	70.444			
	ST_2D	0.906	0.820051	54.533			
AP	AP_3B	0.737	0.543475	13.026	0.947	0.692	Yes
	AP_3C	0.742	0.550413	13.333			
	AP_3D	0.867	0.751993	36.823			
	AP_3E	0.872	0.759776	43.799			
	AP_3F	0.804	0.645987	11.459			
	AP_3G	0.873	0.761671	41.209			
	AP_3H	0.863	0.745144	36.015			
SC	AP_3I	0.880	0.77394	38.084	0.973	0.856	Yes
	SC_4A	0.936	0.87567	77.732			
	SC_4B	0.941	0.884541	89.393			
	SC_4C	0.934	0.871517	75.379			
	SC_4D	0.895	0.801546	48.426			
	SC_4E	0.917	0.841127	47.673			
PSQ	SC_4F	0.928	0.861265	63.071	0.977	0.722	Yes
	PSQ_5A	0.788	0.620971	19.074			
	PSQ_5B	0.854	0.729583	28.531			
	PSQ_5C	0.797	0.635714	20.877			
	PSQ_5D	0.867	0.752348	38.664			
	PSQ_5E	0.877	0.769947	37.925			
	PSQ_5F	0.854	0.728951	30.142			
	PSQ_5G	0.853	0.727846	30.992			
	PSQ_5H	0.855	0.731862	27.384			
	PSQ_5I	0.834	0.696295	22.660			
	PSQ_5J	0.854	0.728495	24.603			
	PSQ_5K	0.812	0.658995	22.386			
	PSQ_5L	0.829	0.686759	25.084			
	PSQ_5M	0.872	0.7606	35.615			
	PSQ_5N	0.885	0.783102	46.306			
	PSQ_5O	0.873	0.761689	32.630			
	PSQ_5P	0.885	0.783116	37.441			
LOY	LOY_6A	0.936	0.876647	68.973	0.962	0.895	Yes
	LOY_6B	0.955	0.912503	112.885			
	LOY_6C	0.946	0.894419	82.772			

Note. * t-value: 5% significant level

Table 56. – Cross Loading for Each Construct for the Case Study

	<i>SS</i>	<i>ST</i>	<i>AP</i>	<i>SC</i>	<i>PSQ</i>	<i>LOY</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
SS_1A	0.922	0.711	0.503	0.625	0.597	0.578
SS_1B	0.879	0.671	0.545	0.588	0.592	0.539
SS_1D	0.889	0.681	0.510	0.626	0.581	0.595
SS_1E	0.924	0.759	0.586	0.671	0.647	0.625
ST_2A	0.749	0.945	0.553	0.736	0.744	0.642
ST_2B	0.727	0.948	0.561	0.710	0.716	0.645
ST_2C	0.711	0.934	0.594	0.704	0.722	0.611
ST_2D	0.730	0.906	0.604	0.700	0.727	0.627
AP_3B	0.504	0.501	0.737	0.413	0.501	0.403
AP_3C	0.560	0.522	0.742	0.566	0.560	0.534
AP_3D	0.463	0.512	0.867	0.466	0.543	0.557
AP_3E	0.507	0.536	0.872	0.525	0.555	0.576
AP_3F	0.453	0.473	0.804	0.509	0.556	0.582
AP_3G	0.492	0.565	0.873	0.511	0.587	0.613
AP_3H	0.513	0.503	0.863	0.431	0.546	0.502
AP_3I	0.458	0.499	0.880	0.528	0.620	0.620
SC_4A	0.676	0.765	0.579	0.936	0.790	0.827
SC_4B	0.654	0.711	0.534	0.941	0.777	0.793
SC_4C	0.648	0.717	0.548	0.934	0.777	0.816
SC_4D	0.626	0.689	0.526	0.895	0.806	0.765
SC_4E	0.615	0.648	0.539	0.917	0.759	0.808
SC_4F	0.639	0.705	0.585	0.928	0.784	0.820
PSQ_5A	0.588	0.621	0.587	0.701	0.788	0.687
PSQ_5B	0.625	0.714	0.596	0.778	0.854	0.761
PSQ_5C	0.585	0.629	0.658	0.692	0.797	0.716
PSQ_5D	0.570	0.701	0.623	0.723	0.867	0.722
PSQ_5E	0.579	0.725	0.608	0.710	0.877	0.695
PSQ_5F	0.662	0.774	0.633	0.751	0.854	0.719
PSQ_5G	0.585	0.629	0.550	0.685	0.853	0.687
PSQ_5H	0.505	0.660	0.484	0.725	0.855	0.678
PSQ_5I	0.499	0.596	0.449	0.689	0.834	0.666
PSQ_5J	0.524	0.642	0.495	0.749	0.854	0.680

1	2	3	4	5	6	7
PSQ_5K	0.542	0.628	0.492	0.702	0.812	0.676
PSQ_5L	0.553	0.643	0.500	0.690	0.829	0.686
PSQ_5M	0.517	0.622	0.542	0.724	0.872	0.759
PSQ_5N	0.513	0.609	0.594	0.699	0.885	0.739
PSQ_5O	0.598	0.694	0.680	0.765	0.873	0.806
PSQ_5P	0.624	0.682	0.619	0.698	0.885	0.732
LOY_6A	0.669	0.674	0.603	0.856	0.818	0.936
LOY_6B	0.567	0.630	0.636	0.816	0.797	0.955
LOY_6C	0.599	0.612	0.646	0.794	0.770	0.946

Table 57. – Fornell-Larcker Criterion Table for the Case Study

	AP	LOY	PSQ	SC	SS	ST
AP	0.832					
LOY	0.664	0.946				
PSQ	0.674	0.841	0.850			
SC	0.597	0.870	0.845	0.925		
SS	0.594	0.648	0.669	0.695	0.904	
ST	0.619	0.676	0.779	0.764	0.782	0.933

Note: 1. The diagonal values show the square root of AVE; 2. Other values indicate the correlation values.

5.5.2 Structural Model (SM)

Just like the main study, this case study also assesses the two sets of constructs on collinearity. 1) PSQ, SS, AP, SC as the predictors of LOY; and 2) PSQ, AP as the predictors of SS. Table 58 exhibits the VIF findings. According to this table, all the VIF value are below the threshold of 5. As a result, collinearity issue did not occur in these two sets of constructs.

Table 58. – Collinearity Examination (VIF value)

	AP	LOY	PSQ	SC	SS	ST
AP		1.965			1.831	
LOY						
PSQ		4.193			1.831	
SC		3.921				
SS		2.166				1.000
ST				1.000		

Path coefficient exhibits the relationship among constructs and the range of path coefficient fall into -1 to $+1$ (Garson, 2013). Table 59 presents the results of each path after the bootstrapping calculation:

Table 59. – Path Coefficients of the Structural Model (Case Study)

Hypothesis	Path	Path coefficient (β)	t -value	Critical value	Statistically significant (Y/N)	p -Value	Critical value	Statistically significant (Y/N)
H1	PSQ→LOY	0.283	3.398	1.96	Y	0.001	$p < 0.001$	Y***
H2	PSQ→SS	0.493	5.576	1.96	Y	0.000	$p < 0.001$	Y***
H3	SS→LOY	-0.016	0.227	1.96	N	0.821	$p < 0.01$	N
H5	AP→LOY	0.155	2.114	1.96	N	0.035	$p < 0.05$	Y
H6	AP→SS	0.262	2.962	1.96	Y	0.003	$p < 0.01$	Y**
H8	SS→ST	0.782	18.169	1.96	Y	0.000	$p < 0.001$	Y***
H9	ST→SC	0.764	17.313	1.96	Y	0.000	$p < 0.001$	Y***
H10	SC→LOY	0.549	7.079	1.96	Y	0.000	$p < 0.001$	Y***

Note. *** $p < 0.001$; ** $p < 0.01$

Table 59, except for the path of $SS \rightarrow LOY$ ($\beta = -0.016$, $t = 0.227$, $p = 0.82$), other paths are statistically significant and supported, due to the t -values are larger than the critical value (1.96) and p -values are below the critical value. The results supported that H1: PSQ positively influences LOY ($\beta = 0.283$, $t = 3.398$, $p < 0.001$), H2: PSQ positively influences SS ($\beta = 0.493$, $t = 5.576$, $p < 0.001$), H5: AP positively influences LOY ($\beta = 0.155$, $t = 2.114$, $p < 0.01$), H6: AP positively influences SS ($\beta = 0.262$, $t = 2.962$, $p < 0.01$), H8: SS positively influences ST ($\beta = 0.782$, $t = 18.169$, $p < 0.001$), H9: ST positively influences SC ($\beta = 0.764$, $t = 17.313$, $p < 0.001$), H10: SC positively influences LOY ($\beta = 0.549$, $t = 7.079$, $p < 0.001$). The path that was not supported, i.e., ($SS \rightarrow LOY$), revealed that H3 is also not supported and explained that the path is statistically insignificant. Therefore, H4 and H7 (the mediating effect of SS between PSQ and LOY and the mediating effect of SS between AP and LOY) also failed to support this case study. These findings are the same as those of the main study.

The measurement result of R^2 values (the model's predictive accuracy) for the case study is exhibited in (Table 60). For easy comparison, the table also includes the results from the main study. This study's model

demonstrates a moderate to substantial predictive capacity especially the predictive accuracy on LOY in which the R^2 value shows substantial number of 0.809, a similar result compared to the main study.

Table 60. – R^2 for the Case Study Model

Latent Variable	R Square (Case Study)	Predictive Accuracy (Case Study)	R Square (Main Study)	Predictive Accuracy (Main Study)
LOY	0.809	Substantial	0.821	Substantial
SC	0.583	Moderate	0.589	Moderate
SS	0.486	Moderate	0.545	Moderate
ST	0.611	Moderate	0.655	Substantial

The effect size (f^2) of the coefficient determination for this case study is demonstrated in Table 61. The exogenous variable (SS) is found to have no effect on its endogenous variables (LOY). On the contrary, SC shows a substantial impact on LOY. This result is also found the same as the main study.

Table 61. – Effect Size (f^2) for the Model (Case Study)

Latent Variable	LOY	SC	SS	ST
AP	0.064 (small)		0.073 (Small)	
LOY				
PSQ	0.1 (small)		0.258 (medium)	
SC	0.402 (Strong effect)			
SS	0.001 (no effect)			1.573
ST		1.399		

The predictive relevance value (Q^2) and its effect size (q^2) for this case study are presented in (Table 62). All Q^2 values for the path model are higher than zero, which indicates predictive relevance in this case study. All the effect size (q^2) are also larger than 0.35, showing a substantial predictive relevance for the endogenous constructs (LOY).

Table 62. – Q^2 and q^2 Values for the Model in Case Study

Latent variable	SSO	SSE	$Q^2 = (1 - SSE / SSO)$	$q^2 = \frac{(Q^2_{included} - Q^2_{excluded})}{(1 - Q^2_{included})}$
1	2	3	4	5
AP	1192.000	1192.000		
LOY	447.000	128.631	0.712	

1	2	3	4	5
PSQ	2384.000	2384.000		
SC	894.000	454.640	0.491	0.767
SS	596.000	366.222	0.386	1.135
ST	596.000	283.364	0.525	0.652

Note: The blindfolding setting with the omission distance of $D = 7$

5.5.3 Mediating Effect from the Model

Same as the main study, four direct paths are affecting LOY in this case study, namely 1) PSQ to LOY; 2) AP to LOY; 3) SS to LOY and; 4) SC to LOY. The significance of the direct effect along the paths is illustrated in Table 59. From the table, the significant value (p-value) of $SS \rightarrow LOY$ is larger than 0.05 at a five percent significant level, which reveals this path of $SS \rightarrow LOY$, is statistically insignificant. As a result, the path did not support in the case study. Meanwhile, the p-values for the other three paths (1, $PSQ \rightarrow LOY$; 2, $AP \rightarrow LOY$ and 4, $SC \rightarrow LOY$) are all smaller than the critical p-value at five percent significant level. Therefore, the direct effects for these three paths are statistically significant, and the paths are supported in this case study. Table 63 summarizes the findings.

Table 63. – The Direct Effect on Student Loyalty of Each Path

Path no.	Direct Path	Direct effect	95% confidence interval of the direct effect	t-value (O/STDEV)	p-Values	Significance ($p < 0.05$)	Path Support
1.	$PSQ \rightarrow LOY$	0.283	[0.119, 0.443]	3.398	0.001	Yes	Yes
2.	$AP \rightarrow LOY$	0.155	[0.002, 0.284]	2.144	0.035	Yes	Yes
3.	$SS \rightarrow LOY$	-0.016	[-0.148, 0.126]	0.227	0.821	NO	Not support
4.	$SC \rightarrow LOY$	0.549	[0.387, 0.695]	7.079	0.000	Yes	Yes

Since there are three indirect effects on LOY in the main study, namely 1) $AP \rightarrow SS \rightarrow LOY$; 2) $PSQ \rightarrow SS \rightarrow LOY$ and 3) $SS \rightarrow ST \rightarrow SC \rightarrow LOY$, these relations are also found in the case study. Owing to the insignificant

path of SS → LOY (refer to table 63), the indirect path for one and two are not supported. Table 64 summarizes the mediating effect (indirect effect) of the three paths for this case study.

Table 64. – Indirect Effect on Student Loyalty for the Case Study

Path no.	Indirect Path	Indirect effect	95% confidence interval of the direct effect	<i>t</i> -value (O/STDEV)	<i>p</i> -values	Significance ($p < 0.05$)	Mediation
1.	AP → SS → LOY	NA	NA	NA	NA	NA	No mediation (SS → LOY does not support)
2.	PSQ → SS → LOY	NA	NA	NA	NA	NA	No mediation (SS → LOY does not support)
3.	SS → ST → SC → LOY	0.328	[0.219, 0.440]	5.89	0.000	Yes	Indirect only (full mediation)

To summarize, as paths 1 and 2 show no mediation on LOY, AP and PSQ cannot transmit any indirect effect to LOY via SS. However, this research's path model also illustrated that AP and PSQ could still show an indirect effect on LOY along the path of SS → ST → SC → LOY. It is a particular feature from the path model, which endorsed that SS cannot directly affect LOY. However, SS has given indirect effects on LOY via ST and SC in IA. These findings are the same as the main study.

In addition, the path model reveals that ST is mediating between SS and SC. In fact, SC is also mediating between ST and LOY because the *p*-value from the direct path coefficients of SS → ST; ST → SC; SC → LOY illustrates statistical significance (Refer to Table 59, all the *p*-values are smaller than 0.001). Therefore, the mediating effect of these two paths can be an area of further study in the future.

Figure 35 summarizes all the PLS-SEM findings for this case study while (Table 65) illustrates all the test results, including the findings from the main study for comparison convenience. All findings between the case study and the main study are found consistent.

Table 65. – Summary of the PLS-SEM Evaluation Findings between the Main and the Case Studies

Hypothesis	Path	p-value (Case study)	Result (Case study)	p-value (Main study)	Result (Main study)
H1	PSQ→LOY	0.001***	Support	0.000***	Support
H2	PSQ→SS	0.000***	Support	0.000***	Support
H3	SS→LOY	0.821	Not support	0.187	Not support
H5	AP→LOY	0.035	Support	0.008**	Support
H6	AP→SS	0.003*	Support	0.0014**	Support
H8	SS→ST	0.000***	Support	0.000***	Support
H9	ST→SC	0.000***	Support	0.000***	Support
H10	SC→LOY	0.000***	Support	0.000***	Support
H4	SS mediates PSQ and LOY				
	PSQ→SS	0.000	Support	0.000	Support
	SS→LOY	0.821	Not support	0.187	Not support
H7	SS mediates AP and LOY				
	AP→SS	0.012	Support	0.0014	Support
	SS→LOY	0.821	Not support	0.187	Not support

Note. **p < 0.01; ***p < 0.001

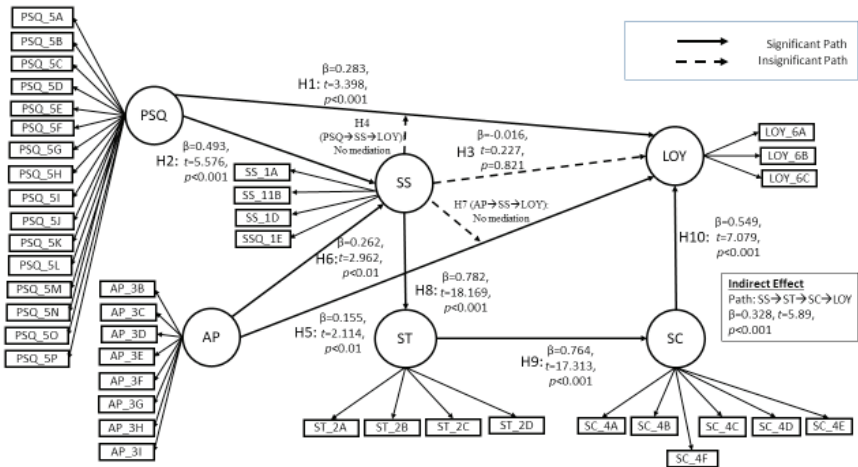


Figure 35. Results of PLS-SEM Analysis (Case Study)

5.6 Multiple Regression for the Case Study

The individual effect of the three APs on SS and LOY for the HD business students in IA is discussed in this section. Views on the three APs, SS and LOY are collected from the questionnaires. The multiple regression is applied in assessing the six sub-hypotheses. To start with the multiple regression evaluation, five assumptions on the data need to be verified.

5.6.1 Minimum Sample Size

Based on the equation $50 + (8 \times \text{number of independent variables})$, this case study requires at least 74 samples. Since 149 valid responses were received, this case has met the requirements (Saunders et al., 2019).

5.6.2 Linear Relation Between Independent Variable and Dependent Variable.

Residual plots of the three APs on LOY and SS for this case study are exhibited in the six figures shown below.

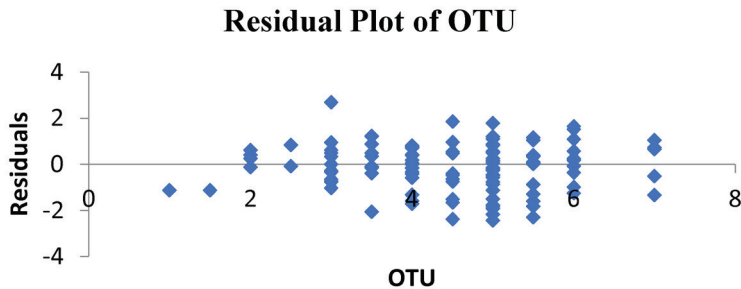


Figure 36. Residual Plot of OTU on LOY (Case Study)

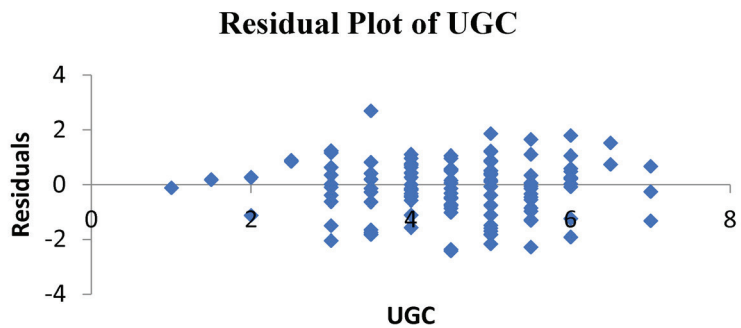


Figure 37. Residual Plot of UGC on LOY (Case Study)

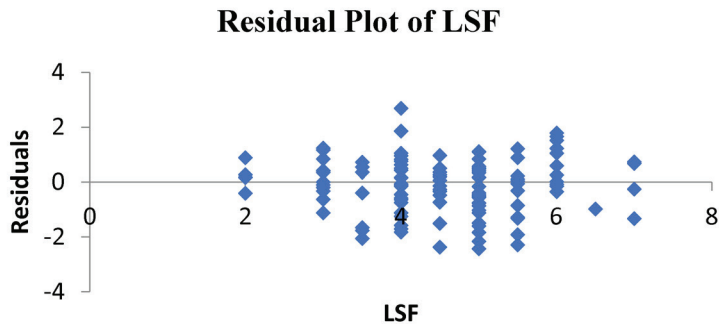


Figure 38. Residual Plot of LSF on LOY (Case Study)

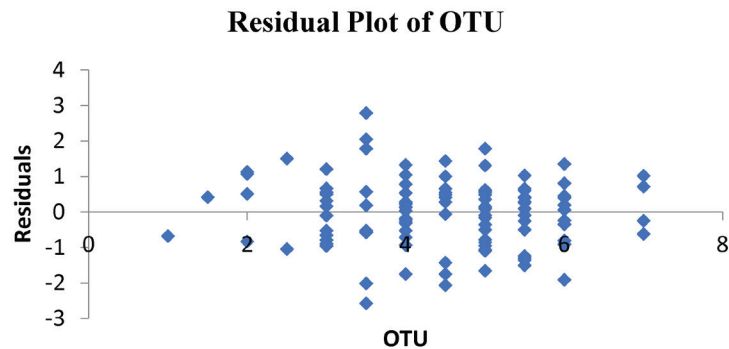


Figure 39. Residual Plot of OTU on SS (Case Study)

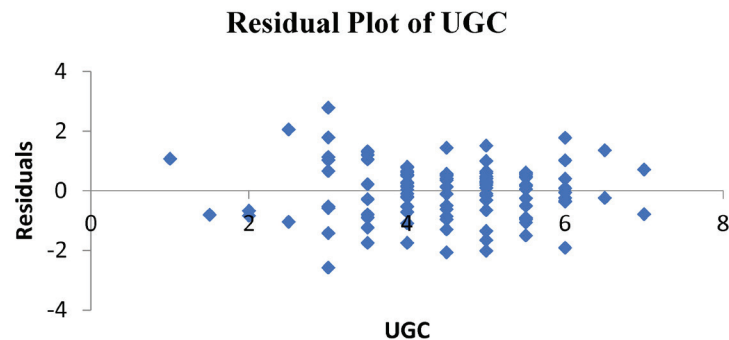


Figure 40. Residual Plot of UGC on LOY (Case Study)

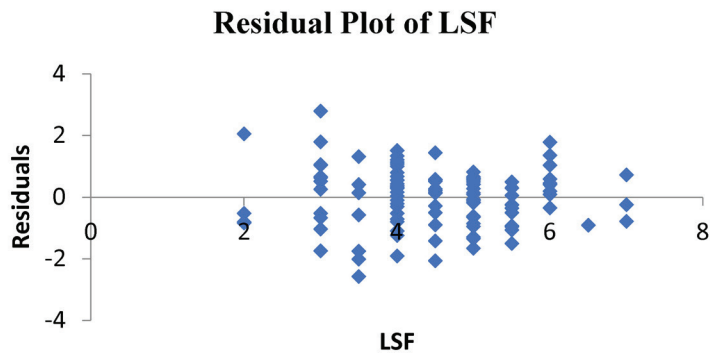


Figure 41. Residual Plot of LSF on SS (Case Study)

All six figures demonstrate that residuals are randomly dispersed around the horizontal x-axis. Therefore, a linear relationship of these three independent variables on LOY and SS can be established.

5.6.3 Homoscedasticity of the Data.

Figure 42 and 43 exhibit the residual against the fitted value of LOY and fitted value of SS respectively. According to these two figures, most of the residual values are equally dispersed in the chart. When the fitted value (dependent variable) increases, a flat trend line (red dots) can be drawn. It can be concluded that data demonstrates obvious homoscedasticity.

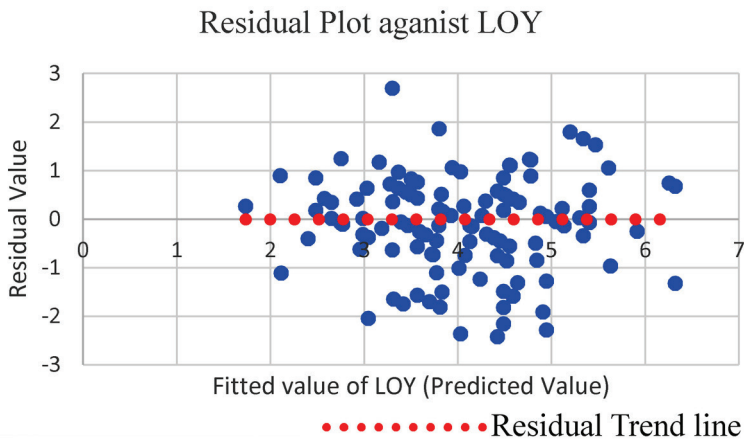


Figure 43. Residual Plot against LOY (Case Study)

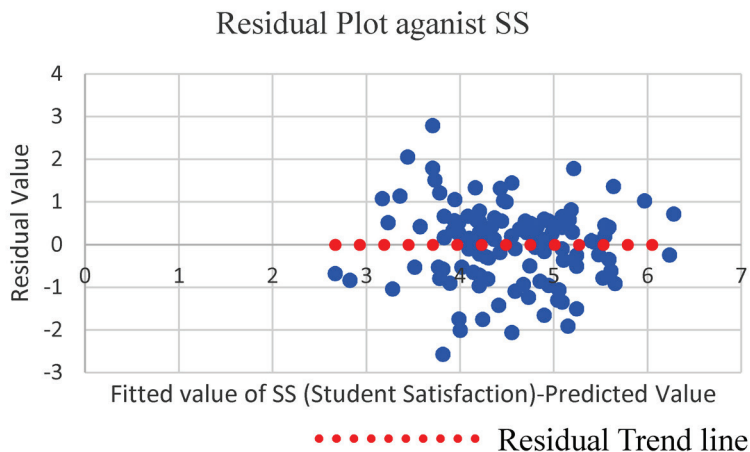


Figure 44. Residual Plot against SS (Case Study)

5.6.4 Data Distribution

Table 66 presents the descriptive statistics. According to this table, the skewness and kurtosis for all variables are between +1 and -1. Hence, the data for all the variables can be considered statistically distributed normally.

Table 66. – Descriptive Analysis of the Case Study

	SS	LOY	Overseas	UGC	LSF
Mean	4.552013	4.035794	4.489933	4.486577	4.52349
Standard Error	0.088901	0.108078	0.09288	0.088438	0.085224
Median	4.75	4	4.5	4.5	4.5
Mode	4	4	5	4	4
Standard Deviation	1.085172	1.319262	1.133742	1.079518	1.040296
Sample Variance	1.177597	1.740452	1.285371	1.165359	1.082215
Kurtosis	0.394244	-0.16476	0.256791	0.46322	0.110816
Skewness	-0.2126	0.118755	-0.28846	-0.16089	0.078085
Range	5.75	6	6	6	5
Minimum	1.25	1	1	1	2
Maximum	7	7	7	7	7
Sum	678.25	601.3333	669	668.5	674
Count	149	149	149	149	149

5.6.5 Multicollinearity Among Variables.

Table 67 depicts the correlation between all variables is all below 0.9. Hence, the multicollinearity assumption is also met. Table 68 summarizes the results of data verification. To conclude, the data from the case and the main studies all fulfil the assumptions of multiple regression. Their traits are very similar to each other.

Table 67. – Correlation Matrix for Multiple Regression (Case Study)

	SS	LOY	Overseas	UGC	LSF
SS	1				
LOY	0.643708	1			
Overseas	0.57159	0.502432	1		
UGC	0.508166	0.597338	0.607166	1	
LSF	0.512895	0.64925	0.570222	0.835087	1

Note: 2 tailed with $p < 0.01$ at 99% significant level

Table 68. – Summary of the Multiple Regression Assumptions for the Case Study

Assumption	Condition	Test result (case study)	Test result (Main study)
Sample size	Meet the min sample size of 74	Supported	Supported
Linearity between IV and DV	Residual plot shows randomly dispersed	Supported	Supported
Homoscedasticity	residual value equally disperses along with the plot	Supported	Moderate supported
Data distributes normally	Both coefficients of skewness and kurtosis are close to zero	Supported	Supported
Multicollinearity between IVs	Correlation coefficients between IVs are all within the threshold	Supported	Supported

5.6.6 Strength of Different Articulation Pathways on Student Loyalty

Since all the assumptions for conducting multiple regression are met, multiple regression for testing the strength of the three types of APs on LOY and SS was confirmed.

The following theoretical hypotheses for APs and LOY have recapped again.

H5: Provision of Articulation Pathway positively influences Student Loyalty for HD business students in IA.

H5a: Provision of UGC Articulation Pathway has the strongest positive influences on Student Loyalty among the three articulation pathways.

H5b: Provision of OTU Articulation Pathway has the smallest positive influences on Student Loyalty among the three articulation pathways.

H5c: Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.

The regression model for these hypotheses is illustrated below:

$$\text{Regression model: } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where

$Y = \text{LOY}$

$X_1 = \text{articulation pathway to UGC}$

$X_2 = \text{articulation pathway to OTU}$

$X_3 = \text{articulation pathway to LSF}$

$\beta_1, \beta_2, \beta_3 = \text{coefficient to the effect size that the independent variables on the dependent variable.}$

$\varepsilon = \text{error term}$

The following statistical hypotheses are derived for testing the H5 and its sub-hypotheses.

Statistical hypotheses for H5:

$H_0: \beta_1 = \beta_2 = \beta_3 = 0$ (the three APs combined has no relationship with LOY)

$H_1: \text{minimum of one } \beta \text{ coefficient is not equal to } 0.$

Statistical hypotheses for H5a:

$H_0: \beta_1 = 0$ (UGC is not a useful predictor of LOY)

$H_1: \beta_1 \neq 0$ (the β_1 coefficient of UGC is not equal to 0)

Statistical hypotheses for H5b:

$H_0: \beta_2 = 0$ (OTU is not a useful predictor of LOY)

$H_1: \beta_2 \neq 0$ (the β_2 coefficient of OTU is not equal to 0)

Statistical hypotheses for H5c:

$H_0: \beta_3 = 0$ (LSF is not a useful predictor of LOY)

$H_1: \beta_3 \neq 0$ (the β_3 coefficient of LSF is not equal to 0)

Table 69 exhibits the summary output of the multiple regression analysis between the three APs to LOY for the case study.

Table 69. – Summary Output for the Multiple Regression Analysis of the Three Articulation Pathways to Student Loyalty (Case Study)

SUMMARY OUTPUT		Loyalty				
Regression Statistics						
Multiple R	0.671243437					
R Square	0.450567751					
Adjusted R Square	0.439200188					
Standard Error	0.987949937					
Observations	149					

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	116.060339	38.68678	39.6363	0.0000
Residual	145	141.526536	0.976045		
Total	148	257.586875			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.104714677	0.39244628	-0.26683	0.78998	0.88039	0.67094
OTU	0.583927943	0.1434092	4.071761	0.00008	0.30049	0.86737
UGC	0.130034481	0.14287999	0.910096	0.36428	0.15236	0.412431
LSF	0.203946691	0.09110463	2.238599	0.02671	0.02388	0.384011

According to (Table 69), the coefficients of determination (R^2) and adjusted R^2 are 0.451 and 0.439, which reflected that around 44 percent of the variance in the LOY could be interpreted. It indicates that this regression model gives a moderate degree of goodness of fit.

The F -test result is 39.636 and its p -value is 0.0000 (p -value < 0.001 at one percent significant level), which proves that this regression is statistically significant. It also reveals the probability of occurrence by chance was below 0.001. Thus, the null hypothesis (H_0) of H_5 can be rejected, and the three APs are positively predicting LOY.

The t -value of OTU is 4.072, and the p -value is 0.00008, which is smaller than 0.001 at one percent significant level, thus statistically significant. The null hypothesis of H_{5b} cannot be accepted. It indicates that OTU is posi-

tively predicting the level of LOY with other independent variables constant. It is also true that the target respondents from the case study are now being offered different kinds of OTU degree programmes. Therefore, respondents treat it as necessary for their sub-degree programme selection.

While the t -value of UGC is 0.911, the p -value of 0.364 is larger than 0.05 at five percent significant level and is therefore statistically insignificant. Meanwhile, the null hypothesis of H5a can also be accepted. It indicates that UGC top-up degree programmes have not shown any evidence to contribute to the prediction of LOY.

The t -value of LSF is 2.239, since the p -value (0.027) is smaller than 0.05 at five percent significant level, it is therefore statistically significant. The null hypothesis of H5c cannot be accepted, which indicates that LSF is positively predicting the level of LOY with other independent variables constant.

To summarize, only OTU and LSF show a significant effect in predicting the level of LOY with other independent variables constant for the target audience in the case study. Meanwhile, the coefficient of the OTU is higher than the coefficient of LSF, which explains the reason that the OTU is playing a more significant effect in predicting the LOY. It shows a different result from the main study.

5.6.7 Strength of Different Articulation Pathways on Student Satisfaction

This section will analyze the relationship between the three types of APs and SS by the multiple regression analysis. The following theoretical hypotheses for APs and SS are recapped.

H6: Provision of Articulation Pathway positively influences Student Satisfaction for HD business students in IA.

H6a: Provision of UGC Articulation Pathway has the strongest positive influences on Student Satisfaction among the three articulation pathways.

H6b: Provision of OTU Articulation Pathway has the smallest positive influences on Student Satisfaction among the three articulation pathways.

H6c: Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.

The regression model for the hypothesis is then illustrated below:

$$\text{Regression model: } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where

Y = LOY

X_1 = articulation pathway to UGC

X_2 = articulation pathway to OTU

X_3 = articulation pathway to LSF

$\beta_1, \beta_2, \beta_3$ = coefficient of the effect size that the independent variables (different APs) on the dependent variable (SS).

ε = error term

The following statistical hypotheses are derived for testing the H6 and its sub-hypotheses.

Statistical hypotheses for H6:

$H_0: \beta_1 = \beta_2 = \beta_3 = 0$ (the three APs combine has no relationship between SS)

H_1 : minimum one β coefficient is not equal to 0.

Statistical hypotheses for H6a:

$H_0: \beta_1 = 0$ (UGC is not a useful predictor of SS)

$H_1: \beta_1 \neq 0$ (the β_1 coefficient of UGC is not equal to 0)

Statistical hypotheses for H6b:

$H_0: \beta_2 = 0$ (OTU is not a useful predictor of SS)

$H_1: \beta_2 \neq 0$ (the β_2 coefficient of OUT is not equal to 0)

Statistical hypotheses for H6c:

$H_0: \beta_3 = 0$ (LSF is not a useful predictor of SS)

$H_1: \beta_3 \neq 0$ (the β_3 coefficient of LSF is not equal to 0)

Table 70 exhibits the multiple regression analysis between the three APs to SS.

According to Table 70, the coefficients of determination (R^2) and adjusted R^2 are 0.3809 and 0.3681, which reflected around 37 percent of the variance in SS can be interpreted by the regression model. It indicates that the degree of goodness of fit of the regression model is moderate.

While the F -test result is 29.7358, its p -value is 0.0000 (p -value < 0.001 at one percent significant level), which means that this regression is statistically significant. It also reveals that the probability of occurrence by chance was less than 0.001. Therefore, the null hypothesis (H_0) for the H6 can be rejected, and the three APs are positively predicting the SS.

While the t -value of UGC is 0.7464, the p -value is 0.4566, which is larger than 0.05 at five percent significant level and is statistically insignificant. Hence, the null hypothesis of H6a can be accepted. It indicates that there is no evidence that the UGC contributes information in predicting the level of SS with other independent variables constant.

While the t -value of OTU is 4.7604, the p -value (0.0000) is smaller than the critical p -value of 0.05 at five percent significant level. Hence, it is statistically significant and the null hypothesis of H6b cannot be accepted,

which indicates that OTU is positively predicting the level of SS with other independent variables constant.

While the t -value of LSF is 1.7489, the p -value (0.0824) is larger than 0.05 at five percent significant level. It is therefore statistically insignificant, and the null hypothesis of H6c can be accepted. The result indicates that there is no evidence the LSF contributes information in predicating SS with other independent variables constant.

Table 70. – Summary Output for the Multiple Regression Analysis of the Three Articulation Pathways to Student Satisfaction (Case study)

Regression	Statistics
Multiple R	0.617163
R Square	0.380890
Adjusted R Square	0.368081
Standard Error	0.862639
Observations	149

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	66.3832	22.1277	29.7358	0.0000
Residual	145	107.9012	0.7441		
Total	148	174.2844			

	Coefficients	Standard Error	t Stat	P -value	Lower 95%	Upper 95%
Intercept	1.4433	0.3427	4.2121	0.0000	0.7661	2.1206
OTU	0.3787	0.0795	4.7604	0.0000	0.2215	0.5359
UGC	0.0931	0.1248	0.7464	0.4566	-0.1535	0.3397
LSF	0.2190	0.1252	1.7489	0.0824	-0.0285	0.4665

To sum up, only OTU shows significant effect in predicting the level of SS with other independent variables constant for the target audience in the case study, and the other two APs show no evidence in predicting the SS in the case study. The findings are also different from the main study.

5.7 ANOVA Test

As the main study analyzed the effect of the sub-degree student's work background on the LOY to their institutions, the same statistical approach will also be applied to the case study. Target students in the case study are again classified into four different groups (FT, FTnPT, PT and NE) for the ANOVA test. Levene's test is first performed to decide the types of ANOVA test to be applied.

The descriptive data is presented in (Table 71) before the ANOVA test.

Table 71. – Descriptive Analysis for Student Loyalty (Case Study)

	FT	FTnPT	PT	NE
Mean	4.24242424	4.55555556	3.91111111	4.133333
Standard Error	0.41460925	0.29765484	0.126654028	0.373458
Median	4	4.33333333	4	3.666667
Mode	4	5	4	5
Standard Deviation	1.3751033	1.26284252	1.297817585	1.446397
Sample Variance	1.89090909	1.59477124	1.684330484	2.092063
Kurtosis	0.75880383	0.13637463	-0.30232237	-0.73044
Skewness	0.60316629	0.80890244	-0.04696411	0.363885
Range	5	4.33333333	6	5
Minimum	2	2.66666667	1	2
Maximum	7	7	7	7
Sum	46.6666667	82	410.6666667	62
Count	11	18	105	15
Confidence Level (95.0%)	0.92380697	0.62799681	0.25115969	0.800988

The statistical hypotheses are shown below. Table 72 displays the result of the Levene's test on LOY.

$$H_0: \sigma_{FT}^2 = \sigma_{FT PT}^2 = \sigma_{PT}^2 = \sigma_{NE}^2$$

H_1 : Not all variances are equal.

Table 72. – Levene's Test Result for Student Loyalty (Case Study)

SUMMARY				
Groups	Count	Sum	Average	Variance
FT diff	11	10.72727	0.975207	0.844778
FTnPT diff	18	17.11111	0.950617	0.637941
PT diff	105	107.2	1.020952	0.631964
NE diff	15	18.8	1.253333	0.409016

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.902306	3	0.300769	0.480602	0.696276	2.667006
Within Groups	90.74327	145	0.625816			
Total	91.64558	148				

Levene's test ($F [3,145] = 0.48, p > 0.05$) shows p -value is 0.696, which is larger than the threshold 0.05 at five percent significant level. Hence, H_0 is accepted. The assumption of four groups of students with different work experience has equal variance is met. Thus, One-way ANOVA needs to apply on the four groups of students in checking whether a significant difference occurs in the means of the groups on LOY.

To perform One-way ANOVA, the following statistical hypotheses are listed:

$$H_0: \mu_{FT} = \mu_{FT \& PT} = \mu_{PT} = \mu_{No Work}$$

H_1 : Not all means are equal.

Table 73 presents findings of the analysis. Since the p -value (0.254) is larger than the critical of 0.05 at five percent significant level, H_0 is accepted. This implies that no significant difference exists between the four groups on LOY ($F [3, 148] = 1.37, p > 0.05$) in the factor of respondents' work background. Under this situation, it is not necessary to conduct the post-hoc test to testify the effect between groups. The test confirms that the work background of the target respondents from the case study do not show a difference on the LOY. Hence, the IA can treat all students who display the same traits in launching the LOY measures.

Table 73. – One-way ANOVA Test Summary (Case Study)

SUMMARY				
Groups	Count	Sum	Average	Variance
FT	11	46.66667	4.242424	1.890909
FTnPT	18	82	4.555556	1.594771
PT	105	410.6667	3.911111	1.68433
NE	15	62	4.133333	2.092063

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	7.107414	3	2.369138	1.37147	0.253895	2.667006
Within Groups	250.4795	145	1.727445			
Total	257.5869	148				

5.8 Summary of All the Statistical Tests on the Case Study

In this chapter, the researchers will be trying to replicate the theoretical framework from chapter 2 into a particular group of the sub-degree students in order to testify the validity of the framework suggested in the main study. The test results are found quite similar with those obtained in the main study. The findings between the main and the case studies are summarized in Table 74. The highlighted areas show that the results are different between the main and the case studies.

Table 74. – Evaluation Results of All Main Hypotheses and Sub-hypotheses (Case study)

RHs. No.	Hypotheses	Test Result (Main)	Test Result (Case)
1	2	3	4
H1	Perceived Service Quality positively influences Student Loyalty for sub-degree students in HK/ HD business students in IA.	Supported	Supported
H2	Perceived Service Quality positively influences Student Satisfaction for sub-degree students in HK / HD business students in IA.	Supported	Supported
H3	Student Satisfaction positively influences Student Loyalty for sub-degree students in HK / HD business students in IA.	Not supported	Not Supported
H4	Student Satisfaction mediates between Perceived Service Quality and Student Loyalty for sub-degree students in HK / HD business students in IA.	Not supported	Not Supported
H5	Provision of Articulation Pathway positively influences Student Loyalty for sub-degree students in HK / HD business students in IA.	Supported	Supported
H6	Provision of Articulation Pathway positively influences Student Satisfaction for sub-degree students in HK / HD business students in IA.	Supported	Supported
H7	Student Satisfaction mediates between Articulation Pathway and Student Loyalty for sub-degree students in HK / HD business students in IA.	Not supported	Not Support
H8	Student Satisfaction positively influences Student Trust for sub-degree students in HK / HD business students in IA.	Supported	Supported

1	2	3	4
H9	Student Trust positively influences Student Commitment for sub-degree students in HK / HD business students in IA.	Supported	Supported
H10	Student Commitment positively influences Student Loyalty for sub-degree students in HK / HD business students in IA.	Supported	Supported
Sub-hypotheses			
H5a	Provision of UGC Articulation Pathway has the strongest positive influence on Student Loyalty among the three articulation pathways.	Supported	Not supported
H5b	Provision of OTU Articulation Pathway has the smallest positive influence on Student Loyalty among the three articulation pathways.	Not supported	Supported
H5c	Provision of LSF Articulation Pathway has a medium positive influence on Student Loyalty among the three articulation pathways.	Supported	Supported
	Effect size (Strength) Descending effect order: UGC > LSF (Main Study) Descending effect order: OTU > LSF (Case Study)	Finding inconsistency	
H6a	Provision of UGC Articulation Pathway has the strongest positive influence on Student Satisfaction among the three articulation pathways.	Supported	Not supported
H6b	Provision of OTU Articulation Pathway has the smallest positive influence on Student Satisfaction among the three articulation pathways.	Supported	Supported
H6c	Provision of LSF Articulation Pathway has a medium positive influence on Student Satisfaction among the three articulation pathways.	Supported	Not Supported
	Effect size (Strength) Descending effect order: UGC > OTU > LSF (Main Study) Descending effect order: OTU only (Case Study)	Finding inconsistency	

ANOVA test:

1	2
Hypothesis statement:	There is no difference regarding the impact of work background on student loyalty among the HD business students in IA.
Hypothesis:	$H_0: \mu_{FT} = \mu_{FT \& PT} = \mu_{PT} = \mu_{NE}$ H_1 : All means are not equal.

<i>1</i>	<i>2</i>
Finding:	LOY ($F [3, 385] = 1.96, p > 0.05$) (Main Study). LOY ($F [3, 148] = 1.37, p > 0.05$) (Case Study).
Conclusion:	$p > 0.05$; therefore, H_0 is accepted and revealed no mean difference between groups. Respondents' work background has no statistical effect on Student Loyalty.

5.9 Qualitative Analysis for the Case Study

According to table 74, all hypotheses of this research are consistent between the main and case studies. However, some of the sub-hypotheses have shown difference between the main and the case studies. Owing to the different results of these sub-hypotheses, the researchers would like to adopt the qualitative approach to analyze the discrepancies. The qualitative approach provides specific evaluation with a series of procedures that can reveal additional information in order to help the researchers gain insight into the findings (Corbin & Strauss, 2014).

5.9.1 Profile of Interviewee from Institute A (IA)

A total of 10 interviews were arranged with 10 different HD business students who are taking various business-related programmes at IA. Because of the social distancing guideline under the covid-19 pandemic, the individual interviews were conducted by phone on 29 and 30 Aug 2020. The contact numbers of the interviews were received from the respective programme leaders who have obtained consent from the interviewees. The researchers called each interviewee at the scheduled timeslots in order to conduct the interviews. Table 75 records the students' background that has accepted the interviews. The shortest interview was around 15 mins, and the longest interview was about 23 mins.

5.9.2 Methodology of the Interview

At the beginning of the interviews, the interviewer informed all the interviewees about the purposes and objectives of the interview. The interviewees were told that it was at their own will to be interviewed and that all the contents obtained from the interviews would be treated with strict confidentiality and anonymity. Fortunately, all interviewees remained co-operative and positive throughout the interviews.

Table 75. – Profile of the Interviewees

Respondent Number	Programme	Gender	Year of study	Date of Interview	Duration (mins)
1.	Retail Management	F	2	29 Sept 2020	20
2.	Accounting	F	2	29 Sept 2020	18
3.	Retail Management	M	2	29 Sept 2020	18
4.	Banking and Finance	F	1	29 Sept 2020	22
5.	Marketing and customer analytic	F	1	29 Sept 2020	23
6.	Accountancy	M	2	29 Sept 2020	19
7.	Event Marketing and Digital Promotion	M	1	30 Sept 2020	20
8.	International Business Management	M	2	30 Sept 2020	17
9.	International Business Management	F	2	30 Sept 2020	21
10.	Retail Management	F	1	30 Sept 2020	15

The interviewer used semi-structured questions to collect in-depth views on all the variables (PSQ, AP, SS, ST, SC, and LOY) from interviewees. The major discrepancies of the quantitative findings on the relations between different kinds of APs to LOY and APs to SS were the main focus of the interviews. Therefore, a set of pre-determined open-ended questions for all variables was first set up before the interviews. Meanwhile, the qualitative interviews allow the researchers to capture the underlying ideas and comments that were failed to be addressed by quantitative research (Raudeliūnienė, 2018).

For this interview, all qualified students are randomly chosen by the respective programme leaders. Seven pre-determined open-end questions were prepared for the interviews. The questions are listed in (Table 76).

Table 76. – Open-end Questions for the Interviews

Question number	Question
1	2
1.	Why did you choose to study in this programme?
2.	Do you think the learning environment, service quality offered by this institution is essential to you?

1	2
3.	What is your preference for the three articulation pathways, and why?
4.	Do you agree that the articulation pathway will affect the student satisfaction and loyalty on the institution, why?
5.	Do you think your institution can satisfy your study needs and meet up your expectation, why?
6.	Do you trust that your institution can bring you to a higher level of academic achievement?
7.	What makes you feel satisfied with the institution? Will your sense of belonging increase when you are satisfied?

5.9.3 Qualitative Finding on Articulation Pathways to Student Satisfaction

During the interviews, all respondents indicated the provision of AP to undergraduate degrees by the institution is a crucial element to them, and respondents were happy for this collaboration. Respondent 7 emphasized that this is a responsible arrangement for an institution to offer APs to its students. Feedback from respondents 2, 7, and 9 all indicated they wish to obtain higher qualifications after their HD studies. Besides, respondent 1 claimed that *“Although I understand that my academic foundation is not so good, it is still my hope to have higher education qualification in the future. I expect all institutions to provide articulation pathway to their students. To me, it is the pre-requisite requirement for a sub-degree provider”*. Also, respondent 4 & 9 commented that *“as it is very difficult to compete for an offer in the UGC-funded programmes, the locally self-financed or overseas top-up degree programmes have become more critical.”* Moreover, respondent 8 reflected that *“articulation rate is one of the factors that I consider when enrolling into this HD programme. I am satisfied with the current articulation pathways arranged by my institute and will share this information with my friends.”* The findings align with the results from the questionnaire that AP positively influences SS.

When the researchers went more in-depth and asked the three types of articulation pathways, all respondents explained that the UGC programme is the top priority among the sub-degree students in HK. It revealed that the UGC programme is essential to sub-degree students. Institutions that can provide an articulation pathway to UGC programme will positively affect SS as well as LOY. It aligns with the finding of the main study. However,

when the researchers checked their own preference on the articulation pathway, the comments were different. Respondent 1 reflected that *“my academic background is not very good; therefore, I have no confidence in getting an offer from the UGC programmes. I prefer overseas top-up degree programmes which are easier for me to handle”*. The same comments were obtained from respondents 4, 9 and 10. Also, respondent 8 further explained that *“the overseas top-up degree programmes offered by my institution are all validated by the local education authority, and since the programmes have received a subsidy from the government, the tuition fees are cheaper”*. It explained why business students from IA are satisfied with the OTU programme arranged by IA. It also aligns with the quantitative findings of the case study that business students from IA demonstrated a statistically significance on OTU only.

5.9.4 Qualitative Finding on Articulation Pathways to Student Loyalty

The quantitative findings show that the overall AP demonstrated a positive relationship on the LOY. The results align in both the main study and case study. The results endorsed the assumption that the overall AP could help to develop LOY. If an institute can offer suitable APs, students would show a higher level of LOY. Respondent 6 replied and said, *“I will recommend my programme to my friends and relatives because it provides an articulation pathway for getting a higher qualification after graduation”*. A similar reply was also obtained from Respondent 8, who claimed that the articulation rate is a factor that he considered when he first enrolled into his current HD programme. Similar comments were received from respondents 2, 7, and 9. However, the sub-degree students demonstrated different preference in the main study and the case study. For the main study, respondents ranked UGC programmes with higher priority. However, business students from IA ranked LFS and OTU as more significant. The discrepancy can be explained by the fact that IA is a vocational institution, hence the students are more job oriented. During the interviews, both respondents 2 and 5 said, *“I prefer to have more internships and industrial attachment opportunities so that I can understand the actual operations of the industry”*. Respondent 10 also reflected that as she wished to set up her online store in the future, the programme she is studying offers her with practical skills and training in running a business. Respondent 6, who is currently studying accounting, explained that his programme allows him to acquire hands-on skill instead merely focusing on the academic results.

Moreover, he can still become an accountant by taking professional examinations after graduation. Hence getting a job is more important for him.

In general, programme leaders revealed that as business students from IA usually have less outstanding academic results in HKDSE, they generally prefer less competitive pathways in getting higher qualifications. More importantly, the OTU programmes offered by IA are competitive in the market. It was demonstrated by respondent 1 who revealed that, *"I understand my academic background is not so strong, so I prefer a locally self-financed or an overseas top-up degree programme because I have no confidence in getting a place from UGC."* Respondent 9 further said, *"my current programme collaborates with an overseas top-up degree programme with some modules exemption. Hence, it is a faster track for me to acquire an undergraduate degree"*. More importantly, respondent 8 revealed that *"with the government allowance, the school fee for OTU is more attractive to him"*. By checking the website of IA, all HD programmes in IA are pegged with more than one OTU programmes. Graduates can directly enter the final year in an undergraduate degree. Moreover, as all the OTU programmes are accredited with the local education authority and have received government subsidies, the school fees are lower than other programmes in the market.

Replies from the respondents showed that both qualitative interview and quantitative questionnaire displayed the same results for the case study, which all indicated that AP is essential to all sub-degree students. Among the three types of APs, UGC programme is the most popular programme for sub-degree students. However, business students from IA will consider their academic capability and prefer less competitive pathways.

5.9.5 Qualitative Findings on Relation of Student Satisfaction, Student Trust, Student Commitment and Student Loyalty

The responses from student 3, 6, 7 and 10 explained why the SS could not be transferred into LOY in the case study. According to respondent 3, *"although I am satisfied with IA on the learning support, I don't have too much sense of belongs on the IA because I do not have a close relationship with my teachers. Moreover, the low learning attitude of my schoolmates gives me no confidence towards IA in providing a quality sub-degree programme to me."* Respondent 6 also expressed that *"the teaching and learning facilities in IA suit my needs. However, I still doubt the recognition of my HD certificate in the job market."* Meanwhile, Respondent 7 also revealed that *"an HD academic level is insufficient to compete with other qualification in the job market. Therefore,*

even I am satisfied with the campus, my sense of belonging is still low". Finally, Respondent 10 highlighted that *"the key to cultivate a sense of belongings to my institute relies on the relationships with my schoolmates and the teachers"*. As a result, it can be said that the business students from IA expected their alma mater to do more to give them the confidence to study at the institution. This substantiates SS is statistically insignificant on LOY, which can only be developed when ST and SC are acquired.

5.9.6 Qualitative Finding on Perceived Service Quality to Student Satisfaction and Student Loyalty

7 out of 10 respondents were satisfied with the service provided by IA, and though that IA has met their expectation in attaining a higher education qualification. Some respondents even expressed that the teaching and learning facilities in IA are good. In this regard, Respondent 3 commented that *"the teaching and learning facilities provided by IA are good, and I am satisfied with these facilities"*. Respondent 4 commented that *"although the school can fill my learning expectation; however, the campus is a bit too small."* Meanwhile, Respondent 6 and 7 reflected that they were satisfied with the campus facilities, teaching quality, and study environment of IA, and they do not mind sharing their learning experience in IA. The finding supported that PSQ is statistically significant in relation to the SS and LOY.

5.10 Conclusion on the Overall Findings for the Case Study

IA is chosen as the subject of case study for this research to compare and contrast the findings with the main study. According to table 76, all findings to testify the RHs are tabulated and compared between the main and case studies. It was found that all main hypotheses between the main study and case study are consistent, whereas the results can be used to conclude that both PSQ and the AP combined positively influence SS & LOY. However, rather than having direct influences on LOY, SS only has indirect effect on LOY. This indirect effect of SS can be passed along the path of $SS \rightarrow ST \rightarrow SC \rightarrow LOY$. This path relationship also disclosed a mediating effect and can be further explored in the future. Besides, the ANOVA test indicates that work background of the HK sub-degree students does not cast any statistical difference on the LOY towards their institutes in both main and case studies.

Furthermore, the sub-hypotheses have shown differences between the main and case studies. By applying the mixed research methods of quantitative and qualitative analyses, the discrepancies in the sub-hypotheses of 5a-5c and 6a-6c can be understood. Since IA is a vocational-oriented institution, the context of the institution may affect the results. It is also worthwhile to note that the business students from IA may be more into vocational programmes. Moreover, as most of the business students from IA demonstrated a weaker academic background, therefore, their goals may differ from other sub-degree students. The phenomenon is particularly common among AD students. Thus, respondents from the main study showed a stronger preference to articulate into UGC programmes, whereas business students from IA displayed a stronger preference for OTU programmes. The qualitative findings substantiated this analysis and offered support and explanation on why SS failed to directly translate into LOY.

Chapter 6. Summary and Implication and Recommendation for Further Research

6.1 Introduction

This chapter explains some areas in the research findings collected from the main study and case study. The relations and findings on the effects of all variables for the main and case studies are first discussed, followed by a comparison between the two studies. While the second part of this chapter explains the implications and contributions of the theories and practice and the third part shares research limitations and contributions, recommendations suggested to further study contribute the fourth area in this chapter. The overview of chapter six is depicted in (Figure 44).

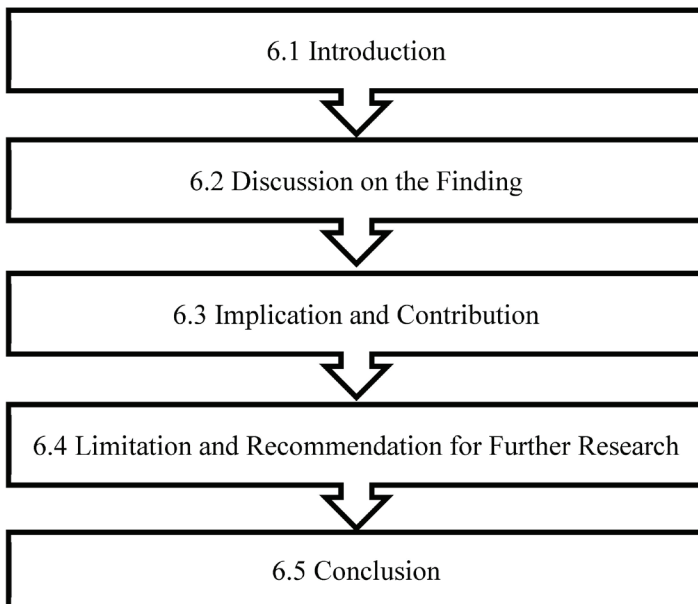


Figure 45. Outline for Chapter 6

6.2 Discussion on the Findings

6.2.1 Discussion on the Findings of Perceived Service Quality on Student Satisfaction and Student Loyalty

From the literature review in chapter two, PSQ is found to be one of the factors that positively influences LOY (Annamdevula & Bellamkonda, 2016a; Annamdevula & Bellamkonda, 2016b; Casidy, 2014a; Casidy, 2014b; Duarte et al., 2012; Perin et al., 2012; Temizer & Turkyilmaz, 2012). The findings in this research are consistent with the area of studies, which implies that sub-degree students in HK, regardless of their disciplines, concern about the service offered by their institutes. As a result, a stronger loyalty on the institutes will be nurtured when the students perceived high service quality provided in the learning environment.

Moreover, PSQ is also found to be directly influencing SS. This finding aligns with previous literature (Ali et al., 2016; Annamdevula & Bellamkonda, 2016a; Annamdevula & Bellamkonda, 2016b; Casidy, 2014a; Duarte et al., 2012; Kashif et al., 2016; Negricea, Edu, & Avram, 2014; Quintal et al., 2012; Rojas-Méndez et al., 2009; Serenko, 2011; Temizer & Turkyilmaz, 2012), which suggested that the better service the students receive, the higher the student's satisfaction towards their institutes. Both findings support the presumption that service quality is vital in building customer loyalty and satisfaction in the service industry (Setó-Pamies, 2012). Therefore, to engage sub-degree students and enhance their LOY and SS, it is vital for sub-degree providers to improve their student's PSQ. This can be done by maintaining a consistency service standard and encouraging employees (both teaching and non-teaching staff) to support their students on their learning needs as much as possible. Furthermore, campus facilities and various student development service in supporting students' learning are also crucial in building up the students' PSQ.

Since the case study replicates the model into a particular group of sub-degree students studying HD business-related programmes in IA, results obtained from the case study support the findings from the main study and echoes to most of the previous literature. In general, the results indicate that most sub-degree students in HK respond in a similar pattern. Under this circumstance, sub-degree providers should consider providing good learning supports to their students.

6.2.2 Discussion on the Findings of Articulation Pathways on Student Loyalty and Student Satisfaction

Results from both the main and case studies support that the overall AP is important on SS and LOY. Similar results were discovered by Ng et al. (2015) and Wong et al. (2016), which reflected that AP is one of the factors that positively influence SS and LOY. The results also help to understand that sub-degree students concern a lot about the articulation pathways to higher education levels. Meanwhile, the study also addressed why secondary school leavers often take this factor as their programme selection for sub-degree education (University Grants Committee, 2010). In particular, sub-degree institutes that can provide suitable articulation pathways are much welcome by the students; and the students' level of satisfaction and loyalty are relatively higher in institutes that offer suitable articulation pathways when compared to those that do not offer such arrangements.

In view of the high demand for students to get into undergraduate course, sub-degree providers are trying to offer different kinds of AP so as to assist their students in getting into undergraduate programmes. By the same token, this has enhanced the SS and LOY on their students and thus, ensures student recruitment in the future. However, due to insufficient research studies on the impact of different APs to SS and LOY, this research has provided a more in-depth review and perspective of the topic. The multiple regression has found that the influence of the three types of articulation pathways on LOY and SS and the results are depicted differently.

The findings from the main study showed that while UGC programmes exhibit a higher impact on LOY than LSF, OTU programmes have no effect on the LOY. The discovery endorsed the presumption that UGC programmes rank higher and are often the students' priorities. The results are in line with the study of Wong et al. (2016) & Yuen (2015) and the news reports in recent years (Ma, 2018; SCMP Editorial, 2018). Students illustrated higher levels of SS and LOY to sub-degree providers that can offer a higher articulation rate to UGC programmes. The high significant effect of UGC programmes on the LOY and SS is mainly due to the scarce supply of 5000 places (SCMP Editorial, 2006; Wong et al., 2016) in the market per year (Committee on Self-financing Post-secondary Education, 2018) and student's preference on UGC programmes (Kember, 2010; Kember et al., 2011; Lau, 2013; Young Post, 2017). Besides, most of the sub-degree students and their parents believed that employers give more credit to graduates of UGC-funded

programmes due to the better reputation and higher quality than privately-run programmes (Lau, 2013). More importantly, the tuition fees for UGC programmes are much lower. As a result, sub-degree students usually consider the chance of getting into UGC programmes as more valuable than the other two articulation pathways. In contrast, the fact that OTU programmes did not show any impact on the LOY may be related to the reason that many institutes collaborate with overseas universities to offer OTU programmes in order to fill up the students' desires in getting undergraduate qualifications. With this marketization motive, there is a good supply of OTU programmes in the market. This phenomenon makes the competition of getting into an OTU programme not as intensive while offsetting the effects on the LOY and SS. Indeed, there seems to be an over-supply of OTU places in view of the decreasing number of students in the recent years. Therefore, the fact that some institutions offer OTU programmes has not helped in raising the LOY. As a result, the OTU factor becomes insignificant for the sub-degree students in enhancing LOY because students believed they would eventually get offers from OTU programmes.

Regarding the impact of the three types of APs on SS, the results from the main study showed that institutes that can provide articulation pathways would have higher SS due to a positive relationship between these two variables. From the multiple regression analysis, the coefficients of OTU, UGC, and LSF are 0.145, 0.148, and 0.128 respectively. The close coefficient of three kinds of APs reflected that the three elements give a similar impact to SS. Meanwhile, an institute that can provide articulation pathway will gradually enhance the level of SS. The slightly smaller coefficient of LSF showed that LSF gives less impact to SS. The reason may be related to the fact that LSF has a relatively shorter history in the market. Hence, sub-degree students generally pay less attention and have lower preference over those LSF programmes. Meanwhile, the shorter history also means that parents and employers have less ideas on the LSF. Hence, the students will rank LSF with less importance while completing the survey. On the contrary, the results from the case study showed difference when comparing with the main study. While UGC programmes play an insignificant effect on the LOY and SS for the business students in IA, OTU showed a significant impact on both LOY and SS.

These findings are different from those collected in the main study due to the reason that IA is a vocational education institution with business students from IA attending HD that were specially designed for vocational study. In general, most graduates wish to enter the job market upon their graduation

(Lau, 2013; University Grants Committee, 2010; Wan, 2011). As it is competitive in getting offers for UGC programmes, most of the secondary school leavers tend to make an early selection of study programmes in their learning path in which sub-degree students who wish to pursue a UGC programme will apply for the AD programme after completing their secondary school education. As a result, business students from IA prefer a less competitive pathway in getting their degree qualification. This is supported by the responses obtained during the interviews with the business students of IA.

During the interview, Respondent 1 reflected that not many of his classmates applied for UGC programmes because of the fierce competition and high academic requirements for getting in UGC programmes. In addition, Respondent 6 reflected most of his classmates had a weaker HKDSE results that hindered them from competing with students from other institutions. Respondents 2, 5, and 7 indicated the students are satisfied with the internship opportunities offered by IA.

University's associated community colleges, with the benefit from the universities brand images, are usually perceived as a better means to get UGC programmes. Therefore, students who wish to compete for UGC programmes have a stronger tendency to take the sub-degree programmes offered by those community colleges. In comparison, the business students from IA who are more vocation focus tend to enroll in HD programmes. Respondent 10 said that as her current HD programme can offer practical skills and training in her study areas, she was enrolled into her current HD programme. Respondent 9 also explained most of his classmates from secondary school chose the AD programmes offered by the University's associated community colleges if they failed to get direct offers from the university. They believe that AD programmes offered by the community colleges can provided a higher articulation chance to UGC programmes following their graduation from sub-degree programmes. This implied that the current articulation pathways have unintentionally classified secondary school leavers according to their articulation desire instead of their learning capability or interests. The situation also explains that most of the sub-degree students who wish to compete for UGC programmes are loyal to the community colleges regardless of other antecedent factors. On the contrary, as the OTU programmes offered by IA are all accredited by the local education bureau, they have given another option to the business students in IA. Therefore, students are also happy and loyal to the OTU programme offered by IA due to the quality assurance offered by those programmes.

Finally, according to Respondent 3, the OTU programmes offered by IA only takes one year to complete and are lower in tuition fees. In comparison, as UGC and LSF programmes normally required two years for completion, the time required and school fees are undoubtedly higher. Moreover, since the OTU programme has a long history in IA, the teaching approach, and pedagogies already well-fit the students of IA in many aspects. Therefore, most of the business students from IA tend to give a higher rank to OTU programmes. Based on the results from the interviews, we can understand the reasons for UGC programmes to give an insignificant impact on LOY and SS among the business students of IA.

6.2.3 Discussion about the Relationship among Student Satisfaction, Student Trust, and Student Commitment on Student Loyalty

Referring to (Table 42), the path coefficient of $SS \rightarrow ST$; $ST \rightarrow SC$; $SC \rightarrow LOY$ are 0.81; 0.768; 0.653 respectively, which are the largest coefficient values among all other paths in the entire PLS-SEM analysis. Although, several studies found that SS has a direct influence on LOY (Ali et al., 2016; Duarte et al., 2012; Kashif et al., 2016), the findings of this research are however consistent with those from the studies conducted by Hennig-Thurau et al. (2001); Ismanova (2019); Kashif et al. (2016); Mulyono (2016) and Rojas-Méndez et al. (2009) who all confirmed that SS could not be translated to LOY directly, but can affect LOY indirectly via the path of ST and SC. In addition, as the research framework extends the theoretical model suggested by Rojas-Méndez et al. (2009); the study condition is line with this paper.

While the five pieces of abovementioned research focused on generating and sustaining a long-term LOY, the findings of this research supported that SS does not significantly give impact to the LOY, especially in developing long-term relationships at the sub-degree level. In particular, the largest coefficient value of $SC \rightarrow LOY$ (0.81) reflected that SC gives the largest effect on LOY when compared with other independent variables (PSQ, SS, AP). This result is consistent with the studies conducted by Ismanova (2019) & Mulyono (2016), which indicated that SC is the crucial factor in developing LOY among sub-degree students. Apart from providing an optimal learning environment and articulation pathway to students, institutes are suggested to engage students in a long-term and consistent approach. It helps to develop student's satisfaction and eventually it nurtures ST and SC.

Moreover, most of the research papers in the past studied LOY at the university level, whereas barely any study in a quantitative approach

was conducted on studies at the sub-degree level. This research serves to provide new findings for HE industry in the HK sub-degree sector. The result revealed that LOY can be established between students and the institutes only when SC and ST have been developed among the sub-degree students. Indeed, all sub-degree programmes are considered steppingstones for the students to pursue higher education achievements or receive better recognition from the public. While students who study sub-degree programmes are traditionally considered as failures from the HKDSE (public examination at the secondary level), there have many negative reports that focused on the sub-degree programmes, particularly AD programmes, and their providers (Ismanova, 2019; Lau, 2013; Lo & Ng, 2015; Mulyono, 2016; SCMP Editorial, 2006; Yuen, 2015). It is a priority for education institutes to build up a trust relationship with the students by giving them confidence that institutes are capable of offering help in developing the students, thereby cultivating the students' commitment and establishing their loyalty towards the institutes (Cavanagh et al., 2018). In fact, it seems that simply raising the students' satisfaction towards the institutes is insufficient to receive loyalty from the sub-degree students. Employees (both teaching staff and non-teaching staff) from the sub-degree providers are suggested to offer passionate teaching and learning support to give confidence to the students in their personal growth. According to the result from the PLS-SEM and the responses from Respondents 7 and 10 of the interviews, although the students are satisfied with the service provided by the institute, the sub-degree programmes (especially AD) are not fully appreciated by employers & the parents. This unfavourable situation has made students less committed to the programmes and the programme providers (Davis, 2016; SCMP Editorial, 2006). To address this issue, Government and the sub-degree providers are recommended to improve the image of sub-degree programmes by spending more effort in giving positive information to the parent and the public.

A consistent result can be found from the case study, in which the path coefficients of $SS \rightarrow ST$; $ST \rightarrow SC$; $SC \rightarrow LOY$ are 0.78; 0.764 and 0.549, respectively. Based on Table 67, these three paths are the highest path coefficient values among others. The path of $SS \rightarrow LOY$ also did not support the hypothesis because the p-value is larger than 0.05 at five percent significant level. The result illustrated that SS will not directly affect the LOY for the business student in IA. To enhance the LOY, IA needs to develop the SS, ST and SC, which are three variables that highly

affected the LOY among students. The results reflected that business students from IA also displayed the same tendency from the main study. According to the student interviews, Respondents 6 and 7 reflected that they are satisfied with the campus facilities and programme quality of IA because they trust IA can help them develop their talents. This revealed that when trust is gained from the students, the IA can receive an optimal LOY in return. The finding also indicates on the reasons about why SS cannot be translated into LOY directly in the case study. As a result, the research model suggested in the main study can be replicated in the specific sub-degree sector.

The results from the main and case studies all showed that ST has significantly influenced SC. These findings are aligned with those generated from recent studies. While Mulyono (2016) & Setó-Pamies (2012), indicated that commitment is the main antecedent factor in LOY in the HK sub-degree education, Rojas-Méndez et al. (2009) highlighted that ST positively affects SC (Cavanagh et al., 2018). Likewise, Ismanova, (2019) also supported the importance of setting up SC for the LOY in the HE industry. Therefore, it is crucial for the administrators of the sub-degree providers to recognize the values of SS, pass them to ST, and subsequently cast the influence on SC. This implies that the doctrine of commitment is essential in building loyalty in customer service and brand management (Evanschitzky, Iyer, Plassmann, Niessing, & Meffert, 2006).

Meanwhile, Respondents 3, 6, and 7, all commented they would not have much sense of belonging towards their institution unless 1) a close relationship is built with their institutes and 2) they have confidence that their HD certificates will be well-recognized by employers. This reflected that ST should be developed by sub-degree providers so that students will have a greater sense of belonging towards their institutions.

Except $SS \rightarrow LOY$, all the paths are found to have positive influence on LOY. The results provided an in-depth understanding on how each factor affects the latent variable of LOY. Since SC displays the most substantial influence on LOY, it is recommended to engage the students and maintain a good and long-term relationship with them. Moreover, the fact that the path of $SS \rightarrow LOY$ failed to support the hypothesis revealed that SS is not giving mediating effect on any variables in this research model. Finally, the research model also confirmed that PSQ and AP are giving direct influence on LOY, while indirect impact also existed via the route of $SS \rightarrow ST \rightarrow SC$.

6.2.4 Qualitative Finding on Different Articulation Pathways to Student Satisfaction and Student Loyalty

The quantitative finding showed that AP positively affects SS in both the main and case studies. This proves that students welcome the articulation arrangement made by their institutions, regardless of the types of pathways offered. Responses from Respondents 3, 6 & 7 all reflected that the AP offered by the IA can satisfy their academic needs. Based on this finding, sub-degree providers are suggested to offer AP to their students in order to achieve higher satisfaction rates. Furthermore, the main study showed that institutions that have gained higher UGC articulation rate give higher SS than LSF and OTU.

The results from the case study were slightly different, in which only the OTU programme demonstrated a statistically significant effect on SS. The difference can be explained by the fact that as business students generally have poorer performance in the HKDSE, they are less competitive in hunting UGC programmes (as suggested by Respondent 1). Moreover, the comment from Respondents 4, 9 and 10 indicated that the OTU programmes offered by IA have been adjusted by taken substantial consideration on the student's learning capability. Last but not the least, as the OTU programmes offered by IA are accredited by the local education authority, business students from IA are satisfied with the OTU options available in the IA. These reasons have all contributed towards a higher satisfaction level among the students. Respondent 3 also support these explanations by commenting that "I am satisfied with this support as my institute offers good teaching and learning support that have met my expectation.", while Respondent 7 stated that "I think the institute provides articulation pathway to help me attain higher education qualification". Findings from the interviews explained the discrepancies on the strengths of the three articulation pathways.

The main study showed that sub-degree providers that offer a higher rate of articulation to UGC programmes received higher level of LOY from students. The finding is different from the case study, in which business students from IA rate a higher LOY with OTU articulation. The reasons may be the vocational focus image, which are more into skill base, that has already been accepted by IA's current students. As per feedback from Respondents 2 and 5, the HD programmes that they are currently studying have provided them with more internship and industrial opportunities. Just like the OTU programme offered by IA accredited by the local education

authority, these programmes also receive government allowance and can thus offer cheaper tuition fees when compared to other OTU programmes in the market. These factors explain the reasons for business students from IA to give higher ranks to OTU programmes.

6.2.5 The Effect of the Work Background

In fact, respondents' views in many ways are much related to their maturity and exposure (Clarke, Nelson, & Stoodley, 2013; Steinberg & Cauffman, 1996), which can affect their cognitive commitment (Hennig-Thurau et al., 2001). Since there is a long holiday break when students finished their HKDSE examination or the DFS study, many students will look for work exposure (mainly part-time). Meanwhile, some students will resume their studies after some years of full-time work. The ANOVA test tries to find any mean difference on the LOY among the four assessed groups, who have different work background exposure. The findings showed that students' work background will not lead to deviation on their views and expectations towards LOY. In summary, work background of the respondents has no statistical significance in this study.

6.3 Implications and Contributions

This research serves as an insight for the HK sub-degree providers to achieve their competitive advantages. The implications for the main study and the case study suggested that sub-degree providers should adopt slightly different approaches when promoting the institutes and programmes offered.

6.3.1 Implication from the Main Study

Student loyalty has been studied for many years since massification and marketization of higher education in most of the countries, especially in Asia (Erjavec, 2013; Molesworth, Scullion, & Nixon, 2010). Thus, more and more institutes bring the concepts of building a competitive advantage in the service industry into the higher education industry. The topic has thus become a common area of study for researchers.

Although a number of studies confirmed that the PSQ (Annamdevula & Bellamkonda, 2016a; Casidy, 2014b), SS (Ali et al., 2016; Annamdevula & Bellamkonda, 2016a; Duarte et al., 2012), ST and SC (Dennis et al., 2016; Ismanova, 2019; Mulyono, 2016; Perin et al., 2012; Rojas-Méndez et al., 2009; Setó-Pamies, 2012) can all influence LOY, relatively limited studies have been

done to prove that these relationships exist in the HK sub-degree sector. Under this circumstance, a research model is formulated after reviewing the literature provided through the effort of previous research and studies (Ng et al., 2015; Rojas-Méndez et al., 2009). The empirical results showed that PSQ, AP and SC can positively influence LOY directly. However, SS (via ST and SC) only gives indirect influence on LOY. This revealed that SS and ST can transmit the influences on LOY via SC as well.

Since all the indirect paths in the research model need to pass through the SC to reach the LOY, it is confirmed that SC is the most important factors affecting LOY in the HK sub-degree sector. In particular, the coefficient of SC is the highest among other factors. This finding contrasts to some of the previous studies that showed SS will positively and directly affect the LOY (Ali et al., 2016; Annamdevula & Bellamkonda, 2016a; Duarte et al., 2012; Giner & Rillo, 2016). It is worthwhile to bear in mind that these studies all targeted on students at undergraduate degree level. Meanwhile, some other research studies discovered that SS only indirectly affects LOY (Ismanova, 2019; Mulyono, 2016; Rojas-Méndez et al., 2009; Setó-Pamies, 2012) as suggested that consistent findings could not be concluded.

As it was found out, quite a limited number of studies put AP as an antecedent factor on LOY because most of the previous studies only targeted the undergraduate level where articulation is not always the student's top priority. This research discovered that AP could affect LOY and SS directly and positively in both main and case studies, which aligned with the findings from Ng et al. (2015). However, the study of Ng et al. (2015) did not consider the impact of ST and SC. More importantly, the result of the main study showed that AP gives indirect influence on LOY along the path of SS → ST → SC. Thus, the findings of this research can be a supplement to fill the research gaps and provide support for further validation in other education levels and disciplines.

As per the discussions conducted in the literature review, there is no paper that quantitatively studied the strength of different APs in influencing LOY and SS. The findings from the main study exhibited that UGC programmes gives the most substantial effect size on both LOY and SS when compared with the other two types of APs.

The findings help to explain the high demand for UGC programmes in the local sub-degree sector. It also explains the reasons for the introduction of LSF and OTU programmes to address the issue of insufficient articulation places. To acquire ST and SC, some institutions provide both LSF and OTU

programmes accredited by the local education authority in spite of the high costs. Lastly, these results revealed that AP is critical among sub-degree students in HK who wish to attain higher education achievements.

6.3.2 Implication from the Case Study

To ensure the research model developed from the main study is replicable in a different context, a case study on a particular segment from the sub-degree education sector was conducted to testify the research model. Vocational HD students who study business-related programmes in IA were selected for the case study. The findings generated are consistent with the main study and support the replicability of the research model.

However, unlike the findings generated from the main study, the OTU programmes shows a stronger influence on LOY and SS in the case study, which demonstrated that UGC programmes are not the only way out for the sub-degree students. Since the business students from IA are more vocational-oriented, internship or skill-based development is often preferred. When the students continue with their academic development, programme accreditation, duration of the study, tuition fees and competitiveness have become their concerns. It is found that the OTU programmes provided by IA can satisfy the academic needs of the business students of IA. The findings filled out the research gap of insufficient study on the influence of different APs to LOY and SS at the local sub-degree education sectors and also provide a direction to further the study in other disciplines and other academic sub-degree institutions in the future.

6.3.3 Overall Implication on the Research

The result supported that the direct antecedent factors of LOY are PSQ, AP, ST, and SC. In addition, SS, PSQ and AP also contribute indirect influence on LOY. Among all the antecedent factors, SC is the most important factor contributing to LOY. Hence, the loyalty model proposed by Rojas-Mendez et al. (2009) is tested to be applicable in the sub-degree education sector in HK. Meanwhile, this research also discovered that different types of APs would exhibit various influences on the LOY and SS. For the overall sub-degree sector in HK, UGC programmes are more welcomed by the majority of the local sub-degree students, particularly those studying in AD programmes. However, the OTU programmes are more welcomed by the business students in the IA. These findings serve as supplementary information for the loyalty

model when measuring the sub-degree education sector in HK higher education environment. As a result, a new research model for this research study is suggested in figure 45.

This new model empirically tested in both the main & case studies have been confirmed as applicable for studies on the sub-degree education industry in HK.

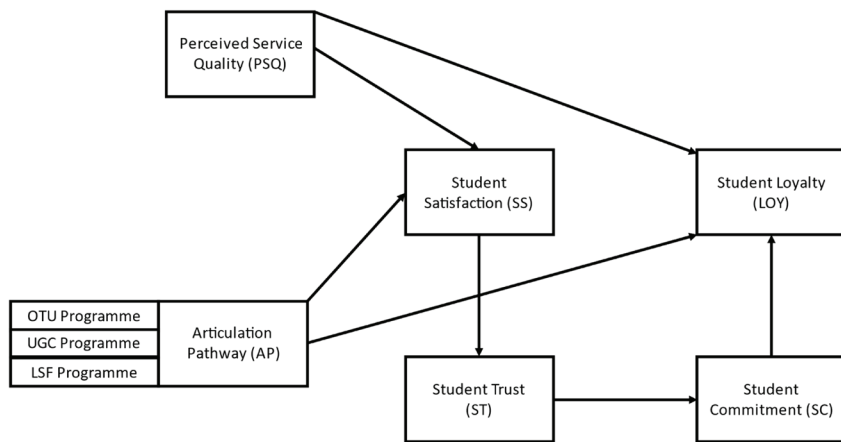


Figure 46. New suggested path model

6.3.4 Implication on the Practices

The research results disclosed that SC is the most powerful driver on LOY (the path coefficient of SC on LOY is the largest in both main and case studies). The finding is the same as those generated by Kember et al. (2011), who believed that a sense of belonging was the important issue among sub-degree students in HK. Mulyono (2016) also mentioned that increasing the students' sense of belonging on their institutions is a key to strengthening the SC. Therefore, sub-degree providers should develop and sustain students' loyalty by creating a supportive and caring learning environment and giving attention to the students' development in order to strengthen the bond between students and the institutions (Lee, Christine, 2019). On the contrary, institutions that failed to offer a good learning environment not just have a weak sense of belonging, but also a low PSQ (Kember, 2010).

Moreover, ST gives a strong direct relation to SC that aligns with the finding (Setó-Pamies, 2012). An institution that receives ST from its students can raise the emotional benefits of the students (Setó-Pamies, 2012).

Thus, sub-degree providers should try to maximize students' trust by giving more teaching and learning supports to their students. In fact, providing in-depth or personal contact with the students will help solve their problems and enhance the relationship, thereby generating higher level of sense of belonging. On this matter, the service quality perceived by students and their trust in the institutions has become a key issue in developing loyalty.

Similar to the findings of Ismanova (2019); Mulyono (2016); Rojas-Méndez et al. (2009); & Setó-Pamies (2012), the research findings also demonstrated that SS gives indirect effects to LOY along the path from ST to SC. In this regard, sub-degree providers need to attain SS so that their students will build up a trust relationship on the institutions and as a result raise the levels of SC and LOY.

PSQ has demonstrated a direct effect on LOY and indirect effect on the paths from SS to SC. The findings have revealed that the service quality offered by the institutions are important on the students' perception. In the study conducted by Kember (2010), students will have low levels of SC and LOY if they perceive the service provided by the institution on both teaching and non-teaching aspects as low and the campus facilities and learning environment as dissatisfactory. Because the campus facilities are relatively less comprehensive when compared to those offered by traditional university campuses, many sub-degree students are not satisfied with the sub-degree programmes in HK.

Lastly, as AP is found to be an antecedent factor for both SS and LOY, it is therefore suggested that the sub-degree providers should try to offer more articulation information and support to their students in order to strengthen the LOY and SS. As mentioned by Kember (2010), most of the sub-degree students are not happy with the low chance for them to acquire degree offers. Thus, sub-degree providers are suggested to provide all kinds of articulation information to their students. More importantly, the research showed that the UGC programme is still a big concern for sub-degree students, especially students taking AD. To address the issue, if the sub-degree providers can increase the articulation rate for the student to get a UGC place, they can have the LOY and SS strengthened, thereby guaranteeing student recruitment while increasing the students' sense of belonging to the institutions. In general, students are quite concerned about the chance to articulate to the degree or even higher education levels (Ma, 2018; SCMP Editorial, 2014). Wong et al. (2016) also suggested that improving articulation is an important-performance factor for better loyalty.

To sum up, PSQ and AP could directly influence LOY. At the same time, these two factors could also pass indirect influence on LOY via the path of $SS \rightarrow ST \rightarrow SC$. Moreover, SC gives the most substantial power on LOY. As a result, sub-degree providers are advised to pay more efforts on the three factors of SS, ST, and SC. To survive the fierce competition in recruiting sufficient number of students, sub-degree providers are advised to engage their students by building the students' confidence in the quality of their product (in this case, their programmes) and maintaining a close relationship with students by offering more teaching and learning supports, which can in turn acquire the students' commitment to the institutions. It is also worthwhile to bear in mind that rather than just making the students satisfied with the campus, institutes should also look after the students' educational needs both in the functional and emotional aspects.

6.4 Limitation and Recommendations for Further Research

Based on the analysis and discussion, some limitations are identified for this research. First of all, as the samples were drawn from a snowball effect; the generalizability of this study is limited due to the chance for bias factor is relatively higher than samples selected from a simple random sampling method (Saunders et al., 2019). Simple random sampling could be adopted in the future in order to obtain results with higher generalizability.

Secondly, as per thumb rules of larger sample size receives better analytical findings (Hair et al., 2017; Hair et al., 2018), although the sample size of this research has met the minimum requirement for conducting all the statistical analysis, a larger sample size can be recruited in the future for more substantial statistical power and better generalizability of the study.

Thirdly, as the respondents in the main study mainly came from a few selected institutions, views from other sub-degree students were not covered. Hence, the attributes of other sub-degree institutions may be not reflected in the main study. More importantly, as the study is in a single industry and focus on HK sub-degree sector, the results may vary when compared to the results obtained from other HE sectors, industries, or countries. Hence, the research scope can be further extended to cover other sectors, such as the pre-sub-degree level that includes Project Yijin (PYJ), Diploma of Foundation Studies (DFS), and other regions, for a better validation so that more analysis and robust result can be obtained.

Fourthly, as the data collection for this research took place throughout the timespan of one academic year (cross-sectional approach), the

relationship tested only represented a snapshot in this AY. In this regard, longitudinal data collection can be considered in the future to reduce this limitation (Ismanova, 2019).

Fifthly, two direct impacts (1. SS on SC and 2. ST on LOY) were neglected in this research. At the same time, ST and SC showed a mediating effect on SS and LOY. As suggested by Mulyono (2016), future researchers could continue to study the mediating effect of ST and SC between SS and LOY with different research objectives. The generation of a complete picture on the LOY can help to provide more insight to the sub-degree providers.

Sixthly, the data was collected during the AY of 2019/20. During this particular period, HK was under the threats from both the global COVID-19 pandemic as well as the serious social unrest. Since many students were involved in the social movement in the second half of 2019, the respondents would have more concerns in answering the questions. In particular, the students were very sensitive in answering questions related to student loyalty, satisfaction, trust, and commitment. To grasp a comprehensive picture with least bias and confounding factors, it is suggested that a more in-depth study can be carried out a few years later in order to make a comparison for result validation.

Lastly, HD and AD students of various study disciplines will show difference and deviations from the research model due to variation in their academic background as well as the cultures of different institutions. It is therefore suggested that further study on the students' perspective can be considered in the future.

6.5 Conclusion

To conclude this chapter started by reviewing the impacts of all the antecedent factors, which include PSQ, AP, SS, ST, and SC to the LOY in both main and case studies. Following the review, this chapter, then, proposed and discussed the theoretical and practical implications. Finally, some limitations on this research are mentioned with potential areas suggested for further studies.

References

1. Abdullah, F. (2006). The development of HEdPERF: A new measuring instrument of service quality for the higher education sector. *International Journal of Consumer Studies*, 30(6), 569–581. doi:10.1111/j.1470-6431.2005.00480.x
2. Adams, J., Khan, H. T., Raeside, R., & White, D. I. (2007). *Research methods for graduate business and social science students* SAGE publications India.
3. Ali, F., Kim, W. G., & Ryu, K. (2016). The effect of physical environment on passenger delight and satisfaction: Moderating effect of national identity. *Tourism Management*, 57, 213–224.
4. Ali, F., Rasoolimanesh, S. M., Sarstedt, M., Ringle, C. M., & Ryu, K. (2018). An assessment of the use of partial least squares structural equation modeling (PLS-SEM) in hospitality research. *International Journal of Contemporary Hospitality Management*.
5. Ali, F., Zhou, Y., Hussain, K., Nair, P. K., & Ragavan, N. A. (2016). Does higher education service quality effect student satisfaction, image and loyalty? *Quality Assurance in Education*.
6. Ali, M., & Ahmed, M. (2018). Determinants of students' loyalty to university: A service-based approach. Available at SSRN3261753.
7. Al-Maamari, Q. A., & Abdulrab, M. (2017). Factors affecting on customer loyalty in service organizations. *International Journal of Energy Policy and Management*, 2(5), 25–31.
8. Alves, H., & Raposo, M. (2010). The influence of university image on student behaviour. *International Journal of Educational Management*.
9. Amaratunga, D., Baldry, D., Sarshar, M., & Newton, R. (2002). Quantitative and qualitative research in the built environment: Application of “mixed” research approach. *Work Study*.
10. Annamdevula, S., & Bellamkonda, R. S. (2016a). Effect of student perceived service quality on student satisfaction, loyalty and motivation in Indian universities. *Journal of Modelling in Management*.
11. Annamdevula, S., & Bellamkonda, R. S. (2016b). The effects of service quality on student loyalty: The mediating role of student satisfaction. *Journal of Modelling in Management*.

12. Ardi, R., Hidayatno, A., & Zagloel, T. Y. M. (2012). Investigating relationships among quality dimensions in higher education. *Quality Assurance in Education*.
13. Aritonang, R., & Lerbin, R. (2014). Student loyalty modeling. *Market-Tržište*, 26(1), 77–91.
14. Arteaga-Sánchez, R., Belda-Ruiz, M., Ros-Galvez, A., & Rosa-Garcia, A. (2020). Why continue sharing: Determinants of behavior in ridesharing services. *International Journal of Market Research*, 62(6), 725–742.
15. Astrachan, C. B., Patel, V. K., & Wanzenried, G. (2014). A comparative study of CB-SEM and PLS-SEM for theory development in family firm research. *Journal of Family Business Strategy*, 5(1), 116–128.
16. Austin, A. J., & Pervaiz, S. (2017). The relation between “student loyalty” and “student satisfaction” (a case of college/intermediate students at Forman Christian college). *European Scientific Journal*, 13(1), 100–117.
17. Balaji, M. S., Roy, S. K., & Sadeque, S. (2016). Antecedents and consequences of university brand identification. *Journal of Business Research*, 69(8), 3023–3032.
18. Beaver, H. O. (2011). The relationship between situational leadership and student achievement.
19. Bedford, S. (2017). Growth mindset and motivation: A study into secondary school science learning. *Research Papers in Education*, 32(4), 424–443.
20. Beins, B. C., & McCarthy, M. A. (2017). *Research methods and statistics* Cambridge University Press.
21. Bell, E., Bryman, A., & Harley, B. (2018). *Business research methods* Oxford university press.
22. Berry, L. L. (1995). Relationship marketing of services — growing interest, emerging perspectives. *Journal of the Academy of Marketing Science*, 23(4), 236–245.
23. Berry, W. D., Feldman, S., & Stanley Feldman, D. (1985). *Multiple regression in practice* Sage.
24. Bhat, A. (2018). Quantitative research: Definition, methods, types and examples. Retrieved from: URL: <https://www.questionpro.com/blog/quantitative-research>
25. Bradley, C. (1994). Translation of questionnaires for use in different languages and cultures. *Handbook of Psychology and Diabetes: A Guide to Psychological Measurement in Diabetes Research and Practice*, 43, 55.
26. Brown, R. (2011). The march of the market. *The Marketisation of Higher Education and the Student as Consumer*, 11–24.

27. Carvalho, S. W., & de Oliveira Mota, M. (2010). The role of trust in creating value and student loyalty in relational exchanges between higher education institutions and their students. *Journal of Marketing for Higher Education*, 20(1), 145–165.
28. Casidy, R. (2014a). Linking brand orientation with service quality, satisfaction, and positive word-of-mouth: Evidence from the higher education sector. *Journal of Nonprofit & Public Sector Marketing*, 26(2), 142–161.
29. Casidy, R. (2014b). The role of perceived market orientation in the higher education sector. *Australasian Marketing Journal (AMJ)*, 22(2), 155–163.
30. Cavanagh, A. J., Chen, X., Bathgate, M., Frederick, J., Hanauer, D. I., & Graham, M. J. (2018). Trust, growth mindset, and student commitment to active learning in a college science course. *CBE — Life Sciences Education*, 17(1), ar10.
31. Chan, D., & Mok, K. (2001). Educational reforms and coping strategies under the tidal wave of marketisation: A comparative study of Hong Kong and the mainland. *Comparative Education*, 37(1), 21–41.
32. Chisnall, P. (1997). *Marketing Research*, McGraw Hill. New York.
33. Chiu, P. (2018a, Jun 17). From quantity to quality: Private tertiary institutions' route to survival? *South China Morning Post* Retrieved from URL: <https://www.scmp.com/news/hong-kong/education/article/2151175/why-hong-kongs-private-tertiary-institutions-may-need-find>
34. Chiu, P. (2018b, Jun 17). Why Hong Kong 's private tertiary institutions may need to find their own niche to survive. *South China Morning Post* Retrieved from URL: <https://www.scmp.com/news/hong-kong/education/article/2151175/why-hong-kongs-private-tertiary-institutions-may-need-find>
35. Chiu, S. W. (2018). *City states in the global economy: Industrial restructuring in Hong Kong and Singapore* Routledge.
36. Clarke, J. A., Nelson, K. J., & Stoodley, I. D. (2013). The place of higher education institutions in assessing student engagement, success and retention: A maturity model to guide practice. Paper presented at the Higher Education Research and Development Society of Australasia (HERDSA) Conference,
37. Collis, J., & Hussey, R. (2013). *Business research: A practical guide for undergraduate and postgraduate students* Macmillan International Higher Education.
38. Committee on Self-financing Post-secondary Education. (2018). Task force on review of self-financing post-secondary education. review report

- "parallel development, promoting diversity". Retrieved from https://www.cspe.edu.hk/resources/pdf/en/TF%20review%20report_EN.pdf
39. Concourse for Self-financing Post-secondary Education. (2017). Key statistics on post-secondary education (2013/14 to 2016/17). Retrieved from URL: https://www.edb.gov.hk/attachment/en/about-edb/publications-stat/figures/Enrol_2017.pdf
 40. Concourse for Self-financing Post-secondary Education. (2019 a). Overview. Retrieved from URL: <https://www.cspe.edu.hk/en/Overview.html>
 41. Concourse for Self-financing Post-secondary Education. (2019 b). Study subsidy scheme for designated professions/sectors. Retrieved from URL: <https://www.cspe.edu.hk/en/sssdp/sssdp.html>
 42. Concourse for Self-financing Post-secondary Education. (2020a). Full-time locally-accredited self-financing post-secondary programmes, student enrolment by area of study and training for the 2019/20 academic year. Retrieved from URL: <https://www.cspe.edu.hk/resources/pdf/en/Number%20of%20Full-time%20Locally-accredited%20Self-financing%20Post-secondary%20Programmes%20by%20Academic%20Programme%20Category%20and%20Relevant%20Student%20Enrolment%20for%20the%202019-20%20Academic%20Year.pdf>
 43. Concourse for Self-financing Post-secondary Education. (2020b). Key statistics on post-secondary education (2016/17 to 2019/20). Retrieved from URL: https://www.cspe.edu.hk/resources/pdf/en/postsec_keystat.pdf
 44. Concourse for Self-financing Post-secondary Education. (2020c). Number of sub-degree intake places (2008/09 to 2019/20). Retrieved from URL: <https://www.cspe.edu.hk/en/Statistics.page#>
 45. Concourse for Self-financing Post-secondary Education. (2020d). Self-financing post-secondary institutions. Retrieved from URL: <https://www.cspe.edu.hk/en/institution-list.page>
 46. Contributor. (2018, June 29). Why Hong Kong's sub-degree students are not 'losers'. South China Morning Post Retrieved from URL: <https://www.scmp.com/comment/letters/article/2152957/hong-kong-students-choosing-sub-degree-courses-are-not-losers>
 47. Cooper, D. R., Schindler, P. S., & Sun, J. (2003). Business research methods.
 48. Corbin, J., & Strauss, A. (2014). Basics of qualitative research: Techniques and procedures for developing grounded theory Sage publications.
 49. Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches Sage publications.

50. Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing*, 56(3), 55–68.
51. Cronin, J. J., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing*, 56(3), 55. doi:10.2307/1252296
52. Davis, C. (2016, Aug 19). University rankings are useful, but they don't tell the whole story. *South China Morning Post* Retrieved from URL: <https://www.scmp.com/news/article/2128896/university-rankings-are-useful-they-dont-tell-whole-story>
53. Definitions and acronyms | Endeavour college. Retrieved from URL: <https://www.endeavour.edu.au/pathways/definitions-and-acronyms-educational-pathways>
54. Dennis, C., Papagiannidis, S., Alamanos, E., & Bourlakis, M. (2016). The role of brand attachment strength in higher education. *Journal of Business Research*, 69(8), 3049–3057.
55. DeShields, O. W., Kara, A., & Kaynak, E. (2005). Determinants of business student satisfaction and retention in higher education: Applying Herzberg's two-factor theory. *International Journal of Educational Management*.
56. Duarte, P. O., Raposo, M. B., & Alves, H. B. (2012). Using a satisfaction index to compare students' satisfaction during and after higher education service consumption. *Tertiary Education and Management*, 18(1), 17–40.
57. Dwyer, F. R., Schurr, P. H., & Oh, S. (1987). Developing buyer-seller relationships. *Journal of Marketing*, 51(2), 11–27.
58. Easterby-Smith, M., Thorpe, R., & Lowe, A. (1991). *Management research: An introduction* sage. Beverly Hills, CA.
59. Education and Manpower Bureau. (2006). Review of the post-secondary education sector. Retrieved from URL: http://www.cuhk.edu.hk/uexb/review_report.pdf
60. Erjavec, H. S. (2013). Regression analysis of customer loyalty in education service industry. *Economic and Social Development: Book of Proceedings*, 1328.
61. Eurico, S. T., Da Silva, João Albino Matos, & Do Valle, P. O. (2015). A model of graduates' satisfaction and loyalty in tourism higher education: The role of employability. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 16, 30–42.
62. Evanschitzky, H., Iyer, G. R., Plassmann, H., Niessing, J., & Meffert, H. (2006). The relative strength of affective commitment in securing loyalty in service relationships. *Journal of Business Research*, 59(12), 1207–1213.

63. Field, A. (2013). *Discovering statistics using IBM SPSS statistics* sage.
64. Field, A. P., & Field, A. P. (2013). *Discovering statistics using IBM SPSS statistics and sex and drugs and rock 'n' roll* (4th ed.). London: Sage.
65. Frost, J. (2017). Heteroscedasticity in regression analysis. Retrieved from URL: <http://statisticsbyjim.com/regression/heteroscedasticity-regression/>
66. Fung, V. (2016, Sept 6). Don't see Hong Kong's associate degrees as sub-standard. South China Morning Post Retrieved from URL: <https://www.scmp.com/comment/insight-opinion/article/2015978/dont-see-hong-kongs-associate-degrees-substandard>
67. Garson, G. D. (2013). *Factor analysis (statistical associates blue book series)*. Asheboro, NC: Statistical Associates Publishers.
68. Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika*, 61(1), 101–107.
69. Ghauri, P., Grønhaug, K., & Strange, R. (2020). *Research methods in business studies* Cambridge University Press.
70. Ghosh, A. K., Whipple, T. W., & Bryan, G. A. (2001). Student trust and its antecedents in higher education. *The Journal of Higher Education*, 72(3), 322–340.
71. Giner, G. R., & Rillo, A. P. (2016). Structural equation modeling of co-creation and its influence on the student's satisfaction and loyalty towards university. *Journal of Computational and Applied Mathematics*, 291, 257–263.
72. Goh, J., Goh, Y., & Ramayah, T. (2017). Student satisfaction and loyalty in Malaysia private higher education institutions. *Global Business & Management Research*, 9.
73. Graue, C. (2015). Qualitative data analysis. *International Journal of Sales, Retailing & Marketing*, 4(9), 5–14.
74. Haas, A. R. (1999). Trends in articulation arrangements for technical and vocational education in the South East Asian region RMIT University Melbourne.
75. Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)* Sage publications.
76. Hair, J., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2018). *Advanced issues in partial least squares structural equation modeling*. Los Angeles: SAGE.
77. Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: Sage.

78. Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2018). *Advanced issues in partial least squares structural equation modeling*. Los Angeles: SAGE.
79. Heberlein, T. A., & Baumgartner, R. (1978). Factors affecting response rates to mailed questionnaires: A quantitative analysis of the published literature. *American Sociological Review*, 447–462.
80. Hemsley-Brown, J., Lowrie, A., Gruber, T., Fuß, S., Voss, R., & Gläser-Zikuda, M. (2010). Examining student satisfaction with higher education services. *International Journal of Public Sector Management*.
81. Hennig-Thurau, T., Langer, M. F., & Hansen, U. (2001). Modeling and managing student loyalty: An approach based on the concept of relationship quality. *Journal of Service Research: JSR*, 3(4), 331–344. Doi:10.1177/109467050134006
82. Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). *The use of partial least squares path modeling in international marketing. New challenges to international marketing* Emerald Group Publishing Limited.
83. Hong Kong Education Bureau. (2017). 2017 policy address education bureau's policy initiatives. Retrieved from URL: https://www.edb.gov.hk/en/about-edb/legco/policy-address/2017_EDB_Panel_Paper_Eng.pdf
84. Huck, S. W. (2012). *Reading statistics and research* (6. bs.).
85. Ismanova, D. (2019). Students' loyalty in higher education: The mediating effect of satisfaction, trust, commitment on student loyalty to alma mater. *Management Science Letters*, 9(8), 1161–1168.
86. Izogo, E. E. (2015). Determinants of attitudinal loyalty in Nigerian telecom service sector: Does commitment play a mediating role? *Journal of Retailing and Consumer Services*, 23, 107–117.
87. Jain, R., Sahney, S., & Sinha, G. (2013). Developing a scale to measure students' perception of service quality in the Indian context. *The TQM Journal*.
88. Kandampully, J., & Suhartanto, D. (2000). Customer loyalty in the hotel industry: The role of customer satisfaction and image. *International Journal of Contemporary Hospitality Management*.
89. Kashif, M., Ramayah, T., & Sarifuddin, S. (2016). PAKSERV—measuring higher education service quality in a collectivist cultural context. *Total Quality Management & Business Excellence*, 27(3–4), 265–278.
90. Kember, D. (2010). Opening up the road to nowhere: Problems with the path to mass higher education in Hong Kong. *Higher Education*, 59(2), 167–179.
91. Kember, D., Hong, C., Ho, A., & Ho, A. (2011). More can mean less motivation: Applying a motivational orientation framework to the

- expanded entry into higher education in Hong Kong. *Studies in Higher Education*, 36(2), 209–225.
92. Keppel, G. (1993). *Design and analysis: A researcher's handbook* Pearson.
 93. Kevin, & Macintosh D. O'Gorman (Robert). (2015). *Research methods for business and management: A guide to writing your research* Goodfellow Publishers.
 94. Kline, R. B. (2005). *Principles and practice of structural equation modeling* 2nd ed. New York: Guilford,
 95. Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer value, satisfaction, loyalty, and switching costs: An illustration from a business-to-business service context. *Journal of the Academy of Marketing Science*, 32(3), 293–311.
 96. Lancaster, G. (2007). *Research methods in management* Routledge.
 97. Lau, C. (2013, October 7). An explosion of sub-degree courses has yielded some dubious results. *South China Morning Post* Retrieved from URL: <https://www.scmp.com/lifestyle/family-education/article/1324461/explosion-sub-degree-courses-has-yielded-some-dubious>
 98. Law, D. C. (2013). Initial assessment of two questionnaires for measuring service quality in the Hong Kong post-secondary education context. *Quality Assurance in Education*,
 99. Law, D. C., & Meyer, J. H. (2011). Relationships between Hong Kong students' perceptions of the learning environment and their learning patterns in post-secondary education. *Higher Education*, 62(1), 27–47.
 100. Leavy, P. (2017). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches* Guilford Publications.
 101. Ledden, L., Kalafatis, S. P., & Mathioudakis, A. (2011). The idiosyncratic behaviour of service quality, value, satisfaction, and intention to recommend in higher education: An empirical examination. *Journal of Marketing Management*, 27(11–12), 1232–1260.
 102. Lee, C. (2019). 7 ways to give your students a sense of belonging. Retrieved from URL: <https://www.turnitin.com/blog/7-ways-to-give-your-students-a-sense-of-belonging>
 103. Lee, D., Ng, P. M., & Bogomolova, S. (2020). The impact of university brand identification and eWOM behaviour on students' psychological well-being: A multi-group analysis among active and passive social media users. *Journal of Marketing Management*, 36(3–4), 384–403.

104. Lee, K., & Salciuviene, L. (2018). Modelling determinants of customer loyalty in services sector across different cultural contexts. *Engineering Economics*, 29(5), 580–590.
105. Lee, M. H. (2014). Hong Kong higher education in the 21st century.
106. Lee, M. H. (2014). Hong kong higher education in the 21st century. *Hong Kong Teachers' Centre Journal*, 13, 15–34.
107. Leung, C., Ng, C. W. R., & Chan, P. O. E. (2011). Can co-curricular activities enhance the learning effectiveness of students? An application to the sub-degree students in Hong Kong. *International Journal of Teaching and Learning in Higher Education*, 23(3), 329–341.
108. Li, S. (2013). Explore the relationships among service quality, customer loyalty and word-of mouth for private higher education in Taiwan. *Asia Pacific Management Review*, 18(4).
109. Listen Data. (2020). 15 types of regression in data science. Retrieved from URL: <https://www.listendata.com/2018/03/regression-analysis.html>
110. Lo, C. C. (2010). How student satisfaction factors affect perceived learning. *Journal of the Scholarship of Teaching and Learning*, 47–54.
111. Lo, J., Yung, W. K., & Feng, E. Q. (2015). The development and challenges of self-financing higher education in Hong Kong. *Public Administration and Policy, an Asia-Pacific Journal*, 18(1), 75–88.
112. Lo, J. M., Feng, E. Q., & Yung, W. K. (2015). The development and challenges of self-financing higher education in Hong Kong.
113. Lo, W. Y. W., & Ng, F. S. K. (2015). Trends and developments of higher education research in Hong Kong: In pursuit of a cosmopolitan vision. *Higher Education Policy*, 28(4), 517–534.
114. Lowry, P. B., & Gaskin, J. (2014). Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE Transactions on Professional Communication*, 57(2), 123–146.
115. Ma, M. (2018, Jul 17). Associate degrees need to step up game. *The Standard* Retrieved from URL: <https://www.thestandard.com.hk/section-news/section/17/197937/Associate-degrees-need-to-step-up-game>
116. Maeda, H. (2015). Response option configuration of online administered Likert scales. *International Journal of Social Research Methodology*, 18(1), 15–26.
117. Mang'anyi, E. E., & Govender, K. K. (2014). Perceived service quality (SQ) and customer satisfaction (CS): Students' perceptions of Kenyan private universities. *Mediterranean Journal of Social Sciences*, 5(23), 2739.

118. Marginson, S. (2016). The worldwide trend to high participation higher education: Dynamics of social stratification in inclusive systems. *Higher Education*, 72(4), 413–434.
119. Mayer, I. (2015). Qualitative research with a focus on qualitative data analysis. *International Journal of Sales, Retailing & Marketing*, 4(9), 53–67.
120. Mok, K., & Tan, J. (2004). *Globalization and marketization in education: A comparative analysis of Hong Kong and Singapore* Edward Elgar Publishing.
121. Molesworth, M., Scullion, R., & Nixon, E. (2010). *The marketisation of higher education* Routledge.
122. Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20–38.
123. Möttus, R., Allik, J., Realo, A., Pullmann, H., Rossier, J., Zecca, G., . . . Barkauskiene, R. (2012). Comparability of self-reported conscientiousness across 21 countries. *European Journal of Personality*, 26(3), 303–317.
124. Mulyono, H. (2016). Mediating effect of trust and commitment on student loyalty. *Business and Entrepreneurial Review*, 14(1), 57–76.
125. Negricea, C. I., Edu, T., & Avram, E. M. (2014). Establishing influence of specific academic quality on student satisfaction. *Procedia-Social and Behavioral Sciences*, 116(1), 4430–4435.
126. Newman, I., Benz, C. R., & Ridenour, C. S. (1998). *Qualitative-quantitative research methodology: Exploring the interactive continuum* SIU Press.
127. Newman, P. (2004). Problems with likert-type scales for measuring attitudes of chinese people.
128. Ng, P. M., Wong, P., Mak, C. K., & Chan Jason, K. Y. (2015). Factors affecting student satisfaction and performance gap in relation to the model of strategic enrolment, graduation and articulation (SEGA): The case of self-financing higher education in Hong Kong. *Public Administration and Policy*, 23(2), 27.
129. Ng, P., Wong, P., Lo, M. F., & Lee, D. (2018). Using strategic enrollment management (SEM) approach to determine student satisfaction in self-financing higher education institutions: Evidence from Hong Kong. *Journal of Economic & Management Perspectives*, 12(1), 366–371.
130. Ng, P., & Galbraith, C. (2016). Strategic enrolment management (SEM) in self-financed higher education of hong kong: Evaluation and measurement. *Asia Pacific Education Review*, 17(1), 161–174.

131. Nguyen, N., & LeBlanc, G. (2001). Image and reputation of higher education institutions in students' retention decisions. *International Journal of Educational Management*.
132. Nip, A., & Man, J. (2013). Oldest girls' commerce college to close over lack of students. Retrieved from URL: <https://www.scmp.com/news/hong-kong/article/1138608/oldest-girls-commerce-college-close-over-lack-students>
133. Ogunnaike, O., Tairat, B., & Emmanuel, J. (2014). Customer relationship management approach and student satisfaction in higher education marketing. *Journal of Competitiveness*, 6(3), 49–62.
134. Parasuraman, A. (1995). Measuring and monitoring service quality. *Understanding Services Management*, 143–177.
135. Pedro, E., Leitão, J., & Alves, H. (2020). Unveiling the relationship between quality of academic life and regional development. *European Journal of Higher Education*, 10(1), 48–71.
136. Perin, M. G., Sampaio, C. H., Simões, C., & de Pólvara, R. P. (2012). Modeling antecedents of student loyalty in higher education. *Journal of Marketing for Higher Education*, 22(1), 101–116.
137. Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *Journal of Consumer Research*, 21(2), 381–391.
138. Peterson, R. A., & Kim, Y. (2013). On the relationship between coefficient alpha and composite reliability. *Journal of Applied Psychology*, 98(1), 194.
139. Polonsky, M. J., & Waller, D. S. (2018). *Designing and managing a research project: A business student's guide* Sage publications.
140. Powell, D. F., & Luzzo, D. A. (1998). Evaluating factors associated with the career maturity of high school students. *The Career Development Quarterly*, 47(2), 145–158. Doi:10.1002/j.2161-0045.1998.tb00548.x
141. Prabhakaran, S. (2017). How to detect heteroscedasticity and rectify it? Retrieved from URL: <https://datascienceplus.com/how-to-detect-heteroscedasticity-and-rectify-it>
142. Quinlan, C., Babin, B. J., Carr, J. C., Griffin, M., & Zikmund, W. G. (2015). *Business research methods* (First ed.). Andover: Cengage Learning EMEA.
143. Quinlan, C., Babin, B. J., Carr, J. C., Griffin, M., & Zikmund, W. G. (2019). *Business research methods* (Second ed.). Andover: Cengage Learning EMEA.
144. Quintal, V. A., Wong, D. H., Sultan, P., & Wong, H. Y. (2012). Service quality in a higher education context: An integrated model. *Asia Pacific Journal of Marketing and Logistics*.

145. Raudeliūnienė, J. (2018). Basic research methods. Modernizing the academic teaching and research environment: Methodologies and cases in business research (pp. 47–70) Springer, Cham.
146. Rojas-Méndez, J. I., Vasquez-Parraga, A. Z., Kara, A., & Cerda-Urrutia, A. (2009). Determinants of student loyalty in higher education: A tested relationship approach in Latin America. *Latin American Business Review*, 10(1), 21–39.
147. Ruizalba, J. L., Bermúdez-González, G., Rodríguez-Molina, M. A., & Blanca, M. J. (2014). Internal market orientation: An empirical research in hotel sector. *International Journal of Hospitality Management*, 38, 11–19.
148. Sahay, A. (2016). Peeling Saunder's research onion. *Research Gate*, Art, 1–5.
149. Sanchez-Hernandez, M. I., & Miranda, F. J. (2011). Linking internal market orientation and new service performance. *European Journal of Innovation Management*.
150. Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research methods for business students*. Harlow, Essex, England: Pearson Education.
151. Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students*. Harlow, Essex, England: Pearson Education.
152. Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students*. Harlow, United Kingdom: Pearson Education Limited.
153. SCMP Editorial. (2006, Dec 28). Students unhappy with associate degree courses. *South China Morning Post* Retrieved from URL: <https://www.scmp.com/article/576752/students-unhappy-associate-degree-courses>
154. SCMP Editorial. (2014, Jul 16). Room for improvement in education. *South China Morning Post* Retrieved from URL: <https://www.scmp.com/comment/insight-opinion/article/1555031/room-improvement-education>
155. SCMP Editorial. (2018, Jul 9). Sub-degree programmes in need of revamp. *South China Morning Post* Retrieved from URL: <https://www.scmp.com/comment/insight-opinion/article/2154334/sub-degree-programmes-need-revamp>
156. Sekaran, U., & Bougie, R. (2013). *Research methods for business: A skill building approach* John Wiley & Sons.
157. Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach* John Wiley & Sons.

158. Sembiring, M. G. (2013). Determinants of students' loyalty at Universitas Terbuka. *Asian Association of Open Universities Journal*.
159. Serenko, A. (2011). Student satisfaction with Canadian music programmes: The application of the American customer satisfaction model in higher education. *Assessment & Evaluation in Higher Education*, 36(3), 281–299.
160. Setó-Pamies, D. (2012). Customer loyalty to service providers: Examining the role of service quality, customer satisfaction and trust. *Total Quality Management & Business Excellence*, 23(11–12), 1257–1271.
161. Silva, D. S., de Moraes, Gustavo Hermínio Salati Marcondes, Makiya, I. K., & Cesar, F. I. G. (2017). Measurement of perceived service quality in higher education institutions. *Quality Assurance in Education*.
162. Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: A clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice*, 17(2), 268–274.
163. Spatz, C., & Johnston, J. O. (1997). *Basic statistics: Tales of distributions* Citeseer.
164. Srivastava, M., & Rai, A. K. (2014). An investigation into service quality–customer loyalty relationship: The moderating influences. *Decision*, 41(1), 11–31.
165. Stat trek. Retrieved from URL: <https://stattrek.com/statistics/dictionary.aspx?definition=residual%20plot>
166. Steinberg, L., & Cauffman, E. (1996). Maturity of judgment in adolescence: Psychosocial factors in adolescent decision making. *Law and Human Behavior*, 20(3), 249–272.
167. Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Methodological)*, 36(2), 111–133.
168. Strang, K. (2015). *The palgrave handbook of research design in business and management* Springer.
169. Sukamolson, S. (2007). *Fundamentals of quantitative research*. Language Institute Chulalongkorn University, 1, 2–3.
170. Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* Pearson Boston, MA.
171. Tellis, G. J. (1988). Advertising exposure, loyalty, and brand purchase: A two-stage model of choice. *Journal of Marketing Research*, 25(2), 134–144.

172. Temizer, L., & Turkyilmaz, A. (2012). Implementation of student satisfaction index model in higher education institutions. *Procedia-Social and Behavioral Sciences*, 46, 3802–3806.
173. Tharenou, P., Donohue, R., & Cooper, B. (2007). *Management research methods*. Cambridge University Press.
174. The Federation for Continuing Education in Tertiary Institutions. (2001). Associate degree in Hong Kong final report of A consultancy study. Retrieved from URL: <https://www.legco.gov.hk/yr00-01/english/panels/ed/papers/1525e01b.pdf>
175. Thomas, S. (2011). What drives student loyalty in universities: An empirical model from India. *International Business Research*, 4(2), 183.
176. UK Research Writers. (2019). Saunders research onion — A step-by-step guide to structuring research methodology chapter for PhD and master-level researchers. Retrieved from URL: <https://www.ukresearchwriters.com/saunders-research-onion-a-step-by-step-guide-to-structuring-research-methodology-chapter-for-phd-and-master-level-researchers>
177. Understanding the research onion: Writing guides. (2020, May 13). Retrieved April 11, 2020, from URL: <https://15writers.com/research-onion>
178. University Grants Committee. (2010). Aspirations for the higher education system in Hong Kong. Retrieved from URL: <https://www.legco.gov.hk/yr10-11/english/panels/ed/papers/edcb2-602-1-e.pdf>
179. University Grants Committee. (2019). Student enrolment (full-time equivalent) of UGC-funded programmes by university, level of study, mode of study and academic programme category, 2018/19. Retrieved from URL: <file:///C:/Users/frankiliu/Downloads/02-TC-05-2018-XXXX-1111.pdf>
180. Urdan, T. C. (2016). *Statistics in plain English* Taylor & Francis.
181. Vatcheva, K. P., Lee, M., McCormick, J. B., & Rahbar, M. H. (2016). Multicollinearity in regression analyses conducted in epidemiologic studies. *Epidemiology* (Sunnyvale, Calif.), 6(2).
182. Vik, P. (2014). *Regression, ANOVA, and the general linear model: A statistics primer*. Thousand Oaks, California: SAGE Publications.
183. Walliman, N. S. R. (2018). *Research methods: The basics* (Second ed.). Abingdon, Oxon: Routledge.
184. Wan, C. (2011). Reforming higher education in Hong Kong towards post-massification: The first decade and challenges ahead. *Journal of Higher Education Policy and Management*, 33(2), 115–129.

185. Wang, T., & Chaipoo Pirutana, S. (2015). A study of the factors influencing customer loyalty: A case study of Thai airways. *PSAKU International Journal of Interdisciplinary Research*, 4(2), 67–76.
186. Weerasinghe, I. S., & Fernando, R. L. (2017). Students' satisfaction in higher education. *American Journal of Educational Research*, 5(5), 533–539.
187. Williams, C. (2007). Research methods. *Journal of Business & Economics Research (JBER)*, 5(3).
188. Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, 73(6), 913–934.
189. Wong, A., Tong, C., & Wong, J. W. (2017). The relationship between institution branding, teaching quality and student satisfaction in higher education in Hong Kong. *Journal of Marketing and HR*, 4(1), 169–188.
190. Wong, P., Ng, P. M., Mak, C. K., & Chan, J. K. (2016). Students' choice of sub-degree programmes in self-financing higher education institutions in Hong Kong. *Higher Education*, 71(4), 455–472.
191. Xinping, Z. (2002). Interpretivist research, positivist research, and field research. *Chinese Education & Society*, 35(2), 39–46.
192. Young Post. (2017, Aug 8). Hong Kong students prefer associate degrees when missing out on public university places. Retrieved from URL: <https://www.scmp.com/yp/discover/news/hong-kong/article/3065654/hong-kong-students-prefer-associate-degrees-when-missing>
193. Yuen, P. P. (2015). Self-financing sub-degree programmes in Hong Kong: Facts vs myths. *Public Administration and Policy*, 18(1), 8–15.
194. Yusoff, M., McLeay, F., & Woodruffe-Burton, H. (2015). Dimensions driving business student satisfaction in higher education. *Quality Assurance in Education*.
195. Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197–206.
196. Zikmund, W. G., Carr, J. C., & Griffin, M. (2013). *Business research methods* (9th ed.). Mason, Ohio: South-Western, Cengage Learning.
197. Zhao, Z. Y. (2017). The marketisation of higher education in Hong Kong since 2000. *臺灣教育評論月刊*, 6(4), 35–48.

Appendix A

Landscape of Sub-degree Providers in HK

Name of the institution	Offer HD	Offer AD
Caritas Bianchi college of Careers	✓	✓
Caritas Institute of community Education	✓	
Caritas Institute of Higher Education	✓	
Community College of City University/UOW College HK		✓
Gratia Christian College	✓	
HKCT Institute of Higher Education	✓	
HKU SPACE Po Leung Kuk Stanley Ho Community College	✓	✓
HK Art School	✓	
HK Baptist University		
- Academy of Film,	✓	
- College of International Education,		✓
- School of Continuing Education	✓	
HK College of Technology	✓	
HK Institute of Technology		✓
HK Nang Yan College of Higher Education	✓	
Lingnan Institute of Further Education	✓	✓
School of Continuing and Profession Studies (under The Chinese University of HK)	✓	
HK Community College (under the HK Polytechnic University)	✓	✓
Li Ka Shing Institute of Professional and Continuing Education (under The Open University of HK)	✓	✓
HKU SPACE Community College (under The University of HK)	✓	✓
Tung Wah College	✓	
HK Institute of Vocational Education / HK Design Institute (under VTC)	✓	
Yew Chung College of Early Childhood Education	✓	
YMCA College of Careers	✓	

Note. The landscape of full-time locally accredited self-financed post-secondary programmes in Hong Kong. From *Self-financing Post-secondary institution* by Committee on Self-financing Post-secondary Education, 2019, retrieve from URL: <https://www.cspe.edu.hk/en/institution-list.page>

Appendix B

LSF Programme Providers in HK

Name of the institute/ University	No. of non SSSDP Undergraduate programme	No. of SSSDP undergraduate programme	Total
Caritas Institute of Higher Education (formerly known as Caritas Francis Hsu College)	3	2	5
Chu Hai College of Higher Education	12	2	14
Community College of City University/UOW College Hong Kong	6	NIL	6
Gratia Christian College	3	NIL	3
HKCT Institute of Higher Education	2	NIL	2
Hong Kong Baptist University - School of Continuing Education	2	NIL	2
Hong Kong Nang Yan College of Higher Education	4	NIL	4
Hong Kong Shue Yan University	14	NIL	14
Lingnan University	1	NIL	1
The Education University of Hong Kong	1	NIL	1
The Hang Seng University of Hong Kong	15	5	20
The Hong Kong University of Science and Technology	1	NIL	1
The Open University of Hong Kong	26	12	38
Tung Wah College	5	5	10
Vocational Training Council - Technological and Higher Education Institute of Hong Kong (THEi)	8	12	20
Yew Chung College of Early Childhood Education”	1	NIL	1”

Note. The landscape of full-time locally accredited self-financed post-secondary programmes in Hong Kong. From *Self-financing Post-secondary institutions* by Committee on Self-financing Post-secondary Education, 2019, retrieve from <https://www.cspe.edu.hk/en/institution-list.page>

Appendix C

Sample Size for a Given Population

N	S		N	S		N	S
10	10		220	140		1,200	291
15	14		230	144		1,300	297
20	19		240	148		1,400	302
25	24		250	152		1,500	306
30	28		260	155		1,600	310
35	32		270	159		1,700	313
40	36		280	162		1,800	317
45	40		290	165		1,900	320
50	44		300	169		2,000	322
55	48		320	175		2,200	327
60	52		340	180		2,400	331
65	56		360	186		2,600	335
70	59		380	191		2,800	338
75	63		400	196		3,000	341
80	66		420	201		3,500	346
85	70		440	205		4,000	351
90	73		460	210		4,500	354
95	76		480	214		5,000	357
100	80		500	217		6,000	361
110	86		550	226		7,000	364
120	92		600	234		8,000	367
130	97		650	242		9,000	368
140	103		700	248		10,000	370
150	108		750	254		15,000	375
160	113		800	260		20,000	377
170	118		850	265		30,000	379
180	123		900	269		40,000	380
190	127		950	274		50,000	381
200	132		1,000	278		75,000	382
210	136		1,100	285		1,000,000	384

Note. N: Population of the study group; S: Number of samples to be taken from the population. Reference of the sample size needed for a given population. Adopted from *Research methods for business: A skill building approach* (p. 268), by Sekaran and Bougie, 2013, John Wiley & Sons.

Appendix D

Sample of the Questionnaire



SBS SWISS BUSINESS SCHOOL

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這個問卷調查是要符合工商管理博士學位的其中一部分課程要求。

本問卷調查旨在收集您對香港副學位教育業界的學生忠誠度的看法，以了解影響學生忠誠度的前因。以下句子描述了學生對自己所就讀的學院的看法。請根據您在現就讀學院所得的學習經驗對每個句子作出評分，以表示您同意的程度。

請對每條問題作出獨立的判斷，並確保回答所有問題。

您提供的所有資料均會以匿名、保密、及最專業的態度處理。此外，所收集的數據均都會用於學術研究。此外，所有數據只會集結一起以顯示此調查的總體結果，從而向學院的行政人員、高級管理層和其他相關持份者提供對副學位教育學生忠誠度的深切理解。

請注意，每條問題的答案均沒有對錯。此問卷調查旨在透過評分來反映您對學院如何在透過加強學生滿意度、感知的服務質量、升學途徑、學生信任及承諾以達致學生忠誠的看法和感受。

如果你有任何查詢，可聯絡 Dr. Bert Wolfs, SBS Swiss Business School, 電話 + 41 44 8800088

回答問題的指引：

請按照評分標準對句子進行評分，1 分表示極度不同意，7 分表示極度同意：

This questionnaire is a partial fulfilment of the requirement for the degree Doctor of Business Administration.

The purpose of this questionnaire is to collect your views regarding the student loyalty within Hong Kong Sub-degree education sector in order to understand the antecedent factors that affect student

loyalty. The statements below describe the comments of how students think of their institutes. Based on your school experience in your current institute, please rate to express your degree of agreement with each statement.

Please make a separate and independent judgement for each question and make sure to answer all questions. All information provided will be treated as anonymous and confidential and will be processed in the most professional manner. In addition, all data collected will be used for academic study and the data will be aggregated to show overall results solely for this survey. It is hope that the results will provide insights on the student loyalty to the institute administrators, senior management and other stakeholders of Hong Kong sub-degree education.

You are reminded that there is no right or wrong answer on each question. The survey focuses on the scale that can best show your views and feeling about how institutes have achieved student loyalty in terms of antecedent factors, such as student satisfaction, perceived service quality, articulation pathway, student trust and commitment.

Should you have any enquiry, please feel free to contact Dr. Bert Wolf, SBS Swiss Business School. at +41 44 8800088.

Instructions for answering the questions:

Please rate the statements in the scale of 1 to 7, with 1 being strongly disagree and 7 being strongly agree.

Part 1: Construct measurement: Student Satisfaction (SS)

Notation number	Question /Items	極度不同意 Strongly disagree					極度同意 Strongly agree	
1A	我的學院能達到我的期望。 My institute has met my expectations.	1	2	3	4	5	6	7
1B	我的學院能滿足我目前的需求。 My institute has fulfilled my current needs.	1	2	3	4	5	6	7
1C	我的學院與我理想的學院相比尚有一段距離。 There is still a gap between my institute and my ideal institute.	1	2	3	4	5	6	7
1D	我認為報讀這所學院是正確的選擇。 I think I made the right choice in enrolling to this institute.	1	2	3	4	5	6	7
1E	總括來說，我滿意這所學院所提供的服務。 In general, I am satisfied with the services provided by this institution.	1	2	3	4	5	6	7

Part 2: Construct measurement: Student Trust (ST)

Notation	Question /Items	極度不同意 Strongly disagree					極度同意 Strongly agree	
2A	這所學院是值得信任。 This institute can be trusted.	1	2	3	4	5	6	7
2B	這所學院有很高的誠信度。 This institute has high integrity.	1	2	3	4	5	6	7
2C	這所學院能謹守承諾。 This institute keeps its promises.	1	2	3	4	5	6	7

2D	我相信教職員會以我的最大的利益為大前提。 I am sure that the institute staff are always acting in my best interest	1	2	3	4	5	6	7
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Part 3 – Construct measurement: Articulation Pathway (AP)

以下問題是想了解學生對三者銜接學位的分別。包括 (1. 海外銜接學位課程, 2. 本地大學學位課程和 3. 本地自資銜接學位課程)

Notation	Question /Items	極度不同意 Strongly disagree							極度同意 Strongly agree						
3A	我懂得三者的分別: 1. 海外銜接學位課程 2. 本地大學學位課程 3. 本地自資銜接學位課程。 I understand the difference among 1. overseas top-up degree, 2. government-funded degree and 3. local self-financed degree programme	1	2	3	4	5	6	7							
3B	我的學院能清晰地提供升讀 海外銜接學位課程 的途徑。 My institute provides a clear articulation pathway to overseas top up degree programmes.	1	2	3	4	5	6	7							
3C	在升讀 海外銜接學位 時, 我的學院能提供學分轉移/學科豁免機制。 My institute provides a clear credit transfer/module exemption to overseas top up degree programmes.	1	2	3	4	5	6	7							
3D	我的學院能清晰地提供升讀 政府資助學位課程 的途徑。 My institute provides a clear articulation pathway to government-funded degree programmes.	1	2	3	4	5	6	7							
3E	在升讀 政府資助的學位 課程時, 我的學院能提供學分轉移/學科豁免機制。 My institute provides a clear credit transfer/module exemption to government-funded degree programmes.	1	2	3	4	5	6	7							
3F	我的學院能清晰地提供升讀 本地自資的銜接學位課程途徑。 This institute provides a clear articulation pathway to local self-financing top-up degree programmes.	1	2	3	4	5	6	7							
3G	在升讀 本地自資的銜接學位課程時, 我學院能提供學分轉移/學科豁免機制。 This institute provides a clear credit transfer/module exemption to local self-financing top up degree programmes.	1	2	3	4	5	6	7							
3H	整體來說, 我的學院能提供清晰的升學途徑。 In general, my institute provides a clear articulation pathway.	1	2	3	4	5	6	7							

3I	整體而言，我的學院能提供清晰的升學學分轉移/學科豁免機制。 My institute provides an overall clear credit transfer / module exemption for articulation.	1	2	3	4	5	6	7
3J	我認為學院能提供升學途徑是重要的。 I think my institute provides articulation pathway is important to me.	1	2	3	4	5	6	7

Part 4: Construct measurement: Student Commitment (SC)

Notation	Question /Items	極度不同意 Strongly disagree							極度同意 Strongly agree						
4A	我非常忠於這所學院。 I am very committed to this institute	1	2	3	4	5	6	7							
4B	這所學院對我來說很重要。 This institute is very important to me.	1	2	3	4	5	6	7							
4C	我很在乎這所學院。 I really care about this institute.	1	2	3	4	5	6	7							
4D	將來，我會與學院維持友好的關係。 I believe that this institute deserves my effort to maintain the relationship in the future.	1	2	3	4	5	6	7							
4E	我對這所學院有歸屬感。 I felt very attached to my institute.	1	2	3	4	5	6	7							
4F	我很高興能成為學院的一份子。 I am very happy to become a member of this institute.	1	2	3	4	5	6	7							

Part 5 – Construct measurement: Perceived Service Quality (PSQ)

Notation	Question /Items	極度不同意 Strongly disagree							極度同意 Strongly agree						
5A	學院的教學設備現代化。 The institute has modern teaching equipment.	1	2	3	4	5	6	7							
5B	學院的學生服務資料清晰。 Materials associated with the service at the institute are visually appealing	1	2	3	4	5	6	7							
5C	學院的辦公時間方便學生。 The operating hours of the institute are convenient to students.	1	2	3	4	5	6	7							
5D	當你遇到問題時，學院會用心為你解決。 Whenever you have a problem, the institute always solves it with a sincere attitude.	1	2	3	4	5	6	7							
5E	學院能迅速地為學生提供適切的服務。 The institute performs the service right in the first time.	1	2	3	4	5	6	7							

Part 6: Construct measurement: Student Loyalty (SL) 學生忠誠度

Notation	Question /Items	極度不同意 Strongly disagree					極度同意 Strongly agree	
6A	我會推薦這所學院給朋友及家人。 I will recommend this institute to my friends and family members.	1	2	3	4	5	6	7
6B	我在這所學院學習感到自豪。 I am proud to be able to study in this institute.	1	2	3	4	5	6	7
6C	如果我想修讀新的課程，我會再選擇這所學院。I will study at the same institute if I want to start a new course.	1	2	3	4	5	6	7

Demographic information of the respondents

Please select the option that best describes your situation.

請選取最適合形容您目前情況的選擇。

Notation	Demographic Details	Measures
7A	性別 Gender	男 Male
		女 Female
7B	年齡 Age	17 或以下 17 or below
		18-20
		21-23
		24 或以上 24 or above
7C	副學位課程類型 Type of Sub-degree Programme	高級文憑 Higher Dipolma
		副學士 Associate degree
7D	課程的運作模式 Operational Mode of the Programme	政府資助課程 Government funded programme
		自資課程 Self-financed programme
7E	您升讀副學位的途徑 Articulate path to your sub-degree programme	香港中學文憑試 DSE
		毅進計劃 PYJ
		基礎課程文憑/職專文憑/文憑 DFS/ DVE/Diploma
		副學士先修 Pre-AD
		其他: _____ Other: _____
7F	在入讀此副學位課程前, 我具備_____工作經驗。 Before I enrolled this programme, I have _____ work experience.	全職 Full time
		兼職 Part time
		全職及兼職 Full time and part time
		我沒有任何工作經驗 No work experiences
7G	學習年份 Year of study	1
		2

7H	就讀學院 Institution	明愛學院 (白英奇專業學校/明愛社區書院/明愛專上學院) Caritas institutions (Bianchi College of Careers/ Institute of community education/ institute of Higher Education) 香港城市大學專上學院/香港伍倫貢學院 Community College of City University/UOW College HK 香港浸會大學社區學院 (電影學院/ 國際學院/ 持續教育學院) Community college from HK Baptist University (Academy of Film/ College of International Education/ School of Continuing Education) 香港專上學院 HK Community College (under the HK Polytechnic University) 香港專業教育學院 / 香港知專設計學院 HK Institute of Vocational Education / HK Design Institute (under VTC) 其他: 請註明 _____ Other: please specify _____
7I	學科 Discipline	藝術、設計、表演藝術 Arts, Design and Performing Arts 理學科及資訊科技 Sciences and Information Technology 健康護理及健康科學 Health Care and Health Sciences 社會科學及人文學科 Social Sciences and Humanities 商業及管理 Business and Management 酒店款待及旅遊 Hospitality and Tourism 教育 Education 其他: 請註明 _____ Other: please specify _____

Appendix E

Graphical Data Dispersion for Main Study (N= 389)

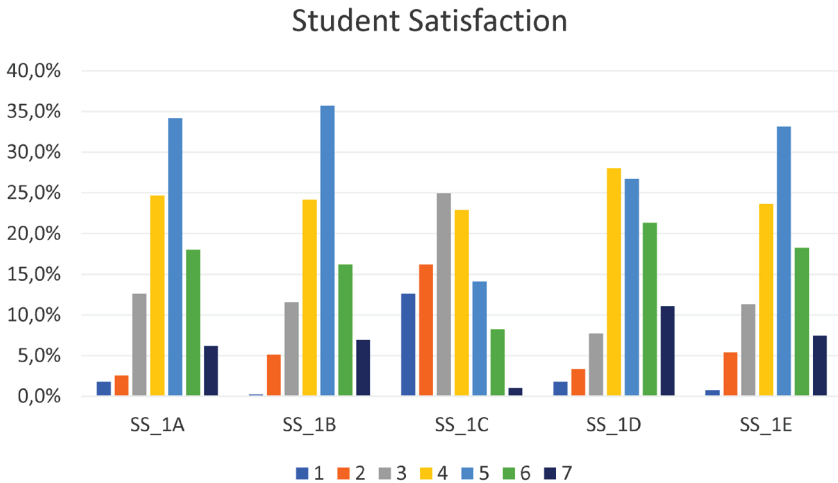


Figure E1. Data Dispersion for Items on Student Satisfaction

Figure E1 demonstrates the responses of the five items in measuring Student Satisfaction in the questionnaire (SS_1A to SS_1E). Except SS_1C, most of the respondents gave ratings of 4 or 5, while 1 and 7 were relatively less frequently chosen. Of this frequency distribution, value 1 is the least value to be chosen by respondents and value 5 is the most frequent value to be chosen by respondents. By excluding the mid-point value (4), the percentage of values 5–7 is relatively higher than that of values 1–3, which means that respondents showed a higher tendency to agree on the items mentioned in the questionnaire (except SS_1C). This represented that most of the items were distributed normally with different degrees of skewness. Since the question of SS_1C was constructed in a reverse question tone, the result, therefore, shows completely different from other items.

Figure E2 demonstrates the responses on Student Trust in the questionnaire, ST_2A to ST_2D are the four items in checking the respondents' views on Student Trust. Most of the respondents gave ratings of 4 or 5,

while 1 and 7 were relatively less frequently chosen. Of this frequency distribution, value 1 is the least value to be chosen by respondents and value 4 & 5 are the most frequent values to be chosen by respondents. By excluding the mid-point value (4), the percentage of values 5–7 is relatively higher than that of values 1–3, which means that respondents showed a higher tendency to agree on the items mentioned in the questionnaire. Likewise, this frequency distribution tendency similar to Figure E1 that most of the items were distributed normally with different degrees of skewness.

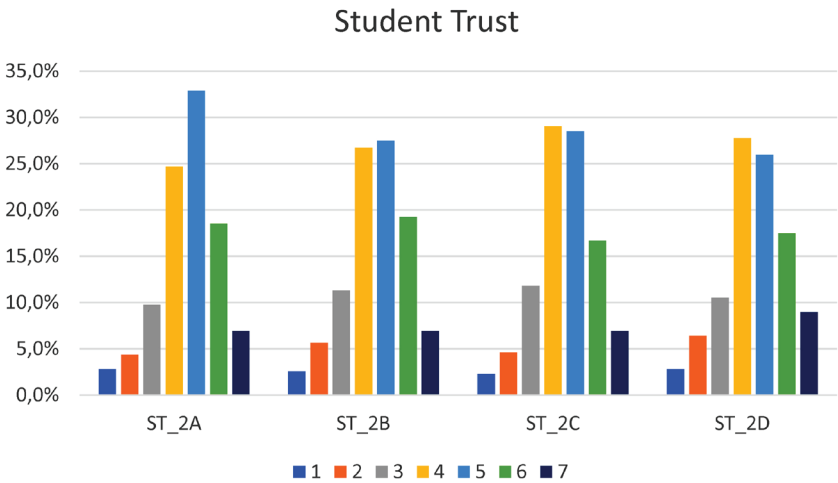


Figure E2. Data Dispersion for items on Student Trust

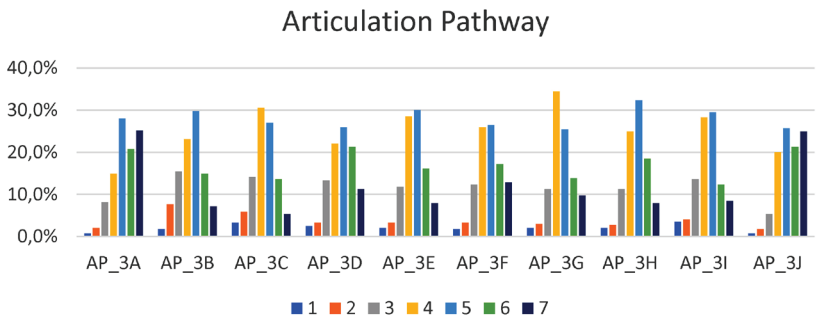


Figure E3. Data Dispersion for Items on Articulation Pathway

Figure E3 illustrates the responses of the 10 items in measuring Articulation Pathway in the questionnaire (AP_3A to AP_3J). Most of the respondents gave ratings of 4 or 5, while 1 and 7 were still less frequently chosen. Likewise, the frequency distributions of Student Satisfaction and Student Trust, value 1 is still the least value to be chosen by respondents and value 5 is the most frequent value to be chosen by respondents, except AP_3C and AP_3G). By excluding the mid-point value (4), the percentage of values 5–7 is relatively higher than that of values 1–3, which means that respondents showed a higher tendency to agree on the items mentioned in the questionnaire, particularly items AP_3A and AP_3J that showed an obvious tendency to agree on the items. All items were distributed normally with different degrees of skewness and this pattern displayed same as Figure E1 and E2.

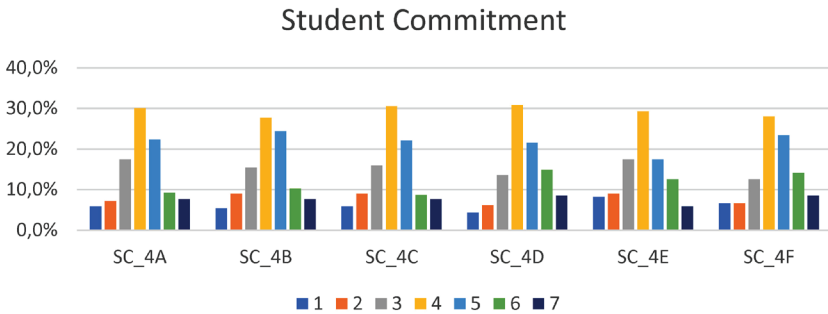


Figure E4. Data Dispersion for items on Student Commitment

Figure E4 demonstrates the responses of the six items in measuring Student Commitment in the questionnaire (SC_4A to SC_4F). Most of the respondents gave ratings of 4, while 1 and 7 were relatively less frequently chosen. Of this frequency distribution, value 1 is the least value to be chosen by respondents, except item SC_4E, and value 4 is the most frequent value to be chosen by respondents. However, by excluding the mid-point value (4), the percentage of values 5–7 is relatively higher than that of values 1–3, which means that respondents showed a higher tendency to agree on the items mentioned in the questionnaire and all the items were distributed normally with different degrees of skewness.

Same as the previous four frequency charts, the frequency distribution on the responses of the three items (LOY_6A – LOY_6C) in measuring Student Loyalty demonstrated similar traits as the other four charts

(Figure E1/ E2/ E3 and E4) and was displayed by Figure E5. Most of the respondents gave ratings of 4, while 1 and 7 were still relatively less frequently chosen. Value 1 and value 4 are the least value and the most frequent value to be chosen by respondents respectively. By excluding the mid-point value (4), the percentage of values 5–7 is relatively higher than that of values 1–3, which means that respondents showed a higher tendency to agree on the items mentioned in the questionnaire.

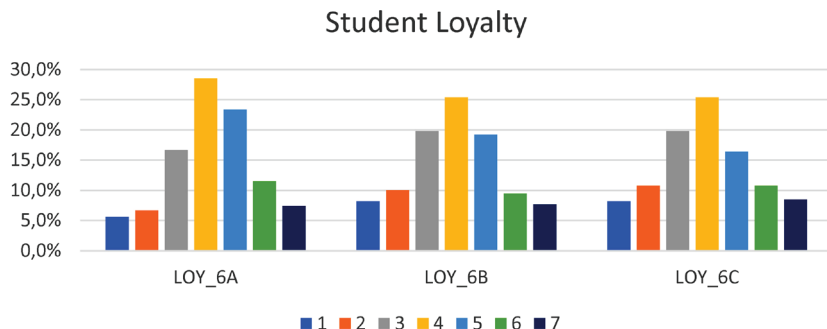


Figure E5. Data Dispersion for items on Student Loyalty

Figure E6 illustrates the responses of the 16 items in measuring Perceived Service Quality in the questionnaire (PSQ_5A to PSQ_5P). Most of the respondents gave ratings of 4 or 5, while 1 and 7 were still less frequently chosen. Likewise, the frequency distributions of other five charts, value 1 is still the least value to be chosen by respondents and value 4 or 5 are the most frequent values to be chosen by respondents. By excluding the mid-point value (4), the percentage of values 5–7 is significantly higher than that of values 1–3, which means that respondents showed a higher tendency to agree on the items mentioned in the questionnaire. All items were distributed normally with different degrees of skewness and this pattern displayed similar traits as the other five charts.

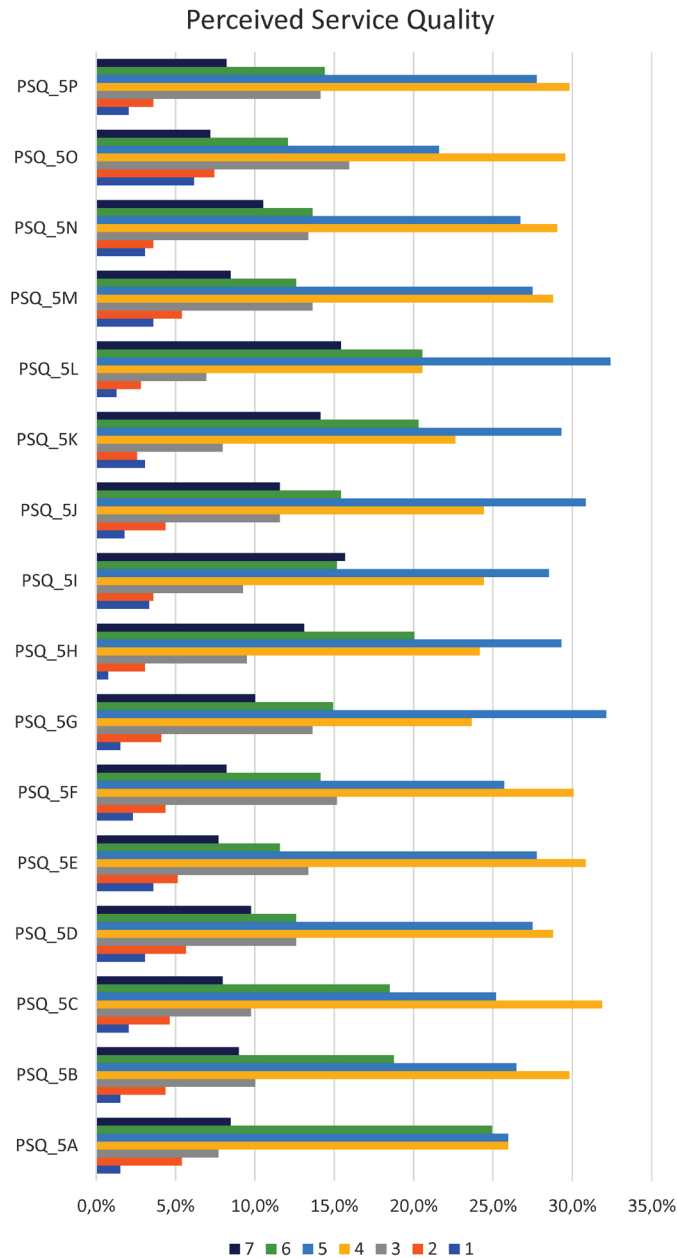


Figure E6. Data Dispersion for items on Perceived Service Quality

Appendix F

Respondents' Profile for Main Study (N= 389)

As per Figure F1 that over 50 percent of the respondents were female (56 percent), who accounted for a slightly more than half of the respondents in this study. The remaining 44 percent is male.

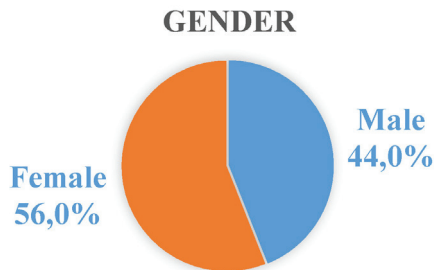


Figure F1. Gender

For the age distribution, Figure F2 shows around 60 percent of the respondents fall into the age group of 18–20, followed by 32 percent in the age group of 21–23. Approximately eight percent of the respondents aged of 24 or above, and only less than one percent of the respondents were 17 or below. The findings are reasonable because most of the students in HK finish their secondary school at the age of 18 in HK. Moreover, respondents at the age of 24 or above had acquired certain amount of work experience (either part-time or full-time) before commencing their sub-degree studies.

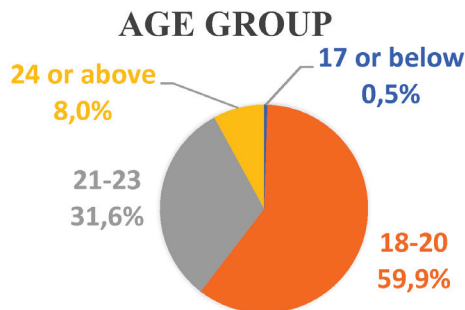


Figure F2. Age Group

Figure F3 presented that around 59 percent of the respondents are studying HD, while the rest of the respondents are studying AD (41 percent). Regarding the mode of programme operation, Figure F4 presented that nearly 57 percent of the respondents are studying self-financed sub-degree programmes, whereas around 43 percent of the respondents are studying in government-funded programmes. These findings are considered logical as there are fewer government-funded programme is comparison (Concourse for Self-financing Post-secondary Education, 2020).

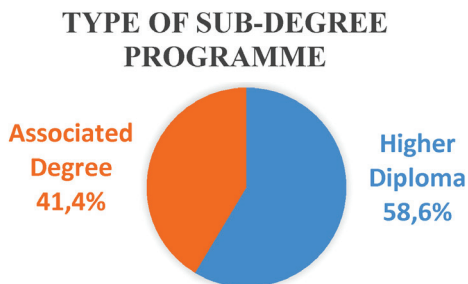


Figure F3. Types of Sub-degree Programme

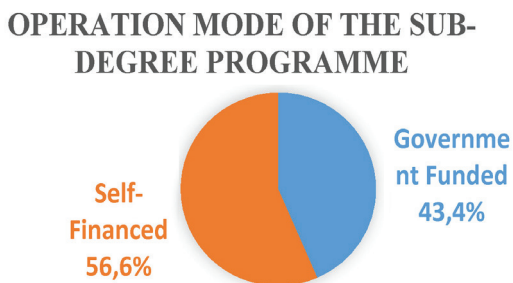


Figure F4. Operational Mode of the Programme

Regarding the source of progression pathway into their sub-degree programme, Figure F5 illustrates that DSE (61.5 percent) and DFS (29 percent) are the two major sources for the student to get into the sub-degree programmes.

Over 80 percent of the respondents have work experience before enrolling into the sub-degree programmes. Figure F6 indicated that around 71 percent of the respondents have had part-time work experience, while about 10 percent of the respondents have gained both part-time and full-time work experience. Meanwhile, approximately four percent of the respondents had full-time work experience before studying their sub-degree programme.

ARTICULATIONPATHWAY TO THE SUB-DEGREE PROGRAMME

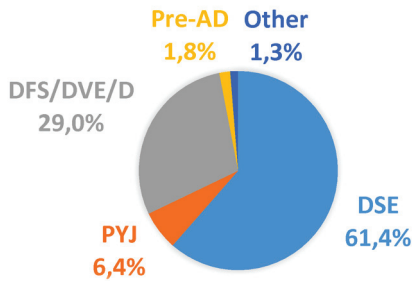


Figure F5. Articulation Pathway to the Sub-degree Programme

The remaining 15.4 percent of the respondents have had no work experience before starting their the sub-degree programmes. The results reflected that it is very common for the respondents to have part-time job before commencing their study in the sub-degree programme. As many DSE students and DFS students had a long summer break before actually starting their studies in the sub-degree programme, most of them will look for part-time jobs to enrich their exposure.

WORK EXPERIENCE BEFORE TAKING SUB-DEGREE PROGRAMME

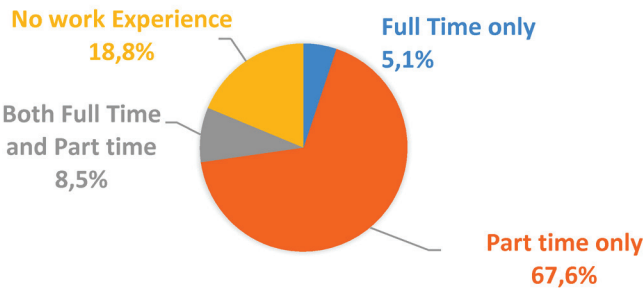


Figure F6. Work Experience Before Enrolled Sub-degree Programme

Figure F7 demonstrates that among the 389 respondents, around 62 percent (241 respondents) are currently in year 1, while 38 percent (148 respondents) are at their second year of study, which is also final year for a regular sub-degree programme.

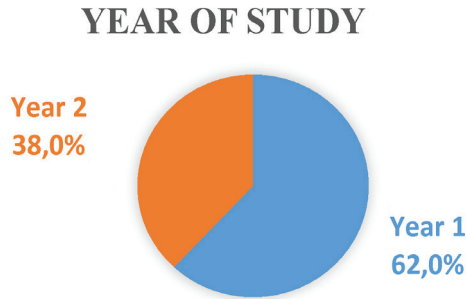


Figure F7.Year of Study

In addition, Figure F8 illustrates that most of the respondents (43.4 percent) are studying in HK Institute of Vocational Education / HK Design Institute (under VTC) (HK IVE/ HK DI (Under VTC), whereas the HK Community College (under the HK Polytechnic University) and HKU SPACE Community College (under The University of HK) made up the second and third sources of the respondents, which account for 22.6 percent and 20.8 percent, respectively. Regarding the discipline of their study, Figure F9 shows that most of the respondents are studying Science & IT, Business & Management and Hospitality & Tourism, which accounted for 24 percent, 23 percent and 20 percent respectively.

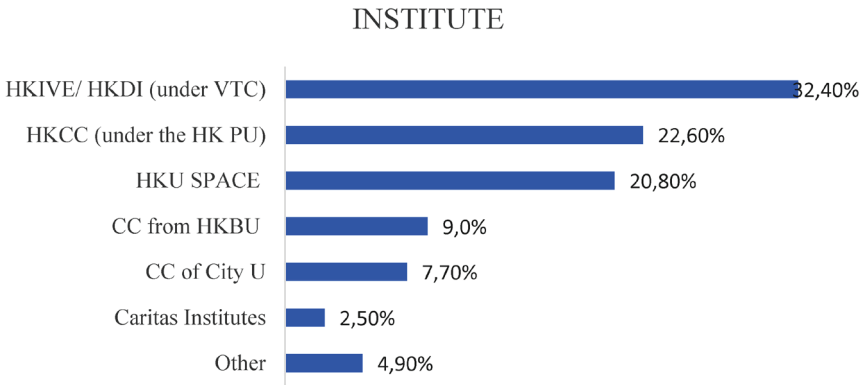


Figure F8. Institute

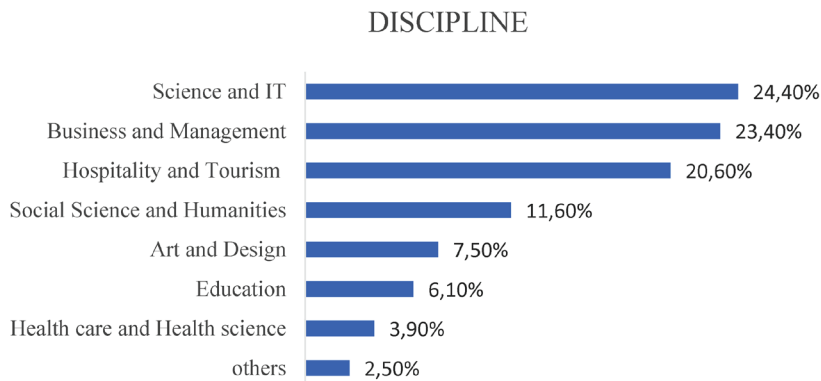


Figure F9. Discipline

