THE RELATIONSHIP OF SERVICE QUALITY, CUSTOMER SATISFACTION

AND LOYALTY IN CELCOM MALAYSIA

VOON SZE CHEE

UNIVERSITI TEKNOLOGI MALAYSIA

THE RELATIONSHIP OF SERVICE QUALITY, CUSTOMER SATISFACTION
AND LOYALTY IN CELCOM MALAYSIA

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DEDICATION

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This dissertation is dedicated to my parents, who taught me that the best kind of knowledge to have is that which is learned for its own sake. Not forget dedicated to siblings and friends, who taught me that even the largest task can be accomplished if it is done one step at a time.

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ABSTRACT

Telecommunications is a key enabler of productivity in today's economies and societies. The fierce market competition among companies has increased dramatically in recent years, and attracting new potential customers is no longer sufficient to keep up with their competitors' business growth. Therefore, maintaining customer satisfaction and loyalty is a critical strategy for maintaining its competitive advantage. Customers purchase services based on how well their needs and expectations for service quality are met. According to this statement, the primary goal of this research is to gain a better understanding of the dynamic relationship between service quality and customer satisfaction, as well as their impact on customer behavior. Despite the fact that this research area has been thoroughly examined, there is little empirical evidence that it has been applied to subscribers in the telecommunications industry in Malaysia. The research's main goals are to identify and analyse factors that influence customer satisfaction and loyalty in the context of Celcom's subscribers in Malaysia. This research also investigated the role of customer satisfaction as a mediator of the relationships between service quality dimensions and customer loyalty. Few underpinning theories, such as Expectancy Disconfirmation Theory (EDT) and Theory of Planned Behavior (TPB), have been used to aid in depicting the inter-relationships among service quality dimensions, customer satisfaction, and customer loyalty. This research employed quantitative method, and data (through questionnaires) were collected from Celcom's subscribers via online and handout within Malaysia. 430 responses were gathered using convenience sampling. The data was analysed using Statistical Package for the Social Sciences (SPSS) and SmartPLS applications. The findings revealed that customer satisfaction is evidently a predictor of customer loyalty. Furthermore, customer satisfaction was positively influenced by network, mobile devices, customer services, and pricing structure, and not by the value-added services and billing system. The findings also revealed that customer satisfaction mediates the relationship between service quality dimensions (network, mobile devices, customer services, and pricing structure) and customer loyalty. In conclusion, the findings provide practitioners with a more comprehensive model for analysing customer loyalty and also provide factors that help Celcom create a seamless relationship with customers in order to gain customer loyalty that develops the re-purchase desire.

ABSTRAK

Telekomunikasi ialah pemangkin produktiviti dalam ekonomi dan masyarakat masa kini. Persaingan pasaran yang sengit dikalangan syarikat telah meningkat secara mendadak sejak beberapa tahun kebelakangan ini. Menarik pelanggan baru tidak lagi mencukupi untuk bersaing dengan pertumbuhan perniagaan pesaing mereka. Oleh itu, mengekalkan kepuasan dan kesetiaan pelanggan adalah strategi kritikal untuk mengekalkan kelebihan daya saing. Pelanggan membeli perkhidmatan berdasarkan seberapa baik keperluan dan jangkaan mereka untuk kualiti perkhidmatan dipenuhi. Berdasarkan kenyataan ini, matlamat utama penyelidikan pemasaran adalah untuk mendapatkan pemahaman yang lebih baik tentang hubungan dinamik antara kualiti perkhidmatan dan kepuasan pelanggan, serta kesannya terhadap tingkah laku pelanggan. Walaupun dikatakan bahawa bidang penyelidikan ini telah diteliti secara menyeluruh, tetapi tidak ada banyak bukti empirikal bahawa ia digunakan untuk yang pelanggan dalam industri komunikasi di Malaysia. Matlamat utama penyelidikan ini adalah untuk mengenal pasti dan menganalisis faktor yang mempengaruhi kepuasan dan kesetiaan pelanggan dalam konteks pelanggan Celcom di Malaysia. Selain itu, penyelidikan ini juga menyiasat peranan kepuasan pelanggan sebagai pengantara hubungan antara dimensi-dimensi kualiti perkhidmatan dan kesetiaan pelanggan. Beberapa teori asas, seperti *"Expectancy Disconfirmation Theory"* (EDT) dan *"Theory of Planned Behavior"* (TPB), telah digunakan untuk membantu dalam menggambarkan perkaitan antara dimensi-dimensi kualiti perkhidmatan, kepuasan dan kesetiaan pelanggan. Tambahan pula, penyelidikan ini menggunakan kaedah kuantitatif dan data (melalui borang soal selidik) dikumpulkan daripada pelanggan Celcom melalui dalam talian dan edaran salinan keras di Malaysia. 430 maklum balas telah dikumpul menggunakan pensampelan mudah. Data telah dianalisa menggunakan aplikasi *"Statistical Package for the Social Sciences"* (SPSS) dan "SmartPLS". Dapatan kajian menunjukkan bahawa kepuasan pelanggan jelas merupakan peramal kesetiaan pelanggan. Tambahan pula, kepuasan pelanggan dipengaruhi secara positif oleh rangkaian, peranti mudah alih, perkhidmatan pelanggan dan struktur harga, manakala perkhidmatan nilai tambahan dan sistem pengebilan tidak ada sebarang pengaruh kepada kepuasan pelanggan. Dapatan kajian ini juga mendedahkan bahawa kepuasan pelanggan adalah faktor pengantara hubungan antara dimensi-dimensi kualiti perkhidmatan (rangkaian, peranti mudah alih, perkhidmatan pelanggan, dan perkhidmatan struktur harga) dan kesetiaan pelanggan. Sebagai kesimpulan, penemuan kajian ini menyediakan pengamal dengan model yang lebih komprehensif untuk menganalisis kesetiaan pelanggan dan juga menyediakan faktor yang membantu Celcom mewujudkan hubungan yang lancar dengan pelanggan untuk mendapatkan kesetiaan pelanggan yang membangunkan keinginan pembelian semula.

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LIST OF ABBREVIATIONS

ACSM	American Customer Satisfaction Model
ARPU	Average Revenue Per User
AVE	Average Variance Extracted
CDR	Call Detail Records
BCa	Bias-Corrected and Accelerated Bootstrap
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
CRM	Customer Relationship Management
DEL	Direct Exchange Line
DV	Dependent Variable
E	Perceived Expectations
EDT	Expectancy Disconfirmation Theory
GPRS	General Packet Radio Services
HSBB	High Speed Broadband
HTMT	Heterotrait-Monotrait Ratio of Correlations
IV	Independent Variable
IVR	Interactive Voice Response
LTE	Long Term Evolution
MCMC	Malaysian Communications and Multimedia Commission
MVNO	Mobile Virtual Network Operator
OCS	Online Customer Service
P	Perceived performance
PLS-SEM	Partial Least Squares-Structural Equation Model
PUK	Personal Unblocking Key
SEM	Structural Equation Modelling
SMS	Short Message Service
SPSS	Statistical Package for the Social Sciences
SQ	Service Quality
telco	Telecommunications
TM	Telekom Malaysia
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behavior
UM	U Mobile
VAS	Value-added services
WAP	Wireless Application Protocol
4G	Fourth Generation

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1 Introduction

This introductory chapter presents the background of the research, followed by the statement of problems which discussed the observation with its gap why this research needs to be done. Then, the scope of research, the research questions, the research objectives, significant of the research, research significance, definition of the research variables/terminologies and organization of dissertation will be discussed. Lastly, the chapter summary will be the last section to be included at the end of this chapter.

1.2 Research background

In this day and age, with the rapid technological and services advancement, the telecommunication companies are emerging tremendously due to high demand from consumers because their invention has made nationwide share and transmit the information and knowledge with a few clicks on the internet (Lam, Lam, & Liew, 2019). The telecommunications industry in Malaysia has experienced tremendous growth in the past few decades (P. K. Chang & Chong, 2011). The industry was pioneered by the first telecommunications service provider, Telekom Malaysia (Munyanti & Masrom, 2018). Initially, Telekom Malaysia (TM) was a giant telco service provider which has been monopoly the market in Malaysia (Ismail, 2005; Partridge, Samad, & Walton, 1995; Ramlan, Yusoff, & Pazim, 2013). However, in 1985, this situation has become shattered after the government decided to open the market to other service providers, which then, enhance the competition (Ismail, 2005). One of the reasons is to diversity from the fix line service to mobile service (Kee, bt Abdullah, & Mahtre, 2019; Ramlan et al., 2013). The government has given 11 licenses to private telecommunications companies to operate in the market. However, in the end, it is only the remaining three

service providers that are Maxis, Celcom, and DiGi, during the time in 1997-1998 (Ramlan et al., 2013), which established with their own network infrastructure. Furthermore, the telecommunications industry has embraced Mobile Virtual Network Operator (MVNO) models, which welcomed the non-telco players to participate in the market (MCMC, 2018). The reason for doing so was to penetrate a high growth market. Another reason was to revise or renew this telecommunications industry market from a different perspective to look for niche markets such as product differentiation opportunities from the major operator in Malaysia. Such as Altel Communications Sdn Bhd, Red ONE Network Sdn Bhd, Tune Talk, XOX Com Sdn Bhd have targeted specific customers to compete with existing giant mobile operators in Malaysia (MCMC, 2018).

Subsequently, the market becomes more competitive nowadays, where they were able to capture about 12% of market share subscriptions in 2018 compared with 11% in the year before (MCMC, 2018). This trending was contributed by their specialised market strategies and branding from the niche market. Moreover, the introduction of the mobile service market skyrockets with the technology advancement where it's already considered the world just like a global village that everyone wants to interconnect to each other (Arif, Aslam, & Ali, 2016; Aslam, Arif, Farhat, & Khursheed, 2018). For instance, sophisticated handset, service, and feature or service that had been customized on the wireless service (Chuah, Marimuthu, & Ramayah, 2015) making this as the leading segment driven in telecommunications industry (P. K. Chang & Chong, 2011).

In addition to that, to survive in the fierce competition among their rival companies, those companies have to offer innovative services and attractive packages that are related to the price structure to keep themselves the most attractive from the customer (Haque, Ahmed, & Rahman, 2007). To validate this, the recent report (MCMC, 2019) highlighted that telecommunications sector revenue had been grown about 6.53% to RM23.00 billion compared to 2017, which was captured RM21.59 billion from the report by referring to Figure 1.1. However, there was a slight drop in telecommunications revenue in 2019, which had shown RM22.26 billion that indicates a fall of 3.22%. Nevertheless, the highlight was the mobile service providers had been contributed approximately 64% to the overall telecom revenue, whereas the remaining

36% was from fixed service providers (MCMC, 2018, 2019), which it's shown a reduction trend. The graph trending in Figure 1.1 illustrates that mobile service providers have been successfully captured more than half of the market in Malaysia compared to the fixed service provider. It is due to customer needs data mobility service with high-speed data communication that associated high tech smartphone usage while they move around.
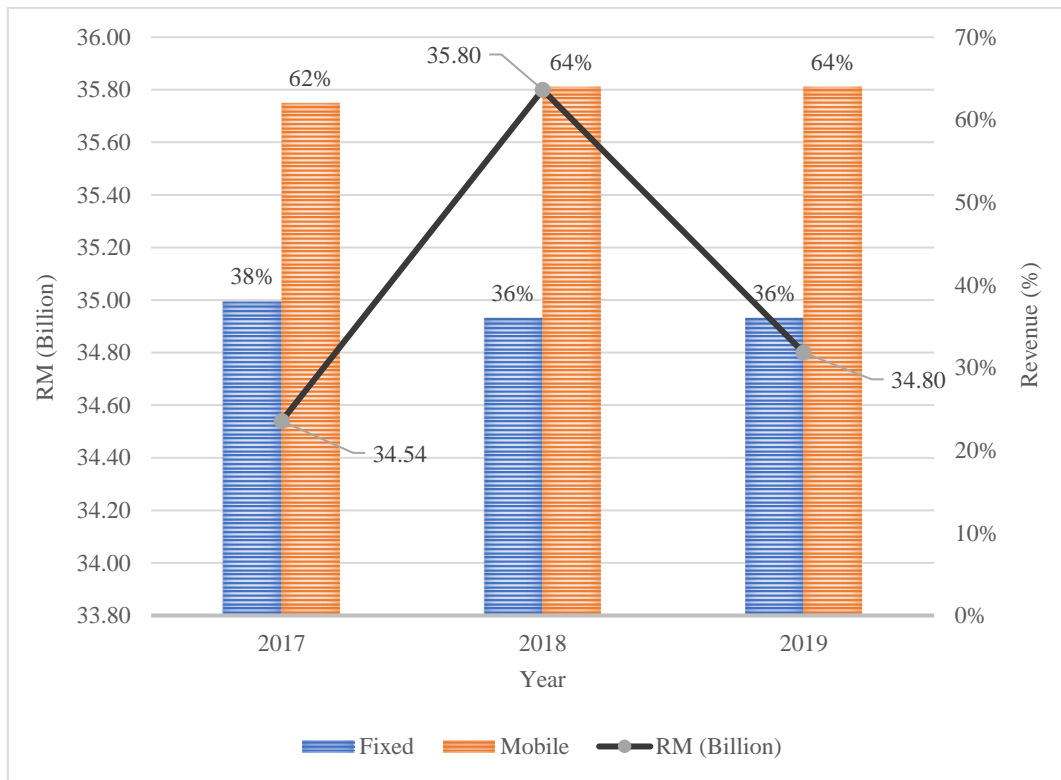
Figure 1.1 Telco sector revenue from 2017 - 2019

(MCMC, 2019)

Followed by that, these few major players in Malaysia are competing to sustain their base customers from leaving one and jump to other service providers. The phenomena can be seen in Figure 1.2, whereas the trend was decreasing gradually after the new player's entry in the market. As a consequence, revenue in cellular operators, which was established earlier (Maxis, Celcom, DiGi) in Malaysia that can be observed from Figure 1.3, showed the fluctuation or decrease trend compare with new player's entry recently.
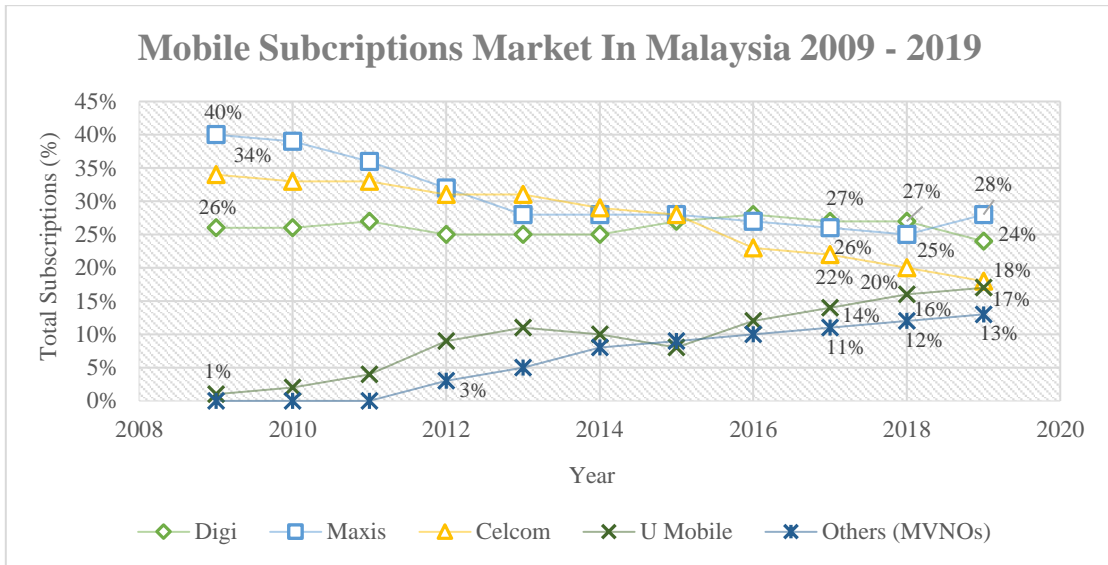
Figure 1.2 Mobile cellular subscriptions market share from 2009 - 2019 (MCMC, 2018, 2019)

The possible reason was that those giant mobile operators in Malaysia had failed to retain their existing customers nor acquire new potential customers caused their revenue to remain stagnant and or decrease year by year. On the contrary, new entry mobile operators, which aggressively acquires their new niche of the market to compete with the existing giant mobile operator, has successfully captured from 2% subscribers in 2010, ramping up to 28% subscribers after eight years and stood at 30% on 2019.
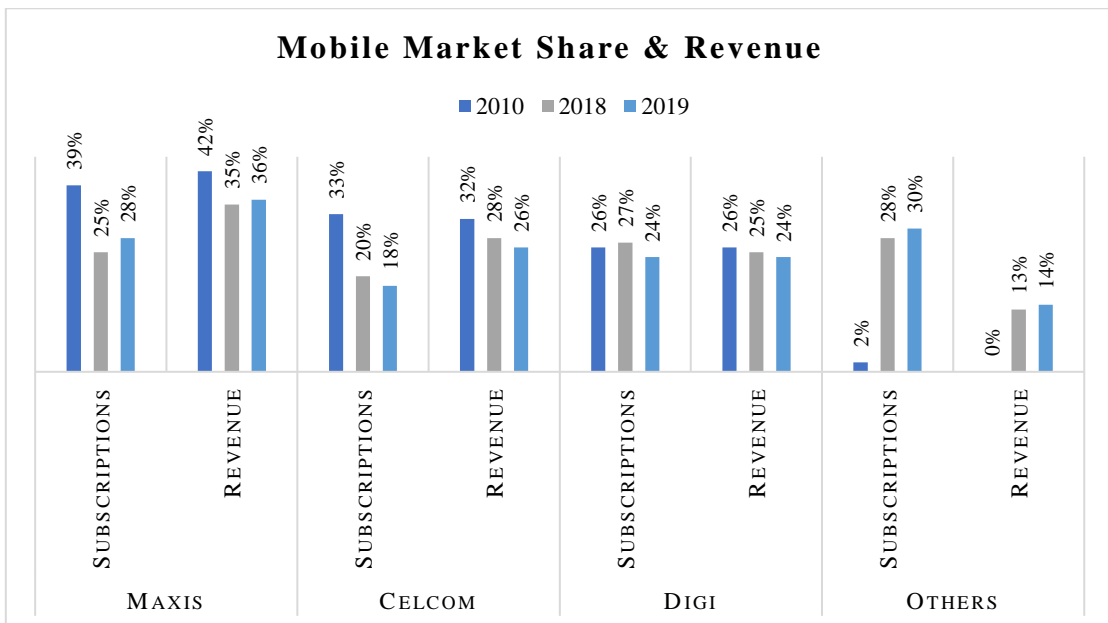
Figure 1.3 Mobile cellular market share & revenue 2010, 2018 - 2019 (MCMC, 2018, 2019)

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Apart from that, the launching of the Mobile Number Portability (MNP) in October 2008 (ONLINE, 2008; Wen & Hilmi, 2011) deteriorate the situation whereby the existing users in the current service provider able to maintain their existing number while switching around their service provider (Bernama, October 2008; Wen & Hilmi, 2011). With the implementation of MNP had been worsened, the situation of "retain" their base customer being fade away easily from one service provider to another service provider. Therefore the total subscribers trending fluctuate due to the customer is switching from one to another service provider (Danish, Ahmad, Ateeq, Ali, & Humayon, 2015). Reacting to this challenge, instead of tempting new customers but trying to put more effort to maintain the satisfaction, loyalty (Boohene & Agyapong, 2011; Seo, Ranganathan, & Babad, 2008; Wen & Hilmi, 2011) and even retain their existing customers.

The role of service quality's dimension, customer satisfaction, and customer loyalty becomes vital in the telecommunications industry in Malaysia, whereby those service providers lose their subscribers every year, which is up to about 30% or more (Tripathi & Siddiqui, 2010). Not only to that, but the author (J. Lee et al., 2001) also conducted the study at mobile phone service in France stressed that the loss of 30 % of mobile subscribers every year is expected to cause large customer acquisition expenditures needed. From other industry, for example, marketing relationship states that customer relationship assists in increasing the market share, as well as profitability (Rakshit & Eyob, 2013). Few researchers (Ndubisi, 2003; Rosenberg & Czepiel, 1984; Sathish, Kumar, Naveen, & Jeevanantham, 2011) validated that cost spends on serving the satisfied customer is five to six times lesser than the cost of attracting or serving to the new potential customer.

Therefore, there are many marketing theories and practice emphasize that telecommunications firms if want to sustain among their rival company; the only way is customer satisfaction shall up to par. For example, (Hogan, Lemon, & Libai, 2003), said that the existing customers could bring more "moneymaking" or revenue growth compared to the potential customer. Subsequently, most of the companies believe that focus on the long-run business and prioritize customer relationship which propels a positive word of mouth (Ngoma & Ntale, 2019), and it is a low-cost alternative to build tough faithful customer base (Barreda, Bilgihan, Nusair, & Okumus, 2015). In other

words, to boost up the growth while in the competitive environment with the saturation market, it is needful to retain loyal customers (Boohene & Agyapong, 2011; Lee, Lee, & Feick, 2001; Seo et al., 2008). Some extant findings found out that retaining the customer with a 5% retention rate may give the average value of the customer increases by 35 in software companies (Boohene & Agyapong, 2011; Seo et al., 2008). On the other hand, there shall be about 95% of the average net to be expected if the companies increase the customer retention rate of just 5%, which applied for advertising agencies (Reinchheld, 1996). Therefore, the growth and survival of the business to sustain is very much dependent on loyal customer retention, and thus to companies shall need to study and understand the customer expectation (Boohene & Agyapong, 2011).

Another benefit of long-term transactions with customer business tends to trigger customer loyalty (Ngoma & Ntale, 2019). Therefore, loyal customers that may influence their relatives and friends via their positive mouth of fact indirectly attract new potential customers about the services and products that they have enjoyed (Mohd Jamil, Mohd Nawawi, & Ramli, 2016). Apart from the recommendation of their own experience in current cellular operator to others, loyal customers are also having decent and uplifting disposition image of brands, repurchase the same product's frequency is high (Fernando, Ab Yajid, Khatib, & Azam, 2019), and a high degree of unwillingness to change other operators (Yee, Ling, & Leong, 2015). Thus, customer acquisition is not much significant to boost the growth of via revenue, but customer loyalty and retention is the key to sustain the revenue growth in the cutthroat market. Thus, most of the business enterprise entities to sustain in their business growth-dependent the ability or capabilities to innovate the original product or service to shield the customer base from competitive activity (Som, Kirner, & Jäger, 2015). Customer loyalty is a strategy that helps generate mutual rewards to benefit both customers and firm (Haghkhah, 2016; Reichheld & Sasser, 1990). Loyalty of customer is one of the factors that contributed to the creation of benefits. Since loyal customers prefer to purchase frequently, spend their money on new services and products, suggest products and service to others, and provide firms with useful suggestions, firms can increase their profits (Haghkhah, 2016). Therefore, an organisation's profitability and success are linked by loyalty (Eakuru & Mat, 2008).

In the nutshell, numerous of empirical evidence told us that there was some holistic exploration of the main factors (service quality's dimension), namely network quality, customer services, price fairness, diversity of products, and etc that constitutes customer satisfaction and how it was leading to customer loyalty which already proven in telecommunications context. Therefore, this research distinguished from previous study, which had been done in telecommunication industry in Malaysia, will use more comprehensive variables (differ from SERVQUAL's dimension) whether dependent or independent that can be controlled by mobile operators (especially for Celcom) to meet the needs of customer and other dynamics of the marketing environment.

1.2.1 Celcom's background

Celcom is the oldest telecommunication company in Malaysia which started its operation in 1988. Celcom is one of the members of Axiata Group Berhad, which Axiata was established in Malaysia on 12 Jun 1992 as a private limited company under the name of Telekom Malaysia International (TMI). After that, the TMI name was changed to Axiata Group Berhad on 28 April 2008 with their new identity, which is considered part of the rebranding exercise (G. B. Axiata, 2014). This rebranding exercise aims to enhance its position as a leading regional mobile operator was providing its services in five mobile operators under the brand names of "Celcom" in Malaysia, "XL" in Indonesia, "Dialog" in Sri Lanka, "Robi" in Bangladesh and "Smart" in Cambodia, with strategic interests in "Idea" in India and "M1" in Singapore and Iran (G. B. Axiata, 2014; Hasnat, Mahbub, Talukder, & Mubasshira, 2017).

Celcom in Malaysia is the country's premier and most experienced mobile telecommunications company among others mobile operator in the same country. Not only that, Celcom is also the leading mobile broadband service provider in Malaysia with over 937,000 subscribers apart from provides Prepaid and Postpaid mobile service in Malaysia. Subsequently, Celcom is focusing to invest in their network coverage, capacity and performance and always ensuring their technology leadership which is always the country's best mobile provider with their widest network coverage in the country, its 2G and 3G networks covers 95.0% and 81.7% of the population respectively (G. Axiata, 2021; Hasnat et al., 2017). Moreover, Celcom also enjoys significant market share in other areas of business namely content and VAS, enterprise solutions and bulk

wholesale services. In line with the evolving technologies and changing consumer behavior in Malaysia, Celcom is moving towards integrated multi–access and multimedia services (G. Axiata, 2021).

Celcom's subscriber base has suffered drop trend since 2014 after new player's entry such as U Mobile, and others (MVNOs) were introduced in competitive market (see Figure 1.2). As a result, Celcom's market share and revenue indirectly has been dropped gradually, where their subscriber base was being taken by another rivals' company (see Figure 1.3). It is important to note, which factor(s) had chased Celcom's subscriber away, and reconfigure marketing strategies whereby assist in developing long-term relationship with customer. Customer dissatisfaction has been driven by factors such as unsatisfactory customer service, constantly increasing prices, poor network quality, limited product packages, high subscriber switching behaviour, and poor overall service quality (Nwakanma et al., 2018).

1.3 Problem statement

The churn rate continued to soar by the service provider in the telecommuniations industry in Malaysia, indicates that customers are willing to switch operators very easily (P. K. Chang & Chong, 2011). One of the main reasons causing this phenomenon was the announcement of the launching of Mobile Number Portability (MNP) nationwide in October 2008 (ONLINE, 2008; Wen & Hilmi, 2011). The launching of the MNP gives an option for the current subscriber to switch from one to service provider easily without changing their phone number. For the telecommunication industry, it is tough to retain the customer because the switching barrier is low (Wen & Hilmi, 2011). Apart from that, customer nowadays is more demanding of their expectation level as they were always expecting their needs, wants, tastes and the perception toward the service provider to be fulfilled accordingly (Haque et al., 2007; Hoang Vu, Van Pham, & Thi Hai Nguyen, 2020; Munyanti & Masrom, 2018). If the performance of product is falls under customer expectation, this will make customer dissatisfied. On the contrary, the customer will be satisfied if the product performance is fulfilled their demand. Subsequently, customers feel delighted if the product is exceeded their expectations. As a result, perceived quality which mobile

operator is providing becomes an antecedent for customer satisfaction that need to further investigate in this research.

The number of Celcom's subscribers was suffered the "churn" rate increment that observed from the graph compared with others mobile operator in Malaysia. As the Figure 1.4 was showed Celcom's subscribers who subscribed Postpaid and Prepaid package from 2017 - 2019 (G. B. Axiata, 2014; Müller, 2021a, 2021b). It was clearly known that the total subscribers of Celcom basically were decreasing from 9.54 million to 8.37 million. The main contributor to the overall reduction trend was observed from statistics, the number of Prepaid subscribers which significantly lesser from year by year. The figure number of Prepaid subscribers from 6.72 million in 2017 was continuously reduced about 0.63 million subscribers in 2018 and stood at 5.41 million on 2019. While the total number of Postpaid subscriber firstly was less than Prepaid subscribers that could be seen in the statistics. Therefore, their slight improvement trend in year 2018 was not much significant to boost Celcom's subscriber trend up in this case.

This churn rate phenomenon existed due to multiple factors which was eroding on customer satisfaction and customer loyalty. From some previous studies that was validated these some antecedents, such as competitive price and package offered by other operators (Arokiasamy & Abdullah, 2013; P. K. Chang & Chong, 2011; Ingy & Hazem, 2016; Lim, Widdows, & Park, 2006; Munyanti & Masrom, 2018; Nwakanma et al., 2018; Santouridis & Trivellas, 2010; Shah, Husnain, & Zubairshah, 2018; Sharma, 2014; Wen & Hilmi, 2011), network coverage (Domb, Sujata, Sanjay, Arindam, & Jypti, 2016; Ingy & Hazem, 2016; Lim et al., 2006; Munyanti & Masrom, 2018; Nwakanma et al., 2018; Santouridis & Trivellas, 2010; Wen & Hilmi, 2011), advancement of added-valued services technology (Ingy & Hazem, 2016; M. K. Kim, Park, & Jeong, 2004; Santouridis & Trivellas, 2010; Sharma, 2014; Tripathi & Siddiqui, 2010; Wen & Hilmi, 2011), and customer support/service (Ingy & Hazem, 2016; Jyh-Fu Jeng & Bailey, 2012; M. K. Kim et al., 2004; Munyanti & Masrom, 2018; Nwakanma et al., 2018; Ogunnaike, Salau, Adeniyi, & Tairat, 2014; Santouridis & Trivellas, 2010; Sharma, 2014; Tripathi & Siddiqui, 2010) might be contributes to the problem.
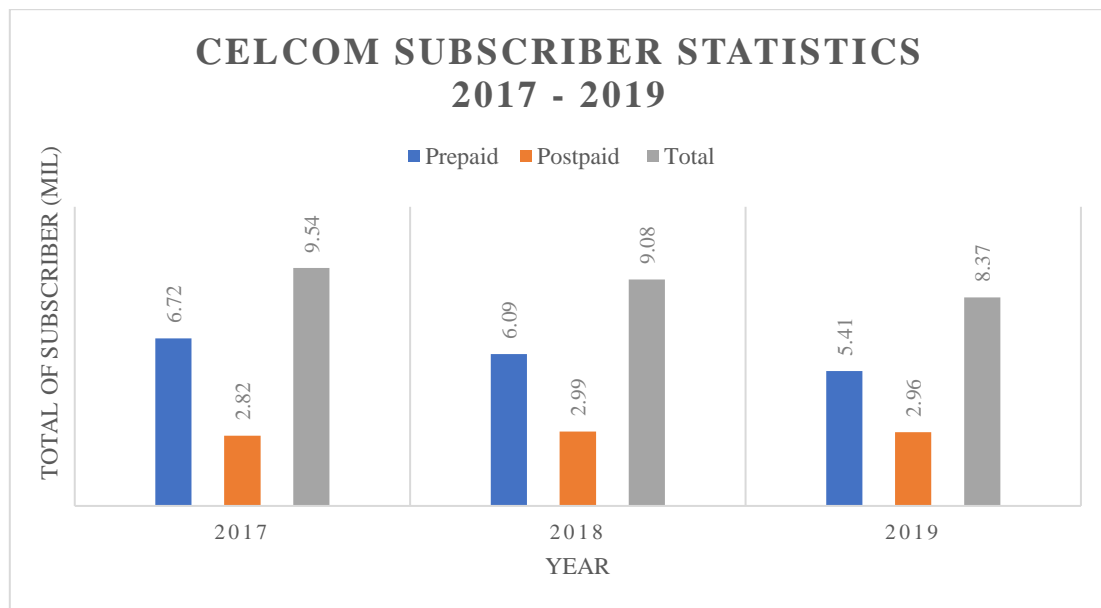
Figure 1.4 Celcom subscribers' statistics (mil) from 2017 - 2019 (Müller, 2021a, 2021b)

Although several empirical researches in the past have helped explain the influence of some significant variables for customer satisfaction and loyalty, which had been widely used, SERVQUAL model. Furthermore, Parasuraman et al., highlighted that SERVQUAL dimensions are "the basic skeleton" underlying service quality that can be supplemented with context-specific items when necessary, which depends on industry (Parasuranman, Zeithaml, & Berry, 1988). In another word, context-specific items/dimensions shall be proposed to examine telecommunications industry, which had been done in other region such as telecommunications industry in Egypt (Ingy & Hazem, 2016), mobile telephony in Greece (Santouridis & Trivellas, 2010), and Korean mobile telecommunications service (M. K. Kim et al., 2004). In the nut shell, in telecommunications industry Malaysia, not many studies have examined the effects of certain factors (service quality's dimension) such as network, value-added services, mobile devices, billing system, customer services and pricing structure on the customer satisfaction and loyalty of Celcom subscribers.

That being the case, this research focuses on Celcom's subscriber behaviour on the service quality's dimension, customer satisfaction and customer loyalty relationships. The finding of this research can serve as a useful guide for Celcom in determining which factors/dimensions of service quality are important to overcome.

1.4 Research scope

This research aims to examine the relationship of service quality's dimension, customer satisfaction and customer loyalty in Celcom, which is one of the major mobile operators in Malaysia. Target population for this research is Celcom's subscriber, which is 18% of total subscribers (44.6 million) in Malaysia as reported by Multimedia Communications and Multimedia Commission (MCMC) in 2019.

Apart from that, the service quality's dimension, which adopted from numerous scholars studies (Choi, Kim, Sung, & Park, 2007; Kaynama & Black, 2000; Zeithaml, Parasuraman, & Malhotra, 2002), namely, network, value-added services, mobile devices, billing system, customer services, and pricing structure were used to investigate their effectiveness on customer satisfaction, effectiveness of customer satisfaction to customer loyalty, and mediator (customer satisfaction) role in between service quality's dimension and customer loyalty. These constructs are considered vital to understand subscriber behavior in Celcom for providing the benchmark for service quality's dimension improvements so that eventually customer satisfaction, loyalty and resultant profitability can be attained.

This research will use quantitative method, and the data were collected from Celcom's subscribers via online and hand-out within Malaysia. The sampling method, where the data was gathered using convenience sampling. After that, data collected will go through descriptive analysis, and follow by structural equation modeling (SEM) analysis. The Statistical Package for the Social Sciences (SPSS) and SmartPLS applications to be utilised to perform data analysis before conclude the research's finding.

1.5 Research questions

Based on the problem statement, the research questions were addressed as follows:

I.   Is there any relationship between service quality's dimension (network, value-added services, mobile devices, billing system, customer services and pricing structure) and customer satisfaction?

II. Is there any relationship between customer satisfaction and customer loyalty?

III. Does customer satisfaction has mediated on relationship between service quality's dimension (network, value-added services, mobile devices, billing system, customer services and pricing structure) and customer loyalty?

1.6 Research objectives

The proposed research intends to examine the relationship between service quality's dimension (network, value-added services, mobile devices, billing system, customer services and pricing structure), customer satisfaction and customer loyalty in Celcom. To answer the research questions, the objectives of the research are:

I.   To analyse the service quality's dimension (network, value-added services, mobile devices, billing system, customer services and pricing structure) effectiveness on customer satisfaction in Celcom.

II. To evaluate the customer satisfaction effectiveness on customer loyalty in Celcom.

III. The mediation effect of customer satisfaction between service quality's dimension (network, value-added services, mobile devices, billing system, customer services and pricing structure) and customer loyalty.

1.7 Research significance

This research provide pragmatic solutions to management team for their awareness on which antecedents that has been adopted from the previous researcher (Ali et al., 2010; Aydin & Özer, 2005; P. K. Chang & Chong, 2011; Choi et al., 2007; Gerpott, Rams, & Schindler, 2001; Ingy & Hazem, 2016; Keaveney, 1995; M. K. Kim et al., 2004; Lee et al., 2001; Lim et al., 2006; Santouridis & Trivellas, 2010; Wen & Hilmi, 2011) is curial for customer satisfaction and loyalty for Celcom. Subsequently, the management team can plan their innovative initiatives in the business growth

strategy implementation to sustain in fierce competition among other mobile operators in telecommunications industry in Malaysia. Moreover, this research is valuable to Celcom to improve their service quality as well as customer relationship management.

In addition, as this research highlight the mediator's effect of customer satisfaction between service quality's dimension and customer loyalty for Celcom's subscribers. This research is expecting service quality loyalty relationship will improve when the relationship is mediated by customer satisfaction due to this construct was empirically tested and found to be a key mediating factor in determining customer loyalty for organisation and customer (P. K. Chang & Chong, 2011; Ingy & Hazem, 2016). From the previous scholars, Lai, Griffin and Babin (2009), Eakuru and Mat (2008) and Zeithaml (1988), service quality has no direct impact on customer loyalty and cannot be considered an influencing factor in customer loyalty (1988) but mediated customer satisfaction. In short, in order to in increase the loyalty, service quality must ensure influence on satisfaction, and customer satisfaction further increase customer loyalty.

From academics' aspects, this research has examined the different service quality's dimension, where it was different from SERVQUAL model (reliability, responsiveness, assurance, empathy, and tangibles). The factor influence of service quality's dimension has been chosen (refer to Chapter 2 for detail), which is more relevant in context of telecommunications industry. Furthermore, this research contributes to theoretical relevance of relationship marketing theory in today's consumer market as well as its practical implementation. Another reason, those variables were applied in this research to investigate yet to review holistically under Celcom's subscribers, and this able to expand the knowledge of studies relating to service quality's dimension, customer satisfaction, customer loyalty.

1.8 Definition of the research variables/terminologies

Several variables or terminologies that have been used in this research, as summarized below.

Service quality: It defines as an evaluation of a business unit's ability to deliver services to its customer which meets or exceeds the expectations of those who have received the service/product. This research, the service quality dimension's which is appropriate to be proposed to examine Celcom's subscriber, namely, network, value-added services, mobile devices, billing system, customer services, and pricing structure.

Network: It defines as voice call clarity from both parties during the voice conversation over the phone. Apart from that, it also reflects the area of coverage of good signal reception, either outdoor or indoor, of all operators in the telecommunications industry in Malaysia. Also, the call drop frequency rate while the subscriber makes the call becomes part of an essential measure to this variable. It applies the same to the Celcom construct, whereby it is part of the vital variable in telecommunications.

Value-added services: Encompasses voice mail, short message service (SMS), music streaming service, online games, unique ring tones, mobile internet, multimedia services, E-services, insurance coverage, call waiting, call holding, call forwarding missed call alert, call block facilities, clip, location-based services, and camera-enabled phone which is provided by operator Celcom.

Mobile devices: The definition of this construct is to reflect the quality, variety type, and design quality mobile device that is offered by Celcom**.** To be specific, the smartphone feature, smartphone quality, and smartphone model type are heavily relying on the smartphone manufactures commonly on sale in Malaysia likewise, Apple, Samsung, Oppo, Vivo, Realme, Xiaomi to collaborate with their device bundle program.

Billing system: Defines as rich content of billing for ease of readability. Besides, the figure of accuracy in the billing is also vital to determine how much cost the customer shall pay. Last but not least, if there is an error in the bill, the fast response to solve the issues is the key. Apart from that, the billing handling involves several tasks, such as billing records from various networks, billing rates determination, cost calculation, generating invoices, sending invoices customers and collecting customer payment. This context shall be specific in Celcom.

Customer services: Define the customer service representative's ability to provide problem fixing proposals and provide consistent advice. Besides, the fast response of assistance from call centres while customers raise the complaint or request is also part of the evaluation. Furthermore, the customer service representative courtesy plays a vital role in this construct. This construct also applies to Celcom, which provides customer services to their customer.

Pricing structure: This construct is covered the price reasonability of a particular package/plan which is offered by Celcom Bhd. Besides, it consists of the variability price tag of the plan/package, together with their flexibility which given to customers to choose the price package plan, and the overall superior pricing plans compared to other service providers which are offered by Celcom. To be specific, Celcom has offered Prepaid plan, Postpaid plan, and broadband plan with their different price tags that target different segment market in Malaysia.

Customer satisfaction: Overall satisfaction with the service offered by telecommunications operator, this context is Celcom. To be specific, is a measurement to evaluate how happy customers toward an organization's products, services delivery, and capabilities.

Customer loyalty: Defines as customer's faithfulness and commitment toward certain product or service that offered by organization. On another hand, high degree of customer loyalty may tendency to stay with telecommunications operators and show a willingness to recommend this current telecommunications operator to other relatives, friends, and or strangers. This context shall be specific in Celcom.

1.9 Organization of dissertation

This research has structured five chapters to investigate the relationship of service quality, customer satisfaction and customer loyalty in Celcom Malaysia. Each chapter has a brief introduction to explain the overview of the content in the chapter.

The first chapter describes the background of the research, background of Celcom, problem statement and research scope. After that, the gap of this research

compared to previous literatures was highlighted in problem statement to be proposed in research questions and research objectives. Apart from that, the research significance has been discussed throughout this chapter. Lastly, the definition of variables and or terminologies of this research also has been captured here to let readers aware of these variables will be a key word throughout the entire research.

The second chapter provides a comprehensive review of the literature on the dependent, independent, and mediator constructs, which were examined by the previous research. Also, the construct's definition and their relationship to be discussed in this chapter, namely, customer satisfaction, customer loyalty and service quality's dimension, which consists of network, value-added services, mobile devices, billing system, customer services, pricing structure. Following that, the outline research framework has been presented in this research, which derived from the existing literature review. Lastly, the list of summaries of literature search listing also will be included in this chapter.

The third chapter will discuss the research methodology, which encompassed research philosophy, research design, research methodology design, and quantitative research method. From the methodology design, the detail of research purpose, type of investigation, research setting, unit of analysis, and time horizon in this research will be further discussed. Sampling design will include target population of interest, sampling area, sampling techniques, and sampling size that have been determined in this research. The content of survey questionnaire will go through validity test, which consists of content validity and face validity before distribute to respondent, will be discussed in pilot study. Besides, the measurement of each construct also will be highlighted here associates with hypotheses/instruments' development as well. Not only that, the data analysis method will be discussed in depth, where includes reliability, analysis, validity analysis, and mediation analysis.

The fourth chapter discusses the full data analysis data processing, which includes the raw data preparation and verification, pilot test data processing and their analysis results conclusion before proceed to actual data collection. Following by the actual data preparation and verification such as, data screening consists of data coding data cleaning (encompasses sorting out missing data and outliers). Apart from that, data

normality and data linearity for investigating data distribution pattern as well as linearity underlying dependent (DV) construct and independent construct (IV) before the descriptive constructs will be carried out by verifying the mean, median and standard deviation by using SPSS application. The next part of this chapter will discuss how to analyses the measurement model (consist of item loading test, construct reliability test, convergent validity test, and discrimination validity test) and structural model (consist of collinearity testing, significance path coefficient (β) with mediation analysis, coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and effect size (q^2) assessment for the framework was carried out by SmartPLS application. Lastly, the hypotheses that were further validate based on the outcome of data analysis.

The fifth chapter discusses the research finding through the results that have been obtained from the previous chapter. Subsequently, this chapter also will present the practical contribution fact associates with the theoretical implications of this research. The end of the chapter will include the current research limitations that have been found. However, the recommendation for future research is also being highlighted accordingly.

1.10 Chapter summary

This chapter has brought the introduction and states the background of the telecommunication industry in Malaysia. Besides, the problem statement of this research also has been highlighted, which had happened in Celcom, one of the major mobile operators in Malaysia. For this reason, the research objectives and research questions were captured in this chapter why this research needs to be conducted. And, the research significance and definition of the study variable/terminologies also will be highlighted in this chapter. Lastly, the whole structure of the research design will be revealed here to provide a clear idea of what has been done.

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Appendix A   Questionnaire Cover Letter

<u>Questionnaire Cover Letter</u>

Dear Respondents:

I, an Azman Hashim International Business School student at University Technology Malaysia (UTM AHIBS) who is enrolling in Doctorate Business & Administration (DBA) course, presently, conducting a research entitled "Role of Service Quality in Influencing Customer Satisfaction and Loyalty in Malaysia." The objective of this research is to examine customer satisfaction and loyalty in mobile operators for telecommunication industry in Malaysia and analyzing how the role of service quality is affecting the level of customer satisfaction and loyalty.

Enclosed with this letter is a copy of the research questionnaire on your views and pick the feeling of your choice on each question that fits you. I appreciate the respondent's precious time and effort to answer all the questions in this survey which is vital for completing my research.

Rest assured that all data gathered from respondents will be kept at the highest level of confidentiality.

Your feedback will be a valuable contribution to the success of the research and will be highly appreciated.

Thanks for your participating in this survey.

Sincerely,

_____

Voon Sze Chee
PBS172010
Azman Hashim International Business School, UTM

Appendix B   Questionnaire Proposal

Demographics of customer

Gender	☐ Male	☐ Female			
Age	☐ < 24	☐ 24-34	☐ 35-44	☐ 45-54	☐ >54
Ethnicity	☐ Malay	☐ Chinese	☐ Indian	☐ Others (Please specify) _____	
Education Background	☐ Primary	☐ Secondary	☐ University	☐ Postgraduate	☐ Others (Please Specify) _____
Profession	☐ Administrative and Managerial ☐ Technical ☐ Sales and Service ☐ Education ☐ Entrepreneur ☐ Others (Please specify) _____				
Monthly Income (RM)	☐ < RM 2000 ☐ RM 2000 – RM 5000 ☐ RM 5001 – RM 10000 ☐ RM 10001 – RM 15000 ☐ > RM 150001				

Package Subscription	☐ Prepaid ☐ Postpaid ☐ Broadband ☐ Other (Please specify) _____
Service Provider	☐ Maxis ☐ Celcom ☐ DiGi ☐ U Mobile ☐ Other (Please specify) _____
Duration of Subscription	☐ < 1 year ☐ 1 year – 2 years ☐ 3 years – 5 years ☐ > 5 years
Device Changes Frequency	☐ < 3 months ☐ 3 months – 6 months ☐ 6.1 months – 12 months ☐ 12.1 months – 24 months ☐ > 24.1 months

Section A: Demographics of respondents

**Construct measurement**

Construct Type	Item Assessment	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Network	This telco provides clear and undistorted voice during the call	☐	☐	☐	☐	☐
	This telco provides no drop call experience during while the call is ongoing	☐	☐	☐	☐	☐
	This telco provides excellent area coverage/signal reception for outdoor	☐	☐	☐	☐	☐
	This telco provides excellent area coverage/signal reception for indoor	☐	☐	☐	☐	☐
Value-added services	This telco provides a variety of value-added services	☐	☐	☐	☐	☐
	This telco provides 24/7 availability of access to value-added services	☐	☐	☐	☐	☐
	This telco provides the convenience of use of value-added services	☐	☐	☐	☐	☐
	This telco provides up-to-date values-added services	☐	☐	☐	☐	☐
Mobile devices	This telco provides excellent quality of the mobile device	☐	☐	☐	☐	☐
	This telco provides a variety of mobile device	☐	☐	☐	☐	☐
	This telco provides excellent design quality of the mobile device	☐	☐	☐	☐	☐
Billing system	This telco provides the provision of accurate billing	☐	☐	☐	☐	☐
	This telco provides an ease of understanding for the content in the billing	☐	☐	☐	☐	☐

	This telco provides excellent ability to fix the billing issue	☐	☐	☐	☐	☐
	This telco provides the quick fix of a billing issue	☐	☐	☐	☐	☐
Customer services	This telco provides courtesy of customer service representative	☐	☐	☐	☐	☐
	This telco provides provision of consistent advice/instructions from a call centre	☐	☐	☐	☐	☐
	This telco provides an accurate representation of service and terms	☐	☐	☐	☐	☐
	This telco provides the excellent ability to fix a problem	☐	☐	☐	☐	☐
Pricing structure	This telco provides a reasonable package plan price to their customer	☐	☐	☐	☐	☐
	This telco provides a variety of price schedule/package plan to their customer	☐	☐	☐	☐	☐
	This telco provides flexibility enough to let the customer choose the price schedule/package plan has offered	☐	☐	☐	☐	☐
	This telco provides overall superior pricing plans compared to another telco provider	☐	☐	☐	☐	☐
Customer satisfaction	I am happy with the decision to choose this service provider	☐	☐	☐	☐	☐
	I did the right thing when choosing this service provider	☐	☐	☐	☐	☐
	I am satisfied with the current telco service provider	☐	☐	☐	☐	☐
	I am satisfied with the current telco that is good handling the unforeseen or critical situations	☐	☐	☐	☐	☐
	I am satisfied with pre-purchase expectation in this telco service provider	☐	☐	☐	☐	☐

Customer loyalty	I am willing to stay with the current telco service provider and no intention to switch to other	☐	☐	☐	☐	☐
	I recommend the current telco service provider to others (friends, relatives, and spouse)	☐	☐	☐	☐	☐
	I intend to purchase additional products/contracts from the same service provider	☐	☐	☐	☐	☐
	If given a chance to choose again, still prefer the current service provider again as the primary service provider	☐	☐	☐	☐	☐

Section B: Survey of respondents for construct item assessment

Appendix C   Questionnaire Validity Check

Questionnaire Validation Form

ROLE OF SERVICE QUALITY IN INFLUENCING CUSTOMER SATISFACTION AND LOYALTY IN CELCOM MALAYSIA

Voon Sze Chee

Azman Hashim International Business School

Universiti Teknologi Malaysia

MEASUREMENT OF CONSTRUCTS

Construct	Measurement items	Source
Network	• Call clarity without distortion • Network coverage area • Call drop frequency	• (Ali et al., 2010; Ingy & Hazem, 2016; Kim et al., 2004; Lim et al., 2006; Nekmahmud & Rahman, 2018; Santouridis & Trivellas, 2010; Tripathi & Siddiqui, 2010)
Mobile devices	• Quality of the offered mobile devices • Variety of mobile devices design offered • Quality design of mobile devices offered	• (Aydin & Özer, 2005; Choi, Kim, Sung, & Park, 2007; Ingy & Hazem, 2016; Kim et al., 2004; Santouridis & Trivellas, 2010)
Customer services	• Measurement of courtesy of customer services representative • Consistent advice/instructions quality from customer services • Ability to fix a customer problem • Suitability of person-in-charge represent customer services	• (Jyh-Fu Jeng & Bailey, 2012; Kim et al., 2004; Lim et al., 2006; Munyanti & Masrom, 2018; Santouridis & Trivellas, 2010)
Value-added services (VAS)	• Measure the variety of value-added services offered • The convenience of using the value-added services • Up-to-date of the content	• (Lee et al., 2001; Nekmahmud & Rahman, 2018; Santouridis & Trivellas, 2010; Tripathi & Siddiqui, 2010)
Pricing structure	• Reasonability price of the package offered • Variety of package plan offered • The flexibility of the package plan	• (Aydin & Özer, 2005; Chakraborty & Sengupta, 2014; Chang & Chong, 2011; Gerpott et al., 2001; Huber, Herrmann, & Wricke, 2001; Lee et al., 2001; Lim et al., 2006; Santouridis & Trivellas, 2010)

	• Offers the overall superior pricing plans compared to another provider	
Billing system	• Accuracy of the billing • Readability of the bill • The response rate of fixing the billing issue	• (Adeleke & Suraju, 2012; Gerpott et al., 2001; Lee et al., 2001; Lim et al., 2006; Santouridis & Trivellas, 2010)
Customer satisfaction	• Satisfied with the current provider • The choice of choosing the current provider • Feeling with this current service provider • Proper in handling in unforeseen or critical issue occurred	• (Fornell, 1992; Gerpott et al., 2001; Kim et al., 2004; Quoquab, Mohammad, Yasin, & Abdullah, 2018)
Customer loyalty	• Willingness to stay in the current service provider • Recommendation others to subscribe to this current service provider • Intend to purchase additional products/contracts from the same service provider	• (Aydin & Özer, 2005; Danish, Ahmad, Ateeq, Ali, & Humayon, 2015; Gerpott et al., 2001; Kim et al., 2004; Lee et al., 2001; Morgan & Govender, 2017)

QUESTIONNAIRE

Demographics of customer

Gender	☐ Male	☐ Female			
Age	☐ < 24	☐ 24-34	☐ 35-44	☐ 45-54	☐ >54
Ethnicity	☐ Malay	☐ Chinese	☐ Indian	☐ Others (Please specify) _____	
Education Background	☐ Primary	☐ Secondary	☐ University	☐ Postgraduate	☐ Others (Please Specify) _____
Profession	☐ Administrative and Managerial ☐ Technical ☐ Sales and Service ☐ Education ☐ Entrepreneur ☐ Others (Please specify) _____				
Monthly Income (RM)	☐ < RM 2000 ☐ RM 2000 – RM 5000 ☐ RM 5001 – RM 10000 ☐ RM 10001 – RM 15000 ☐ > RM 150001				
Package Subscription	☐ Prepaid ☐ Postpaid ☐ Broadband ☐ Other (Please specify) _____				

Service Provider	☐ Maxis ☐ Celcom ☐ DiGi ☐ U Mobile ☐ Other (Please specify) _____
Duration of Subscription	☐ < 1 year ☐ 1 year – 2 years ☐ 3 years – 5 years ☐ > 5 years
Device Changes Frequency	☐ < 3 months ☐ 3 months – 6 months ☐ 6.1 months – 12 months ☐ 12.1 months – 24 months ☐ > 24.1 months

Validator's Comments:

The demographic details provided in the questionnaire are appropriate to achieve the research objectives.

Validator's Signature & Stamp: .... Date: 12 April 2020

International Business School (UTM IBS)
Level 9, Menara Razak
Universiti Teknologi Malaysia Kuala Lumpur
Jalan Sultan Yahya Petra
54100 Kuala Lumpur, Malaysia
Tel : +603-2180 5069
Fax : +603-2180 5669

Construct measurement: Five point likert scale ranging from Strongly Disagree to Strongly Agree

Construct	Item	Comments	Your assessment		
			Perfect Match (maintain item as it is)	Moderate Match (maintain item but needs some refining)	Poor Match (remove item)
Network	This telco provides clear and undistorted voice during the call		√		
	This telco provides no drop call experience during while the call is ongoing	1. will all respondents understand the meaning of 'no drop call'? you might want to change it to the lament term 2. use either while or during		√	
	This telco provides excellent area coverage/signal reception for outdoor		√		
	This telco provides excellent area coverage/signal reception for indoor		√		
Value-added services	This telco provides a variety of value-added services		√		
	This telco provides 24/7 availability of access to value-added services		√		
	This telco provides the convenience of use of value-added services		√		

Category	Statement	Comments			
	This telco provides up-to-date values-added services		√		
Mobile devices	This telco provides excellent quality of the mobile device		√		
	This telco provides a variety of mobile device		√		
	This telco provides excellent design quality of the mobile device		√		
Billing system	This telco provides the provision of accurate billing		√		
	This telco provides an ease of understanding for the content in the billing		√		
	This telco provides excellent ability to fix the billing issue		√		
	This telco provides the quick fix of a billing issue	Would suggest to change to: This telco provides a quick fix to a billing issue		√	
Customer services	This telco provides courtesy of customer service representative		√		
	This telco provides provision of consistent advice/instructions from a call centre		√		
	This telco provides an accurate representation of service and terms		√		
	This telco provides the excellent ability to fix a problem	Change to 'an excellent ability to solve'		√	
Pricing structure	This telco provides a reasonable package plan price to their customer		√		

			√		
	This telco provides a variety of price schedule/package plan to their customer		√		
	This telco provides flexibility enough to let the customer choose the price schedule/package plan has offered		√		
	This telco provides overall superior pricing plans compared to another telco provider		√		
Customer satisfaction	I am happy with the decision to choose this service provider		√		
	I did the right thing when choosing this service provider		√		
	I am satisfied with the current telco service provider		√		
	I am satisfied with the current telco that is good handling the unforeseen or critical situations	Please fix the sentence		√	
	I am satisfied with pre-purchase expectation in this telco service provider		√		
Customer loyalty	I am willing to stay with the current telco service provider and have no intention to switch to other	Missing have	√		
	I recommend the current telco service provider to others (friends, relatives, and spouse)		√		
	I intend to purchase additional products/contracts from the same service provider		√		

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			√		
	If given a chance to choose again, still prefer the current service provider again as the primary service provider		√		

Validator's Comments:

The items and questions cover the full range of the issues and problems being measured. Please correct some minor grammatical errors as highlighted.

Validator's Signature & Stamp: .... Date: 12 April 2020

Appendix D   Smart PLS Data Analysis
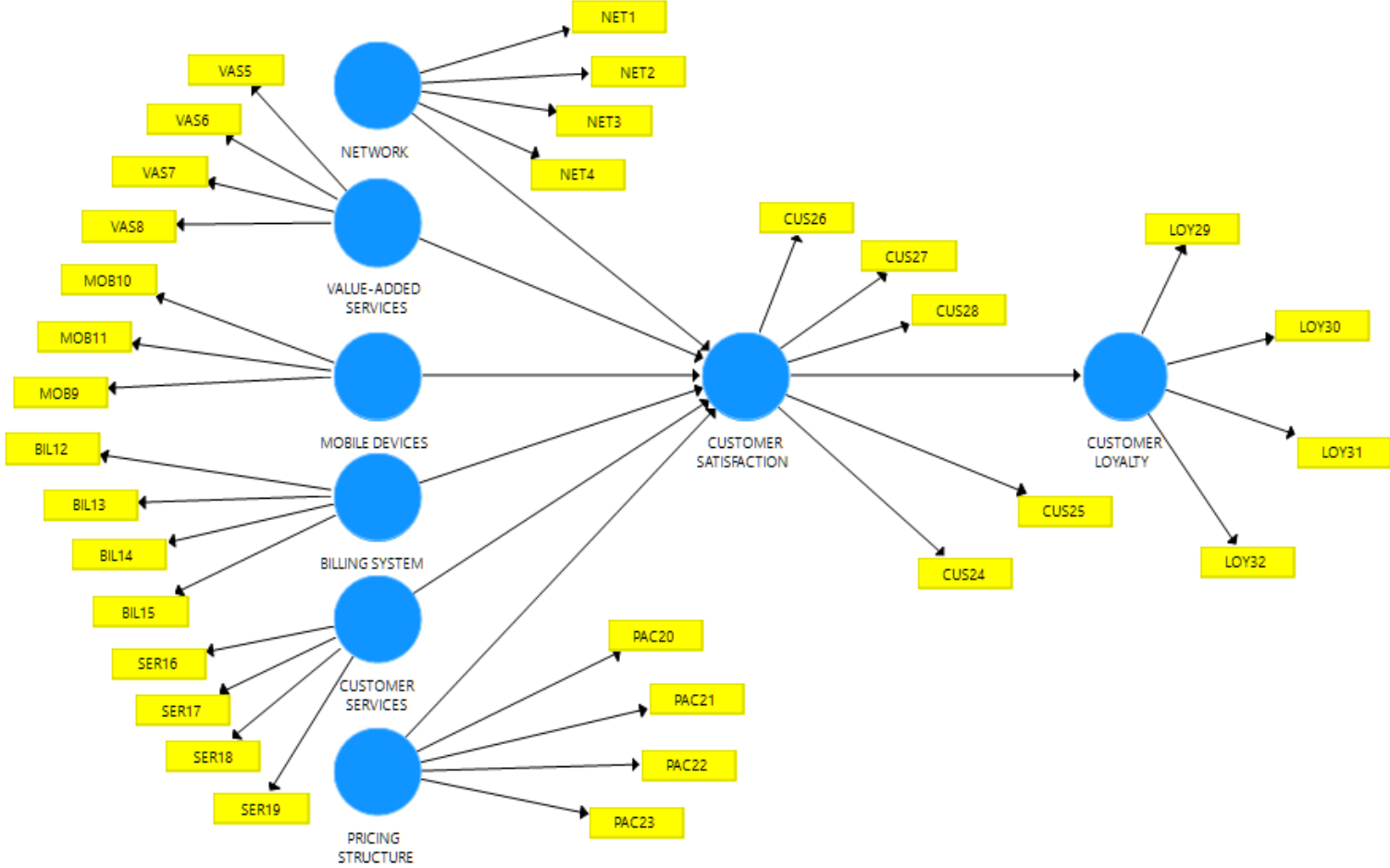
Path Coefficients

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BILLING SYSTEM -> CUSTOMER SATISFACTION	-0.009	-0.010	0.046	0.196	0.845
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.843	0.843	0.017	48.179	0.000
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.307	0.308	0.054	5.722	0.000
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.193	0.193	0.048	4.002	0.000
NETWORK -> CUSTOMER SATISFACTION	0.098	0.099	0.045	2.153	0.031
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.397	0.396	0.049	8.056	0.000
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	-0.035	-0.033	0.047	0.742	0.458

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
BILLING SYSTEM -> CUSTOMER SATISFACTION	-0.009	-0.010	-0.101	0.078
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.843	0.843	0.806	0.874
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.307	0.308	0.203	0.415
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.193	0.193	0.099	0.288
NETWORK -> CUSTOMER SATISFACTION	0.098	0.099	0.012	0.188
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.397	0.396	0.300	0.491
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	-0.035	-0.033	-0.126	0.058

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
BILLING SYSTEM -> CUSTOMER SATISFACTION	-0.009	-0.010	-0.001	-0.101	0.078
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.843	0.843	0.000	0.804	0.873
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.307	0.308	0.001	0.202	0.413
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.193	0.193	0.000	0.098	0.287
NETWORK -> CUSTOMER SATISFACTION	0.098	0.099	0.001	0.010	0.186
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.397	0.396	-0.002	0.304	0.494
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	-0.035	-0.033	0.001	-0.129	0.056

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BILLING SYSTEM -> CUSTOMER LOYALTY	-0.008	-0.008	0.039	0.195	0.845
BILLING SYSTEM -> CUSTOMER SATISFACTION					
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY					
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.259	0.259	0.045	5.693	0.000
CUSTOMER SERVICES -> CUSTOMER SATISFACTION					
MOBILE DEVICES -> CUSTOMER LOYALTY	0.163	0.163	0.041	3.969	0.000
MOBILE DEVICES -> CUSTOMER SATISFACTION					
NETWORK -> CUSTOMER LOYALTY	0.082	0.083	0.038	2.160	0.031
NETWORK -> CUSTOMER SATISFACTION					
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.335	0.333	0.043	7.781	0.000
PRICING STRUCTURE -> CUSTOMER SATISFACTION					
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	-0.029	-0.028	0.039	0.742	0.458
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION					

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
BILLING SYSTEM -> CUSTOMER LOYALTY	-0.008	-0.008	-0.085	0.066
BILLING SYSTEM -> CUSTOMER SATISFACTION				
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY				
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.259	0.259	0.170	0.351
CUSTOMER SERVICES -> CUSTOMER SATISFACTION				
MOBILE DEVICES -> CUSTOMER LOYALTY	0.163	0.163	0.083	0.245
MOBILE DEVICES -> CUSTOMER SATISFACTION				
NETWORK -> CUSTOMER LOYALTY	0.082	0.083	0.010	0.158
NETWORK -> CUSTOMER SATISFACTION				
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.335	0.333	0.250	0.418
PRICING STRUCTURE -> CUSTOMER SATISFACTION				
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	-0.029	-0.028	-0.106	0.048
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION				

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
BILLING SYSTEM -> CUSTOMER LOYALTY	-0.008	-0.008	-0.001	-0.085	0.066
BILLING SYSTEM -> CUSTOMER SATISFACTION					
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY					
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.259	0.259	0.000	0.169	0.350
CUSTOMER SERVICES -> CUSTOMER SATISFACTION					
MOBILE DEVICES -> CUSTOMER LOYALTY	0.163	0.163	0.000	0.083	0.244
MOBILE DEVICES -> CUSTOMER SATISFACTION					
NETWORK -> CUSTOMER LOYALTY	0.082	0.083	0.001	0.009	0.157
NETWORK -> CUSTOMER SATISFACTION					
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.335	0.333	-0.001	0.254	0.421
PRICING STRUCTURE -> CUSTOMER SATISFACTION					
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	-0.029	-0.028	0.001	-0.109	0.047
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION					

Outer Loadings

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BIL12 <- BILLING SYSTEM	0.828	0.828	0.017	48.731	0.000
BIL13 <- BILLING SYSTEM	0.838	0.837	0.017	48.278	0.000
BIL14 <- BILLING SYSTEM	0.861	0.861	0.014	62.997	0.000
BIL15 <- BILLING SYSTEM	0.844	0.843	0.018	47.207	0.000
CUS24 <- CUSTOMER SATISFACTION	0.822	0.822	0.018	45.942	0.000
CUS25 <- CUSTOMER SATISFACTION	0.850	0.849	0.015	57.662	0.000
CUS26 <- CUSTOMER SATISFACTION	0.845	0.845	0.015	55.055	0.000
CUS27 <- CUSTOMER SATISFACTION	0.867	0.866	0.014	64.117	0.000
CUS28 <- CUSTOMER SATISFACTION	0.807	0.806	0.020	40.792	0.000
LOY29 <- CUSTOMER LOYALTY	0.828	0.828	0.018	45.568	0.000
LOY30 <- CUSTOMER LOYALTY	0.869	0.869	0.013	65.471	0.000
LOY31 <- CUSTOMER LOYALTY	0.863	0.862	0.015	57.358	0.000
LOY32 <- CUSTOMER LOYALTY	0.864	0.863	0.013	65.552	0.000
MOB10 <- MOBILE DEVICES	0.854	0.853	0.015	55.555	0.000
MOB11 <- MOBILE DEVICES	0.866	0.865	0.014	61.791	0.000
MOB9 <- MOBILE DEVICES	0.863	0.863	0.012	69.674	0.000
NET1 <- NETWORK	0.818	0.817	0.021	38.869	0.000
NET2 <- NETWORK	0.844	0.843	0.018	46.179	0.000
NET3 <- NETWORK	0.841	0.840	0.019	44.159	0.000
NET4 <- NETWORK	0.831	0.831	0.016	52.752	0.000

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
PAC20 <- PRICING STRUCTURE	0.829	0.829	0.017	49.322	0.000
PAC21 <- PRICING STRUCTURE	0.839	0.838	0.016	52.301	0.000
PAC22 <- PRICING STRUCTURE	0.830	0.830	0.018	46.388	0.000
PAC23 <- PRICING STRUCTURE	0.854	0.854	0.015	56.540	0.000
SER16 <- CUSTOMER SERVICES	0.777	0.776	0.025	30.713	0.000
SER17 <- CUSTOMER SERVICES	0.842	0.842	0.016	53.969	0.000
SER18 <- CUSTOMER SERVICES	0.872	0.872	0.014	64.457	0.000
SER19 <- CUSTOMER SERVICES	0.857	0.857	0.015	58.731	0.000
VAS5 <- VALUE-ADDED SERVICES	0.815	0.814	0.021	37.975	0.000
VAS6 <- VALUE-ADDED SERVICES	0.825	0.823	0.020	40.367	0.000
VAS7 <- VALUE-ADDED SERVICES	0.857	0.857	0.015	58.255	0.000
VAS8 <- VALUE-ADDED SERVICES	0.788	0.787	0.022	36.018	0.000

R Square

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CUSTOMER LOYALTY	0.710	0.710	0.029	24.166	0.000
CUSTOMER SATISFACTION	0.673	0.678	0.029	22.962	0.000

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
CUSTOMER LOYALTY	0.710	0.710	0.650	0.764
CUSTOMER SATISFACTION	0.673	0.678	0.618	0.733

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
CUSTOMER LOYALTY	0.710	0.710	0.000	0.647	0.763
CUSTOMER SATISFACTION	0.673	0.678	0.006	0.603	0.721

f Square

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BILLING SYSTEM -> CUSTOMER SATISFACTION	0.000	0.003	0.004	0.026	0.979
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	2.453	2.488	0.357	6.880	0.000
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.110	0.115	0.041	2.659	0.008
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.050	0.054	0.026	1.927	0.054
NETWORK -> CUSTOMER SATISFACTION	0.014	0.017	0.014	1.018	0.309
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.196	0.200	0.054	3.629	0.000
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.002	0.004	0.006	0.261	0.794

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
BILLING SYSTEM -> CUSTOMER SATISFACTION	0.000	0.003	0.000	0.013
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	2.453	2.488	1.857	3.238
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.110	0.115	0.046	0.209
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.050	0.054	0.013	0.115
NETWORK -> CUSTOMER SATISFACTION	0.014	0.017	0.000	0.051
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.196	0.200	0.108	0.318
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.002	0.004	0.000	0.021

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
BILLING SYSTEM -> CUSTOMER SATISFACTION	0.000	-0.010	-0.010	-0.082	0.097
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	2.453	0.843	-1.610	0.761	0.761
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.110	0.308	0.198	0.103	0.103
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.050	0.193	0.143	0.023	0.023
NETWORK -> CUSTOMER SATISFACTION	0.014	0.099	0.085	-0.064	0.016
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.196	0.396	0.199	0.218	0.218
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.002	-0.033	-0.035	-0.057	0.129

Average Variance Extracted (AVE)

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BILLING SYSTEM	0.710	0.710	0.019	36.480	0.000
CUSTOMER LOYALTY	0.733	0.732	0.019	38.865	0.000
CUSTOMER SATISFACTION	0.703	0.702	0.020	35.550	0.000
CUSTOMER SERVICES	0.702	0.701	0.020	35.707	0.000
MOBILE DEVICES	0.741	0.740	0.017	43.536	0.000
NETWORK	0.695	0.694	0.022	31.383	0.000
PRICING STRUCTURE	0.702	0.702	0.020	34.538	0.000
VALUE-ADDED SERVICES	0.675	0.674	0.021	32.075	0.000

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
BILLING SYSTEM	0.710	0.710	0.670	0.747
CUSTOMER LOYALTY	0.733	0.732	0.695	0.768
CUSTOMER SATISFACTION	0.703	0.702	0.662	0.740
CUSTOMER SERVICES	0.702	0.701	0.662	0.738
MOBILE DEVICES	0.741	0.740	0.707	0.773
NETWORK	0.695	0.694	0.649	0.736
PRICING STRUCTURE	0.702	0.702	0.660	0.740
VALUE-ADDED SERVICES	0.675	0.674	0.632	0.714

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
BILLING SYSTEM	0.710	0.710	-0.001	0.670	0.747
CUSTOMER LOYALTY	0.733	0.732	-0.001	0.695	0.768
CUSTOMER SATISFACTION	0.703	0.702	-0.001	0.662	0.740
CUSTOMER SERVICES	0.702	0.701	0.000	0.662	0.739
MOBILE DEVICES	0.741	0.740	0.000	0.707	0.773
NETWORK	0.695	0.694	-0.001	0.649	0.736
PRICING STRUCTURE	0.702	0.702	-0.001	0.659	0.740
VALUE-ADDED SERVICES	0.675	0.674	-0.001	0.633	0.715

Composite Reliability

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BILLING SYSTEM	0.907	0.907	0.008	113.400	0.000
CUSTOMER LOYALTY	0.916	0.916	0.007	123.456	0.000
CUSTOMER SATISFACTION	0.922	0.922	0.007	134.472	0.000
CUSTOMER SERVICES	0.904	0.903	0.008	109.463	0.000
MOBILE DEVICES	0.896	0.895	0.008	107.654	0.000
NETWORK	0.901	0.900	0.009	96.036	0.000
PRICING STRUCTURE	0.904	0.904	0.008	106.580	0.000
VALUE-ADDED SERVICES	0.892	0.892	0.009	96.016	0.000

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
BILLING SYSTEM	0.907	0.907	0.890	0.922
CUSTOMER LOYALTY	0.916	0.916	0.901	0.930
CUSTOMER SATISFACTION	0.922	0.922	0.907	0.934
CUSTOMER SERVICES	0.904	0.903	0.887	0.919
MOBILE DEVICES	0.896	0.895	0.879	0.911
NETWORK	0.901	0.900	0.881	0.918
PRICING STRUCTURE	0.904	0.904	0.886	0.919
VALUE-ADDED SERVICES	0.892	0.892	0.873	0.909

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
BILLING SYSTEM	0.907	0.907	0.000	0.891	0.922
CUSTOMER LOYALTY	0.916	0.916	0.000	0.901	0.930
CUSTOMER SATISFACTION	0.922	0.922	0.000	0.907	0.935
CUSTOMER SERVICES	0.904	0.903	0.000	0.887	0.919
MOBILE DEVICES	0.896	0.895	0.000	0.879	0.911
NETWORK	0.901	0.900	-0.001	0.881	0.918
PRICING STRUCTURE	0.904	0.904	0.000	0.886	0.919
VALUE-ADDED SERVICES	0.892	0.892	-0.001	0.873	0.909

Cronbach's Alpha

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BILLING SYSTEM	0.864	0.863	0.013	67.185	0.000
CUSTOMER LOYALTY	0.878	0.878	0.012	74.252	0.000
CUSTOMER SATISFACTION	0.894	0.894	0.010	88.099	0.000
CUSTOMER SERVICES	0.858	0.857	0.014	62.636	0.000
MOBILE DEVICES	0.826	0.825	0.015	53.679	0.000
NETWORK	0.853	0.852	0.015	55.274	0.000
PRICING STRUCTURE	0.859	0.858	0.014	62.116	0.000
VALUE-ADDED SERVICES	0.839	0.838	0.016	53.851	0.000

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
BILLING SYSTEM	0.864	0.863	0.836	0.887
CUSTOMER LOYALTY	0.878	0.878	0.853	0.899
CUSTOMER SATISFACTION	0.894	0.894	0.872	0.912
CUSTOMER SERVICES	0.858	0.857	0.828	0.882
MOBILE DEVICES	0.826	0.825	0.794	0.853
NETWORK	0.853	0.852	0.820	0.880
PRICING STRUCTURE	0.859	0.858	0.828	0.883
VALUE-ADDED SERVICES	0.839	0.838	0.806	0.866

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
BILLING SYSTEM	0.864	0.863	-0.001	0.836	0.887
CUSTOMER LOYALTY	0.878	0.878	-0.001	0.853	0.899
CUSTOMER SATISFACTION	0.894	0.894	-0.001	0.872	0.912
CUSTOMER SERVICES	0.858	0.857	-0.001	0.829	0.882
MOBILE DEVICES	0.826	0.825	-0.001	0.794	0.853
NETWORK	0.853	0.852	-0.001	0.820	0.880
PRICING STRUCTURE	0.859	0.858	-0.001	0.828	0.883
VALUE-ADDED SERVICES	0.839	0.838	-0.001	0.806	0.867

Heterotrait-Monotrait Ratio (HTMT)

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
CUSTOMER LOYALTY -> BILLING SYSTEM	0.681	0.680	0.594	0.758
CUSTOMER SATISFACTION -> BILLING SYSTEM	0.720	0.719	0.649	0.783
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.950	0.950	0.918	0.977
CUSTOMER SERVICES -> BILLING SYSTEM	0.847	0.847	0.785	0.901
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.769	0.769	0.692	0.836
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.817	0.817	0.756	0.872
MOBILE DEVICES -> BILLING SYSTEM	0.689	0.688	0.598	0.770
MOBILE DEVICES -> CUSTOMER LOYALTY	0.693	0.693	0.599	0.778
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.747	0.746	0.667	0.815
MOBILE DEVICES -> CUSTOMER SERVICES	0.754	0.754	0.677	0.823
NETWORK -> BILLING SYSTEM	0.660	0.658	0.566	0.740
NETWORK -> CUSTOMER LOYALTY	0.695	0.695	0.614	0.767
NETWORK -> CUSTOMER SATISFACTION	0.676	0.675	0.592	0.750
NETWORK -> CUSTOMER SERVICES	0.635	0.634	0.544	0.716
NETWORK -> MOBILE DEVICES	0.626	0.626	0.531	0.715
PRICING STRUCTURE -> BILLING SYSTEM	0.789	0.788	0.719	0.848
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.814	0.813	0.754	0.867
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.849	0.848	0.798	0.892
PRICING STRUCTURE -> CUSTOMER SERVICES	0.754	0.752	0.681	0.815
PRICING STRUCTURE -> MOBILE DEVICES	0.690	0.689	0.606	0.766
PRICING STRUCTURE -> NETWORK	0.738	0.737	0.653	0.809
VALUE-ADDED SERVICES -> BILLING SYSTEM	0.661	0.659	0.561	0.746
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	0.647	0.646	0.542	0.737
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.638	0.637	0.536	0.729
VALUE-ADDED SERVICES -> CUSTOMER SERVICES	0.639	0.638	0.531	0.732
VALUE-ADDED SERVICES -> MOBILE DEVICES	0.796	0.795	0.722	0.858
VALUE-ADDED SERVICES -> NETWORK	0.763	0.763	0.689	0.829
VALUE-ADDED SERVICES -> PRICING STRUCTURE	0.696	0.694	0.598	0.779

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
CUSTOMER LOYALTY -> BILLING SYSTEM	0.681	0.680	-0.001	0.592	0.758
CUSTOMER SATISFACTION -> BILLING SYSTEM	0.720	0.719	-0.001	0.648	0.783
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.950	0.950	0.000	0.917	0.976
CUSTOMER SERVICES -> BILLING SYSTEM	0.847	0.847	0.000	0.785	0.901
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.769	0.769	0.000	0.687	0.833
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.817	0.817	0.000	0.751	0.869
MOBILE DEVICES -> BILLING SYSTEM	0.689	0.688	-0.001	0.600	0.770
MOBILE DEVICES -> CUSTOMER LOYALTY	0.693	0.693	0.000	0.596	0.775
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.747	0.746	0.000	0.664	0.811
MOBILE DEVICES -> CUSTOMER SERVICES	0.754	0.754	0.000	0.676	0.823
NETWORK -> BILLING SYSTEM	0.660	0.658	-0.001	0.565	0.739
NETWORK -> CUSTOMER LOYALTY	0.695	0.695	0.000	0.612	0.766
NETWORK -> CUSTOMER SATISFACTION	0.676	0.675	-0.001	0.587	0.749
NETWORK -> CUSTOMER SERVICES	0.635	0.634	-0.001	0.542	0.714
NETWORK -> MOBILE DEVICES	0.626	0.626	0.000	0.531	0.715
PRICING STRUCTURE -> BILLING SYSTEM	0.789	0.788	-0.001	0.718	0.847
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.814	0.813	-0.001	0.754	0.867
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.849	0.848	-0.001	0.798	0.892
PRICING STRUCTURE -> CUSTOMER SERVICES	0.754	0.752	-0.001	0.680	0.814
PRICING STRUCTURE -> MOBILE DEVICES	0.690	0.689	-0.001	0.606	0.766
PRICING STRUCTURE -> NETWORK	0.738	0.737	-0.001	0.652	0.808
VALUE-ADDED SERVICES -> BILLING SYSTEM	0.661	0.659	-0.002	0.562	0.747
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	0.647	0.646	-0.001	0.539	0.734
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.638	0.637	-0.001	0.534	0.726
VALUE-ADDED SERVICES -> CUSTOMER SERVICES	0.639	0.638	-0.001	0.530	0.731
VALUE-ADDED SERVICES -> MOBILE DEVICES	0.796	0.795	-0.001	0.722	0.858
VALUE-ADDED SERVICES -> NETWORK	0.763	0.763	0.000	0.686	0.826
VALUE-ADDED SERVICES -> PRICING STRUCTURE	0.696	0.694	-0.002	0.596	0.777

Latent Variable Correlations

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CUSTOMER LOYALTY -> BILLING SYSTEM	0.598	0.597	0.039	15.445	0.000
CUSTOMER SATISFACTION -> BILLING SYSTEM	0.636	0.636	0.033	19.232	0.000
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.843	0.843	0.017	48.179	0.000
CUSTOMER SERVICES -> BILLING SYSTEM	0.731	0.731	0.029	25.347	0.000
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.667	0.667	0.035	19.312	0.000
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.716	0.716	0.029	24.854	0.000
MOBILE DEVICES -> BILLING SYSTEM	0.588	0.588	0.039	14.980	0.000
MOBILE DEVICES -> CUSTOMER LOYALTY	0.593	0.593	0.041	14.441	0.000
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.644	0.645	0.035	18.419	0.000
MOBILE DEVICES -> CUSTOMER SERVICES	0.637	0.637	0.034	18.496	0.000
NETWORK -> BILLING SYSTEM	0.569	0.568	0.041	13.767	0.000
NETWORK -> CUSTOMER LOYALTY	0.603	0.603	0.038	16.037	0.000
NETWORK -> CUSTOMER SATISFACTION	0.590	0.591	0.038	15.372	0.000
NETWORK -> CUSTOMER SERVICES	0.543	0.542	0.042	12.978	0.000
NETWORK -> MOBILE DEVICES	0.528	0.529	0.041	12.763	0.000
PRICING STRUCTURE -> BILLING SYSTEM	0.681	0.680	0.032	21.139	0.000
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.710	0.709	0.029	24.744	0.000
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.745	0.745	0.025	29.751	0.000
PRICING STRUCTURE -> CUSTOMER SERVICES	0.649	0.648	0.034	19.280	0.000
PRICING STRUCTURE -> MOBILE DEVICES	0.585	0.584	0.038	15.546	0.000
PRICING STRUCTURE -> NETWORK	0.633	0.633	0.038	16.523	0.000
VALUE-ADDED SERVICES -> BILLING SYSTEM	0.564	0.563	0.044	12.833	0.000
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	0.556	0.556	0.046	12.185	0.000
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.553	0.553	0.045	12.388	0.000
VALUE-ADDED SERVICES -> CUSTOMER SERVICES	0.541	0.541	0.046	11.761	0.000
VALUE-ADDED SERVICES -> MOBILE DEVICES	0.664	0.663	0.034	19.806	0.000
VALUE-ADDED SERVICES -> NETWORK	0.646	0.646	0.034	18.912	0.000
VALUE-ADDED SERVICES -> PRICING STRUCTURE	0.592	0.591	0.042	13.933	0.000

Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
CUSTOMER LOYALTY -> BILLING SYSTEM	0.598	0.597	0.519	0.670
CUSTOMER SATISFACTION -> BILLING SYSTEM	0.636	0.636	0.570	0.698
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.843	0.843	0.806	0.874
CUSTOMER SERVICES -> BILLING SYSTEM	0.731	0.731	0.672	0.785
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.667	0.667	0.594	0.730
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.716	0.716	0.658	0.769
MOBILE DEVICES -> BILLING SYSTEM	0.588	0.588	0.509	0.663
MOBILE DEVICES -> CUSTOMER LOYALTY	0.593	0.593	0.509	0.670
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.644	0.645	0.572	0.709
MOBILE DEVICES -> CUSTOMER SERVICES	0.637	0.637	0.567	0.701
NETWORK -> BILLING SYSTEM	0.569	0.568	0.483	0.644
NETWORK -> CUSTOMER LOYALTY	0.603	0.603	0.526	0.674
NETWORK -> CUSTOMER SATISFACTION	0.590	0.591	0.511	0.663
NETWORK -> CUSTOMER SERVICES	0.543	0.542	0.456	0.619
NETWORK -> MOBILE DEVICES	0.528	0.529	0.445	0.607
PRICING STRUCTURE -> BILLING SYSTEM	0.681	0.680	0.614	0.739
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.710	0.709	0.650	0.763
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.745	0.745	0.693	0.791
PRICING STRUCTURE -> CUSTOMER SERVICES	0.649	0.648	0.579	0.710
PRICING STRUCTURE -> MOBILE DEVICES	0.585	0.584	0.509	0.655
PRICING STRUCTURE -> NETWORK	0.633	0.633	0.552	0.703
VALUE-ADDED SERVICES -> BILLING SYSTEM	0.564	0.563	0.472	0.645
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	0.556	0.556	0.461	0.641
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.553	0.553	0.463	0.637
VALUE-ADDED SERVICES -> CUSTOMER SERVICES	0.541	0.541	0.444	0.628
VALUE-ADDED SERVICES -> MOBILE DEVICES	0.664	0.663	0.593	0.725
VALUE-ADDED SERVICES -> NETWORK	0.646	0.646	0.576	0.710
VALUE-ADDED SERVICES -> PRICING STRUCTURE	0.592	0.591	0.503	0.668

Confidence Intervals Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
CUSTOMER LOYALTY -> BILLING SYSTEM	0.598	0.597	0.000	0.517	0.668
CUSTOMER SATISFACTION -> BILLING SYSTEM	0.636	0.636	0.000	0.568	0.697
CUSTOMER SATISFACTION -> CUSTOMER LOYALTY	0.843	0.843	0.000	0.804	0.873
CUSTOMER SERVICES -> BILLING SYSTEM	0.731	0.731	0.000	0.671	0.784
CUSTOMER SERVICES -> CUSTOMER LOYALTY	0.667	0.667	0.000	0.590	0.728
CUSTOMER SERVICES -> CUSTOMER SATISFACTION	0.716	0.716	0.000	0.654	0.767
MOBILE DEVICES -> BILLING SYSTEM	0.588	0.588	0.000	0.508	0.662
MOBILE DEVICES -> CUSTOMER LOYALTY	0.593	0.593	0.000	0.506	0.668
MOBILE DEVICES -> CUSTOMER SATISFACTION	0.644	0.645	0.000	0.569	0.706
MOBILE DEVICES -> CUSTOMER SERVICES	0.637	0.637	0.000	0.566	0.700
NETWORK -> BILLING SYSTEM	0.569	0.568	-0.001	0.482	0.644
NETWORK -> CUSTOMER LOYALTY	0.603	0.603	0.000	0.522	0.672
NETWORK -> CUSTOMER SATISFACTION	0.590	0.591	0.000	0.509	0.659
NETWORK -> CUSTOMER SERVICES	0.543	0.542	-0.001	0.454	0.618
NETWORK -> MOBILE DEVICES	0.528	0.529	0.000	0.443	0.606

PRICING STRUCTURE -> BILLING SYSTEM	0.681	0.680	-0.001	0.613	0.739
PRICING STRUCTURE -> CUSTOMER LOYALTY	0.710	0.709	0.000	0.649	0.762
PRICING STRUCTURE -> CUSTOMER SATISFACTION	0.745	0.745	0.000	0.692	0.789
PRICING STRUCTURE -> CUSTOMER SERVICES	0.649	0.648	-0.001	0.579	0.710
PRICING STRUCTURE -> MOBILE DEVICES	0.585	0.584	0.000	0.509	0.654
PRICING STRUCTURE -> NETWORK	0.633	0.633	-0.001	0.550	0.701
VALUE-ADDED SERVICES -> BILLING SYSTEM	0.564	0.563	-0.001	0.472	0.645
VALUE-ADDED SERVICES -> CUSTOMER LOYALTY	0.556	0.556	0.000	0.459	0.637
VALUE-ADDED SERVICES -> CUSTOMER SATISFACTION	0.553	0.553	0.000	0.460	0.634
VALUE-ADDED SERVICES -> CUSTOMER SERVICES	0.541	0.541	-0.001	0.442	0.625
VALUE-ADDED SERVICES -> MOBILE DEVICES	0.664	0.663	-0.001	0.593	0.724
VALUE-ADDED SERVICES -> NETWORK	0.646	0.646	0.000	0.573	0.707
VALUE-ADDED SERVICES -> PRICING STRUCTURE	0.592	0.591	-0.001	0.500	0.666

Appendix E   Summary of the literature listing

Name of Author & Publication	Research Context	Objective/Research Question	Methodology	Finding
• Salmiah Mohammad Amin, Ungku Norulkamar Ungku Ahamad & Lim Shu Hui, 2012	• Factor Contributing to Customer Loyalty Towards Telecommunication Service Provider	• Find the factor that impacts customer loyalty • The target sample is 185 telecommunications among university students • Perceive service quality was found to be the most critical factor in affecting user loyalty	• Conception/Multiple Regression Analysis	• Perceived service quality is the most critical contributing factor to customer loyalty. Followed by corporate image, trust and switching cost • Customer judgement about the overall excellent services of the telecommunication service provider to increase their commitment to repeat patronage to a preferred service provider in the future • Higher switching cost to make the customer less likely to switch from one to another operator • Customer trust toward a particular service provider may restrain customer from switching one to another operator

• Ingy Shafei, Hazem, 2015	• Factors affecting customer loyalty for the mobile telco industry	• Customer loyalty and customer retention is the key to success in telco business	• Conception, Empirical, Hypothesis/Coefficient (Cronbach's) for reliability, Pearson's correlation, Regression Analysis Techniques	• Higher levels of service quality (call quality, pricing structure, mobile subsidized devices, value-added services, levels of customer support) are associated with higher levels of customer satisfaction (H1) • Higher levels of switching costs (loss cost, adaptation cost) are associated with higher levels of switching barrier (H2a and H2b) • Lower levels of attractiveness of alternatives are associated with higher levels of the switching barriers (H3)
• Ilias Santouridis & Panagoitis Trivellas, 2010	• Investigating the impact of service quality and customer satisfaction on customer loyalty in mobile telephony in Greece	• Network quality, value-added service, customer service, pricing structure, billing system, is the main influence of customer loyalty	• Research model/Conception/Field Research/Reliability Test/ Statistical Test/Cause and Effect Relationship	• Customer service, pricing structure, and billing system are the service quality dimensions have a more significant positive influence on customer satisfaction
• Heejin Lim, Richard Widdows & Fungkun Park, 2010	• M-Loyalty: winning strategies for mobile carries."	• Customer satisfaction is an essential factor for a long-term relationship between firm and customer service quality, the perceived value was	• Empirical/Hypothesis testing (LISREEL 8.52)/Statistical analysis, principal component analysis, Varimax rotation	• Service quality and perceived value were affected consumer loyalty intention

		design to affect customer loyalty intention through the level of satisfaction		
• Don Jyh-Fu Jeng, Thomas Bailey, 2012	• Assessing customer retention strategies in mobile telecommunications: Hybrid MCDM approach", Management Decision	• Customer satisfaction is an essential factor for a long-term relationship between firm and customer review the critical success factor for mobile services	• Conception/Empirical/Hybrid MCDM approach/ DEMATEL/ANP	• Phone service quality, customer service quality, and phone plan quality are three major motivators
• Abdul Kadir Othman, Noor Azlina Mohamed Yunus, Baharom Ab Rahman, 2012	• The Relationship between Service Quality and Customer Loyalty at Telecommunication Company in Malaysia	• Determine the relationship between customer loyalty and service quality	• Hypothesis/SERVQUAL/Non-Experimental Correlational and Multiple Regression Method/Cronbach"s Alpha Analysis	• Results showed a significant relationship between service quality and customer loyalty. • The most influential factor on customer loyalty was assurance followed by reliability and tangibles
• Chuah Hui Wen, Mohd Faiz Hilmi, 2011	• Exploring Service Quality, Customer Satisfaction and Customer Loyalty in the Malaysian Mobile Telecommunication Industry	• Adopt four additional dimensions, namely customer-perceived network quality, pricing structure, convenience, value-added service quality • How to maintain the loyal customer become	• Hypothesis/SERVQUAL/Non-Experimental Correlational and Multiple Regression Method/Cronbach"s Alpha Analysis	• Customer perceived network quality is the most crucial service quality, dimensions followed by empathy, pricing structure and assurance. • Value-added services are positively correlated to customer satisfaction and have a significant effect on customer loyalty.

		meaningful strategic for the mobile provider to survive in this fiercely competitive market • Investigate the relationship between customer satisfaction and service quality • Investigate the relationship between customer satisfaction and customer loyalty		• In contrast, reliability, responsiveness, convenience, and tangibles should be less focus by mobile service providers in their efforts to improve customer satisfaction.

• Ogunnaike, Olakeke Oluseye (PhD), Sholarini Adeniyi (PhD), Taiye Tairat Borishade, 2014	• Evaluation of Customer Service and Retention: A Comparative Analysis of Telecommunication Service Providers	• Customer loyalty, quality, and customer satisfaction are significant factors that show how effective the customer service of an organization is. If customer service is active, then customer retention/retention of product is considered • The study investigates the effectiveness of customer service in the retention of GSM SIM packs using a comparative analysis	• Hypothesis/Empirical/Correlation/ANOVA/Pearson product-moment correlation co-efficient	• Loyalty is the results from the quality of service provided by the service provider • There is a relationship between customer service, customer satisfaction, customer retention • There is no relationship between customer gender and customer service • There is a difference between the level of effective customer service among GLOBACOM, CELTEL and MTN respectively
• P.K. Chang, H. L. Chong, 2011	• Customer Satisfaction and Loyalty on Service Provided by Malaysian Telecommunication Companies	• The determinants of perceived service quality, corporate image and price and which more significantly affecting customer satisfaction. • The effects of customers satisfaction on service loyalty of	• Empirical, hypothesis, multiple regression analysis/ANOVA	• The examined relationship among service quality, corporate image, price, customer satisfaction and service loyalty and found a positive relationship among these variables. • Price is found to be the most important factor for telecommunication consumers when choosing a telecommunication service

		telecommunication service providers • Seek to contribute to the development of a conceptual framework that integrates service quality, corporate image, price, customer satisfaction, and service loyalty		provider and has the highest significant level on consumer satisfaction and service loyalty. • 2nd and third to the service quality and corporate image
• Moon-Koo Kim, Dong-Heon Jeong, Ysongpgu, Gajeong-dong, Myeong-Cheol Park, Yusong-gu, Hwaam-dong, 2004	• The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services	• The new launching of the IMT-2000 service and the scheduled introduction of mobile number portability. In response, the industry is shifting its strategic focus away from attracting new customers, towards retaining existing customers through the promotion of customer loyalty • Investigate how customer satisfaction and the switching barrier influence customer loyalty	• Empirical • SPSS was used for fundamental statistical analysis, factor analysis, and reliability analysis, and AMOS 4 was adopted for analysis of the structural equation model	• Service quality positively affect customer satisfaction, reveal that that call quality, value-added services, and customer support are significant • The call quality of telephone service is the top issue that directly creates customer satisfaction for mobile subscribers. • Creating switching costs affect customer satisfaction. • Loss cost and move-in cost were high in this regard • Interpersonal relationships between carriers and customers have a significantly positive effect on the switching barrier. This show that the factors

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		• The adjustment effect of the switching barrier on customer satisfaction and customer loyalty is also analyzed		creating the switching barrier are closely connected with customers relationships-specific assets • Trust and personal relationships between the company and the customer are also significant in the mobile telecommunication industry • Customer satisfaction and the switching barrier have a positive effect on customer loyalty, indicated that both factors have a significant positive effect • High level of satisfaction with pricing structure leads to high customer satisfaction could not be statistically verified in this study • Loss cost which involves the loss of benefits and conveniences received from the existing telecommunication carrier strengthens customer satisfaction • Customer is likely to remain with the existing carrier even when he or she experiences only a low level of customer satisfaction if he or she perceives he was overall switching barrier or loss costs to

				be high or forms a high level of interpersonal relationship
• Sharma, Raj Bahadur, 2014	• Customer Satisfaction in the Telecom Sector in Saudi Arabia: An Empirical Investigation	• Customer satisfaction helps in building a long-term relationship and achieving goals of the business that is "Profit." • Saudi Telecom Company (STC) is the first telecom communication company in Saudi Arabia which is provided landlines and mobile services. Presently, four companies provide telecom services in the country, for instance, Saudi Telecom Company (STC), Mobily (UAE Company), ZAIN (Kuwaiti Company), Go ATHEEB. The STC still is the most famous companies in the entire Kingdom	• Experimental research based on survey method, using hypothesis development • Using the statistical tools of simple percentage analysis, ranking and chi-square to interpret the data	• It was found that male and female both are almost equal users of mobile network in Saudi Arabia • It was found that the number of users between (ages 20 - 30 years) is more than as compared to others, below 20 only a few children are using mobile • It found that service class people (government and private sector) are the highest user • It surprisingly found that persons whose income is less than 5000 and those who are getting higher salary holders are using more dependent on mobile technology as compared to middle-income holders • It was found that graduating students are most likely users of mobile • It found that the most popular telecom company in Saudi Arabia is STC, which is liked by all groups of peoples, i.e., age, group, income, and occupation.

		• Nowadays, mobile users are not satisfied with the existing telecom services that they are expecting. Therefore, it is vital to analyse the impact of proving quality of service, network coverage, quality of SMS, mobile internet, and customer service, and promotion schemes. There is a need to study customer satisfaction in this telecom industry		• It was found a significant difference in satisfaction between different groups of income • There was found a significant difference in satisfaction between different groups of educational standards • It was found that age is not a barrier to satisfaction; all age group people are satisfied. The teenagers are the most likely customer of STC
• Arokiasamy, Anantha Raj A. Abdullah, Abdul GhaniKanesanbin, 2013	• Service Quality and Customer Satisfaction in the Cellular Telecommunication Service Provider Malaysia	• This study attempts to investigate the impact of service quality dimension (SERVQUAL) which is widely used in telecommunication industry on customer satisfaction • Target of this study is subscribers under cellular	• A structured questionnaire had designed which based on the five dimensions (tangibility, assurance, reliability, responsiveness and empathy), and use five-point Likert scale from 1	• The results show that empathy, responsiveness, assurance, tangibles and reliability have positive significant impact of customer perceived service quality on CTSP in Malaysia • Responsiveness has positive influence to customer satisfaction • Management in organization and customer should be emphasize for long term sustainability

		telecommunication service providers (CTSP) in Malaysia	strongly disagree to 5 strongly agree	• Focus on the improvement plan to improving customer responsiveness to strengthen customer loyalty in telecommunication service providers (CSTP) in Malaysia
		• The market competition in Malaysia is intense and requires marketers to have the ability to provide superior customer service which serve as a differential advantage over competitors	• Random sampling approach had used to identify the respondents	
		• This study intends to explore an insight of CTSP practices in Malaysia of the customer satisfaction toward service provided	• Pearson correlation coefficient, measure the association between the two variables	
		• The GAP model by previous researchers also be examined to validate their applicability in telecommunication industry	• Regression analysis was used to testify the relationship of service quality on customer satisfaction	

| • Munyanti, Izyan, Masrom, Maslin, 2018 | • Customer Satisfaction Factors towards Mobile Network Services | • This study intends to investigate the factor that could become the customer satisfaction index in determining the customer needs expectation toward mobile network service operators in Malaysia
• Few factors had proposed in this research to be further validated such as service quality, billing and price, network connectivity, customer services and delighting promotion
• The intense competitions among existing players and new entry player in the saturated market nowadays cause the players focusing on retaining an existing customer who can bring steady revenue growth. | • A structured questionnaire from respondent by using simple random sampling technique
• Quantitative approach has been used in this study
• Target respondent is somewhere around University Technology Malaysia Kuala Lumpur
• Data analysis via statistical tools including descriptive analysis and correlation analysis | • Quality of service, customer services, billing and price and network connectivity have high impact on customer satisfaction
• The companies shall focus on these factors that have high impact to customer satisfaction to retain their customer from fading away to competitor |

• Nwakanma IC1*, Udunwa AI1, Anyiam KE1, Ukwunna ED1, Obasi EC2 and Bubagha SZ3, 2018	• Factors Influencing Telecommunication Subscribers' Decision to Port among Network Providers in Nigeria	• Retention and satisfaction are important factor in telecommunication industry where the current market is in great competition. • The dynamic behaviour and expectation of subscribers on quality service delivery in Nigeria must be examined in order to succeed or maintain the sustainability in competitive market	• Survey will be distributed within four major network operators (MTN, Glo, Airtel, 9Mobile) aged 18-59 years and above residing in the three geopolitical zones (Owerri Municipal Orlu, and Okigwe) in Imo State into this study • Quantitative method, simple random sampling technique and regression analysis using SPSS	• Service quality, network quality, call rate/tariff/price factor are significantly influence the subscribers' decision to port • Promotion and customer care/services are not really influence subscribers' decision to port compare to first three factors above • This study urges managerial team shall look into their current network coverage/quality to reduce network instability or outage frequently to provoke subscribers have intention to switch out
• Khurshid, MURTAZA, 2013	• Determinants of Customer Loyalty, its causes and influences in Telecom Industry	• Investigate determinants for the loyalty in the Telecom industry of users in Peshawar Pakistan	• Quantitative method, questionnaire distributed to obtain the primary data via non probability convenient sampling method • Regression analysis, descriptive statistics	• The outcome of this study revealed that customer satisfaction, switching barriers, price, promotion, sale promotion, customer trust, corporate/brand image, service quality, customer care service, value added services, network coverage, signal strength, call packages or rates, call quality/call rates, SMS rates,

			and correlation method were use via using SPSS tools	SMS quality, GPRS rates, GPRS quality are the important factors causing influence on customers loyalty in telecom industry in Peshawar city in Pakistan
• Morgan, Simon, Govender, Krishna, 2017	• Exploring customer loyalty in the South African mobile telecommunications sector	• The greatness of telecom industry market in South African leading to mobile operators steadily divert their focus on acquiring and retaining loyal customers to facilitate repeat purchases, guarantee future revenues and shelf the customer base from competitive activity	• Online survey had been designed and distributed among the customer of the South African (SA) mobile telecommunications industry • Few hypotheses had been formulated for proposing relationship among from the proposed framework in this study • Probability sampling was used where each member of the population had an equal chance of being selected • Data were processed using STATA and SPSS tools. Besides,	• The outcome of this research revealed that customer satisfaction has the most significant effect customer loyalty • Customer brand image and perceived value have a significant positive effect on customer satisfaction, but not customer loyalty. However, these two constructs had indirectly influence customer loyalty through customer satisfaction construct • This study was useful reference for organization in telecom industry to focus on how to improve customer satisfaction for developing a cadre of loyal customers

			the structural equation modelling (SEM) for analyses the model causal relationship between multiple variables, whether they are manifest or latent	
• Shah Muhammad Abdul Rauf, Husnain Mudassir, Zubairshah Amir, 2018	• Factors Affecting Brand Switching Behavior in Telecommunication Industry of Pakistan: A Qualitative Investigation	• The telecommunication market becomes more mature • The competition for acquiring new customers and retaining the existing customers becomes more intense • The factor of influence customer satisfaction and brand switching behaviour is crucial to investigate • Accessing the four variables whereas switching behaviour that may influence others factors as well	• The qualitative approach through a face-to-face interview about the tendency of customers brand switching behaviour towards telecommunication industry • In-depth interview to investigate the quality of service influence of family, friends & relatives and price structure were among the determining factors that influence customers satisfaction toward	• The results explore that the price structure, brand image and influence of family, friends & relatives and customer satisfaction towards brand switching behaviour, but the brand is negatively correlating towards customer satisfaction • Customer satisfaction has a significant mediating role in the relationship before predictor factor and customer switching behaviour

			brand switching behaviour	
• Nekmahmud, Md Rahman, Shafiqur, 2018	• Measuring the Competitiveness Factors in Telecommunication Markets	• Some important theories namely service quality, customer satisfaction, and loyalty on telecommunication markets in previous study to be reviewed and try to differentiate the present study from the past studies. • Explores some factor that are affected by emerging telecommunication market and some competitiveness of factors which significantly influence on customer satisfaction and loyalty.	• Primary data has been collected via the questionnaire distribution in different mobile operators in Bangladesh. • Secondary data are collected from different source, such as previous articles, books, different related publications, news, reports, and websites.	• The key competitive factors to be proven to increase customer satisfaction such as sale promotion, value-added service (VAS), price and tariff structure, customer service care, communications and convenience which apply in telecommunication operators in Bangladesh.
• Ishaq Muhammad Ishtiaq, 2011	• A study on relationship between service quality and customer satisfaction: An empirical evidence from Pakistan	• To investigate the impact of service quality on the overall customer satisfaction in telecommunication industry of Pakistan.	• Quantitative method study • Survey questionnaire are used to collect the data from the Postpaid users of	• This study has showed three dimensions of service quality (value added service, customer service, and pricing system) out of the six instruments have significant positive effects on customer satisfaction.

			different telecommunication service providers. • Stepwise regression analysis had been used to examine the research hypothesis.	• The improved customer satisfaction may lead to positive influence of customer loyalty in telecommunication industry of Pakistan.
• Domb, Menachem, Sujata, Joshi, Sanjay, Bhatia, Arindam, Roy, Jypti, Saini, 2016	• An empirical study to measure customer experience for telecom operators in Indian telecom industry	• To review some extant literature on customer experience in Telecom industry. • Identify the determinants of customer experience for Telecom operators in Indian Telecom industry. • Define a yardstick called ACEI score to quantify customer experience in telecom industry.	• The survey/questionnaire for Amdocs Customer Experience Program was taken over 36 centres spreading measure customer experience at a pan-India level. • Pilot survey was carried out with 166 samples to validate the strength of the research instruments with their clarify of the measures used. • The actual survey that was involved more than 5000 responses were recorded which was	• This research validates all the hypotheses such as network experience, service delivery experience, customer care experience, brand image, billing experience, store/gallery and web self-service experience that had proposed showed positive significant toward customer experience in Indian telecom industry.

			intervent by Market Research agency.	
• Lee, Weng Onn, Wong, Lai Soon, 2016	• Determinants of mobile commerce customer loyalty in Malaysia	• Investigate the factors that affect mobile commerce customer loyalty in Malaysia by incorporating e-service quality models and relationship quality theories in the context of mobile commerce. • Examine relationships between e-service quality dimensions of with of efficiency, system availability, fulfilment and privacy, and relationship quality dimensions of satisfaction, trust and commitment with customer loyalty in mobile commerce services.	• Online survey method was used for data collection • Questionnaires was distributed, 214 out of 300 were successfully collected. • Structural Equation Modelling (SEM) tools was used to analysed the data.	• The findings of this study revealed that efficiency, system availability, fulfilment, privacy, satisfaction, trust and commitment are the factors that influence m-commerce customer loyalty in Malaysia, directly or indirectly. • Commitment has a stronger influence on customer loyalty than satisfaction and trust.

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LIST OF PUBLICATIONS

Index Journal

1. **Chee, V. S., & Husin, M. M. (2020)**. The Effect of Service Quality, Satisfaction and Loyalty toward Customer Retention in the Telecommunication Industry. *International Journal of Academic Research in Business and Social Sciences. 10*(9), 55-71.

Non-Index Journal

2. **Chee, V. (2019)**. The Relationship of Service Quality, Customer Satisfaction, Customer Loyalty and Customer Retention in Telecommunication Industry: A Conceptual. *Business. Utm. My*, *12*(2).