

Customer Satisfaction Model for Mobile Phone Service Providers in Malaysia

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Abstract—This paper presents the investigation on the effect of image, customer expectation, perceived quality and perceived value on customer satisfaction of mobile phone providers in Malaysia. Then, exploration on the effect of image and customer satisfaction on customer loyalty is also described. Data is gathered through online questionnaire distributed to international students in a selected public university in Malaysia. Partial Least Squares Structural Equation Modeling (PLS-SEM) has been used to analyze the data. The results found that image and perceived quality have significant impact on customer satisfaction with the regression coefficient values of 0.398 and 0.382 respectively. Image and customer satisfaction were also found to have significantly related to customer loyalty with the regression coefficient values of 0.378 and 0.409 respectively. On the other hand, there is no significant impact found between customer expectation and customer satisfaction, perceived value with customer satisfaction, and customer expectation with perceived value.

Index Terms—Customer Loyalty; Customer Satisfaction; Mobile Phone Provider; Partial Least Squares.

I. INTRODUCTION

In recent years, the concepts of customer satisfaction and loyalty have drawn more attention than before. Associated to each other, the definition of customer satisfaction is a customer post-purchase evaluation of a product or service, whilst customer loyalty is defined as a long-term commitment to repurchase involving both repeated patronage and a favorable attitude [1,2].

Satisfaction and loyalty are crucial in the era of increasing competition [3]. Thus, the marketers today are not only concentrating on the product and increase sales volume but also concentrating to maintain good relationships with customers. Without the loyalty, a particular company will not be able to survive in the competition and recruiting new customers will be more expensive for the company, rather than keeping the loyalty of customers [3]. Loyal customers boost business by purchasing more, paying premium prices, and providing new referrals via positive word-of-mouth over time [4].

With extremely dynamic communications industry and characterized by intense competition, most of the telecommunication companies continually strive for rapid pace introduction of new products and services. According to a study [5], telecommunications companies lost 2-4% of their customer monthly, which cut a huge amount of revenue and profit. Some researchers investigated the factors that

influence Malaysian customer satisfaction index of mobile phone provider [6-8]. However, not many researchers studied the foreigners in determining customer satisfaction index especially in Malaysia mobile phone sector.

The mobile phone sector was selected for this paper for two reasons. Firstly, the competition in this industry results in dynamics product developments and an increasing demand for the product. Second, for the Malaysia telecommunications industry, the mobile services segment mainly drives growth rate [9]. With the increase of mobile phone users, it is certainly very advantageous for the providers to get customers as many as possible, not only Malaysian but also foreigners in Malaysia.

This paper investigates foreign customers' perception of mobile phone provider in Malaysia through their consumption experiences. This study focuses on international students as foreign customers who live in Malaysia for a certain period of study. The objectives of this study are first to investigate the effect of image and customer satisfaction on customer loyalty and secondly to modify a customer satisfaction Index (CSI) model to fit with foreign student perception on customer satisfaction of Malaysia mobile phone sector.

II. CONCEPTUAL MODEL

The Customer Satisfaction Index (CSI) model is a structural model built on the assumptions that customer satisfaction is caused by some factors such as perceived quality (PERQ), perceived value (PERV), customer expectation (CUEX), and image (IMAG). These factors are the antecedents of overall satisfaction. The model also estimates the results of satisfaction or dissatisfaction. These results of customer satisfaction are consequences factors such as complaints or loyalty of customers [10]. Each factor in the CSI model is a latent construct operationalized by multiple indicators [11-12].

The European Customer Satisfaction Index (ECSI) model has been used in this study as a baseline to investigate all the relationships between each factor as shown in Figure 1. The ECSI, developed by the European organization for quality and European foundation for quality management, was first introduced in 1999 across 11 European countries [13].

The ECSI model is a structured model assuming that customer satisfaction is caused by antecedent factors of image, perceived quality, perceived value, and customer expectation. The model estimates the outcomes whether a customer is satisfied or not. These customer satisfaction results are

consequences factors such as complaints or loyalty of customers [10].

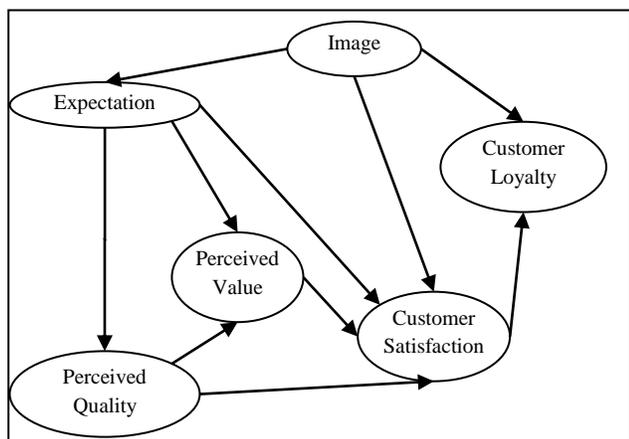


Figure 1: The European Customer Satisfaction Index (ECSI) Model

The ECSI model consists of the constructs that are derived from theories and approaches in customer behavior. The latent constructs and their observable items are given in Table 1.

Table 1
Latent variables and their corresponding manifest variables

Latent variables	Observable (manifest) variables
Expectations (CUEX)	CUEX1 : expectations for fulfilments of personal needs CUEX2 : expectations for overall quality CUEX3 : expectations for product quality CUEX4 : expectations for service quality
Perceived Quality (PERQ)	PERQ1 : for service quality PERQ2 : for product quality PERQ3 : for reliability and accuracy provided PERQ4 : technical product quality PERQ5 : for customer services PERQ6 : overall product quality PERQ7 : overall services quality
Perceived Value (PERV)	PERV1 : value of customer services PERV2 : value of product and services PERV3 : value of product PERV4 : value of the security and level correctness provided PERV5 : value of the availability provided PERV6 : overall service value
Image (IMAG)	IMAG1 : being professional IMAG2 : customer relations IMAG3 : add value to user IMAG4 : being reliable IMAG5 : overall perception of image
Customer Satisfaction Index (CUSA)	CUSA1 : overall satisfaction CUSA2 : fulfilments of expectations CUSA3 : compare with ideal
Customer Loyalty Index (CUSL)	CUSL1 : price tolerance CUSL2 : recommendation to others CUSL3 : repurchase intention

III. METHODOLOGY

In this study, Partial Least Squares Structural Equation Modeling (PLS-SEM) is used to analyze the data from questionnaire. Online questionnaire is used to obtain the data and distributed to the respondents' email. The PLS path

diagram is used to determine the relationship between variables and value expectation, perceived value, perceived quality, and the image of the customer satisfaction index. PLS-SEM was also used to determine which variables are the most dominant influence on customer satisfaction and customer loyalty. It also used analysis of Goodness of Fit, which is to measure the influence of variable expectation, perceived value, perceived quality and image of the customer satisfaction index.

IV. DATA ANALYSIS

Out of 1650 international students in Universiti Utara Malaysia (UUM), a sample of 320 questionnaires was collected. The questionnaires have been sent by email in May 2013, and then after one month, 165 responses (51.6% rate of response) received. Ten of the responses were then left out since some questions had not been answered, thus leaving the number of valid questionnaires at 155 or 48.4% rate of valid response. According to Saunders, Lewis, and Thornhill [14], for the online questionnaire likely response rate is 30% reasonable within organizations.

The questionnaires were distributed online to all international students in Universiti Utara Malaysia (UUM). As shown in Table 2, the subjects were 104 (67.1%) male and 51 (32.9%) female respondents. The analysis shows that, respondents' level of study program was 46 (29.7%) with bachelor degree, 32 (20.6%) master degree, 77 (49.7%) with PhD or DBA. Out of 155 valid responses, the finding shows that 71 (45.8%) respondent from Asia, 47 (30.3%) from Middle East and 37 (23.9%) from Africa. There are four main mobile phone service providers, identified as A, B, C, and D in this paper.

Table 2
Profiles of Respondents (N=155)

Variables	Frequency	Percentage	
Gender	Male	104	67.1
	Female	51	32.9
Level of study	Bachelor degree	46	29.7
	Master degree	32	20.6
	PhD/DBA	77	49.7
Age	<= 20 years old	12	7.7
	21 – 30 years old	78	50.3
	31 – 40 years old	45	29.0
	>= 41 years old	20	12.9
Country	Asia	71	45.8
	Middle east	47	30.3
	Africa	37	23.9
Current provider	A	67	43.2
	B	24	15.5
	C	60	38.7
	D	4	2.6
Subscribed to the provider	< 1 year	24	15.5
	1 – 3 years	76	49.0
	3 – 6 years	50	32.3
	> 6 years	5	3.2

V. RESULTS

The outer model (or measurement model) defines how each block of indicators is related to their latent variable. The outer model estimation results (that is, outer weights and loadings) are given in Table 3.

Table 3
Profiles of Respondents (N=155)

Latent variable	Manifest variable	Outer weight	Loadings
IMAG	IMAG1	0.2076	0.8156
	IMAG2	0.2290	0.8618
	IMAG3	0.2379	0.8484
	IMAG4	0.2391	0.8671
	IMAG5	0.2474	0.9059
CUEX	CUEX1	0.2916	0.8210
	CUEX2	0.2842	0.7785
	CUEX3	0.2928	0.8194
	CUEX4	0.3323	0.9012
PERQ	PERQ1	0.2061	0.7954
	PERQ2	0.1557	0.7694
	PERQ3	0.1567	0.7522
	PERQ4	0.1395	0.7282
	PERQ5	0.1915	0.7793
	PERQ6	0.1885	0.8588
	PERQ7	0.2155	0.8616
PERV	PERV1	0.2405	0.8211
	PERV2	0.2022	0.8120
	PERV3	0.1940	0.7424
	PERV4	0.1578	0.6969
	PERV5	0.2196	0.8467
	PERV6	0.2322	0.8548
CUSA	CUSA1	0.3663	0.8969
	CUSA2	0.3650	0.9319
	CUSA3	0.3615	0.9165
CUSL	CUSL1	0.2257	0.6313
	CUSL2	0.4502	0.9473
	CUSL3	0.4625	0.9320

In PLS, individual item reliability is assessed by examining the loading of the manifest variables with their respective construct. A rule of thumb employed by many researchers is to accept items with loadings of 0.70 or more, which implies that there is more shared variance between the construct and its manifest variable than error variance [15-18]. In PLS estimation, communality measures the shared variance between the manifest variable and related latent variable (that is, capacity of the manifest variable to describe the related latent variable) [19].

In this research, the loadings between manifest variables and their related latent variable are relatively large and positive. All the loadings except loading of PERV4 and CUSL1 are greater than 0.70. The loading of PERV4 and CUSL1 are 0.6969 and 0.6313, respectively. Due to the lowest outer loading of PERV4 and CUSL1, both manifest variables were removed. Overall, from 28 of outer loadings six manifest variables had been eliminated (PERQ2, PERQ3, PERQ4, PERV3, PERV4, CUSL1), due to the low of their loadings' value and in order to get the valid results.

Simple and multiple regression coefficients for each endogenous latent variable, p-value and R² statistics are shown in Figure 2.

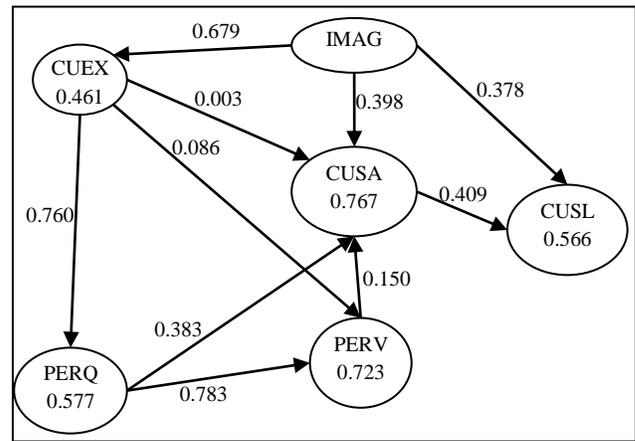


Figure 2: Path Diagram of Regression Coefficient the Customer Satisfaction Index of Malaysia Mobile Phone Sector Model

The causality scores in Figure 2 show the various structural regressions of the customer satisfaction index of Malaysia mobile phone sector model. The path coefficients, given on the lines, are the standardized regression coefficients. The R² values, given in the circles, are the fraction of the total variance of the dependent variable that is explained by its regression model. It is important to notice that all the relationships between the latent variables in the model are positive. Therefore, for each regression scores, an increase in the value of an independent latent variable will also increase the value of related dependent latent variable.

According to regression relationships for customer satisfaction (CUSA), image (IMAG) and perceived quality (PERQ) have significant impact on customer satisfaction with the value are 0.398 and 0.382, respectively. In addition, non-significant impact for perceived value (PERV) and customer expectation (CUEX) value are 0.150 and 0.003, respectively. The R² measure for customer satisfaction is 0.767. This means that the regression model can explain 77% of the total variance in satisfaction.

A particular attention should be paid to customer loyalty (CUSL) construct since it is the ultimate factor in the model. Image and customer satisfaction are the independent latent variables of this constructs with the regression coefficient values of 0.378 and 0.409, respectively. The R² measure of this regression model is 0.566, which can be considered as satisfactory. Other noticeable strong relationship exists between company image and customer expectation with the value is 0.679, with the R² measure of this regression model is 0.461, which is moderate. The value of relationship customer expectation and perceived quality with is 0.760; with the R² measure of this regression model is 0.577, which means moderate. The value of relationship perceived quality and perceived value is 0.783, and non-significant impact for the relationship between customer expectation and perceived value with the regression coefficient of this relationship is 0.086. The R² measure of this regression model is 0.723, which means substantial.

The index scores of the latent variables are calculated as the weighted average of manifest variables pertaining to their own block. Then the CSI scores are calculated as follows.

$$CSI = \frac{\sum_{i=1}^3 w_{4i} y_{4i}}{\sum_{i=1}^3 w_{4i}} \times 10 \quad (1)$$

where y is the manifest variable related to latent CSI, and w is the unstandardized outer weight between latent variable and related centered manifest variable.

Considering the survey data from 155 mobile phone customer on international student in UUM, the customer satisfaction index score for Malaysia mobile phone industry is found 66.94 (for 0-100 scale). The other latent variable scores are shown in Figure 3.

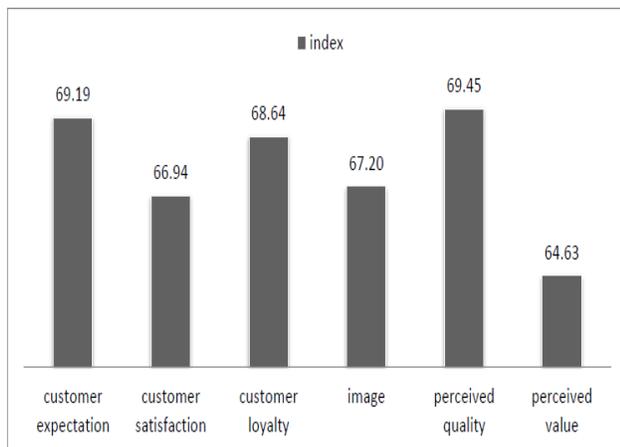


Figure 3: Index Scores for Malaysia Mobile Phone Sector

The results show that the quality level of products they perceived is very high with the value is 69.45. On the other hand, the mobile phone users' expectation is also very high with the value is 69.19. The lowest score of the customer satisfaction index of Malaysia mobile phone sector model is perceived value with the score is 64.63, which shows the price/quality and quality/price evaluation. Since, mobile phone firms are known as leading firms for technological products their image is expected to be high. Image score for Malaysia mobile phone sector is 67.20. Customer loyalty score is found to be 68.64. Loyal customers are those who keep buying from the same company, recommend to others, and have price tolerance.

VI. CONCLUSION

The structural model customer satisfaction index of Malaysia mobile phone sector was analyzed using the Partial Least Squares-Structural Equation Modelling (PLS-SEM) method.

From the results for customer satisfaction index of Malaysia mobile phone sector, we conclude that customer satisfaction is largely affected by image and followed by perceived quality. Image is one of the most important components of the customer satisfaction model. For the telecommunication companies, image is a result of being professional and innovative, reliable, adding prestige to its customers, and having contributions to society.

Customer loyalty, the ultimate factor in the model, is

another important construct that should be considered. The findings show that customer satisfaction and company image have positive and significant effect on customer loyalty. Customer satisfaction is found to be the most important factor for enhancing customer loyalty. Therefore, the level of customer loyalty increases with the increase of the customer satisfaction level. This paper concludes that if Malaysia's mobile service providers want to increase customer loyalty among international student effectively, they should find a way to increase customer satisfaction.

We recommend a few approaches that could be taken to improve customer satisfaction and customer loyalty of Malaysia mobile phone provider. First, we suggest employment of larger sample size from diverse locations. The number of respondent can be increased to cover all foreigners in Malaysia in order to be more representative. The increase of respondents can be done by sending the questionnaires through internet to target respondent. Second, this customer satisfaction index of Malaysia mobile phone sector model can be tested for Malaysian as a sample, so it can be used as a comparison in this research, and the model should be tested periodically so we can get the appropriate model for Malaysian mobile phone sector. Finally, in the future, the research can be expanded to examine from a marketing point of view.

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