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Assessing the Service Quality and Customer Satisfaction Towards Internet Provider Using the SERVQUAL Model

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Abstract: Internet connectivity in Malaysia has increased significantly over the past decade, especially since the covid-19 epidemic struck, creating growth in the use of the internet as an essential communication tool. As a result, there is competition between Internet service providers (ISPs) to provide attractive internet packages. However, is the quality of the internet in line with the package offered. Therefore, it is crucial to understand customer satisfaction with the services provided and why customers remain loyal to a particular internet service provider. This study looks at the elements that determine customer satisfaction with Malaysia internet service providers. A quantitative method was conducted with 300 internet customers in Malaysia. The SERVQUAL model was employed to identify the factors influencing customer satisfaction towards internet services quality. Multiple linear regressions and correlation were used to determine the relationship between customer satisfaction and SERVQUAL dimensions. The results show that Network quality, Reliability, Tangible, and Empathy strongly affect customer satisfaction as the most important determinant of perceived service value, increasing customer satisfaction. These findings help internet service providers better understand the factors that affect customer satisfaction, enable them to improve their services and keep customers loyal to their providers.

Keywords: *ISPs, Service Quality, SERVQUAL, Internet Provider*

1. Introduction

In recent years, establishing a network access provider has been a significant endeavour in Malaysia. Joining social networks is the most popular online activity in Malaysia. However, since the covid-19 epidemic struck, internet usage has increased exponentially. The increasing use of the internet for learning, e-Health, e-Government, e-Commerce, and entertainment is significant. Ordering products or services online, online banking, webinar classes, watching television online, and gathering information from government entities are all examples of service-related activities.

The availability of smart homes is on the rise because most employment sectors allow workers to work from home. As a result, internet providers' tolerance for connection failures rapidly declines. Loss of connection is a frequent intermittent occurrence and if the issue persists, there is a possibility that the cause of the problem has nothing to do with the equipment or settings but rather stems from a problem on the part of the Internet Service Provider (ISP).

Although the coverage rate of mobile networks in Malaysia is high, this does not guarantee the quality of service to customers. Internet quality issues in buildings, offices and homes can occur due to signal degradation. The quality of service can also be disrupted when data traffic and the number of customers increase, as in urban areas.

In line with the global trend of the rapid increase in internet usage, market liberalization and support from the government have increased the demand for internet services in Malaysia. Furthermore, as the telecommunications sector shifted away from regulated

markets and became more competitive, many firms began to focus on increasing consumer satisfaction.

Customer satisfaction is defined as the determinant of the extent to which a firm's goods, maintenance, services, and improvements can meet customer expectations. One of the main factors influencing customer satisfaction is the quality of service.

Quality of service, customer satisfaction, and consumer loyalty are critical concepts businesses must understand to succeed. Organizations must understand how to assess customer satisfaction and loyalty from a customer perspective to understand better and meet their needs and wants. Service quality is important because it increases customer satisfaction customer loyalty and provides an advantage at a more reasonable cost. Customer satisfaction with their Internet provider indicates an attitude bond or contractual relationship with the telecommunications provider.

Therefore, the main issue of telecommunications companies is to retain their customers for the longer period and also to attract the new customers. Thus, this research aims to identify the service quality elements that have the most significant impact on customer satisfaction in the telecommunication industry. This study assists internet service providers in understanding the significant aspects that influence customer satisfaction and keep them loyal to the internet provider.

2. Literature Review

Satisfaction is a customer's assessment of a product or service in terms of whether it matched their requirements and expectations (Zeithaml and Bitner, 2003). Expectations are impacted not just by prior service experience, but also by what others say about the brand. If the consumer is happy, the firm can create a long-term partnership (Munusamy and Chelliah, 2011). Customer satisfaction indicates the extent to which the product use experience is compared to the buyer's value expectations (Razak and Shamsudin, 2019). Thus, Jack and Powers (2013) define satisfaction as a customer response after a service performance appraisal to meet an expected standard.

Service quality evaluates the extent to which services are delivered to customer expectations. Monitoring customer interaction with the services provided is closely related to assessing the quality of internet services. Service providers routinely evaluate the quality of their services offered to their users to improve their services, identify problems quickly and evaluate customer satisfaction better (Ramya N., 2019). According to Christian Gronroos (1978), perceived service quality has two dimensions: the technical or outcome dimension and the role of process-related dimensions.

The main factor of internet access quality is related to the download and upload speed of internet connection (Quach et al., 2016; Thaichon et al., 2014;). The quality of internet access suggests internet connection bandwidth has a significant positive effect on customer satisfaction towards internet providers (Giovanis et al., 2014; Grzybowski et al., 2018). Therefore, connection speed remain an essential factor. Furthermore, customers can use test tools to determine the delivery rates they receive from their internet service providers (Elkins, 2018).

Customers perceive failure to supply the agreed-upon connection bandwidth as a "loss" (psychological) (Chuang et al., 2012). More frequent losses contribute to a worse sense of value or service quality, resulting in lower consumer loyalty to internet service providers (Stocker and Whalley, 2018)

Khatibi, Ismail, and Thyagarajan (2002) explore the relationship between quality, price and consumer satisfaction perceptions. According to the study findings, customer satisfaction

and service quality have a significant correlation. Wang, Lo, and Yang (2004) investigated the dynamic relationship between service quality, customer value, and customer satisfaction in the Chinese mobile-phone business and its influence on consumer behavior. The findings indicate network quality is one of the most important predictors of overall consumer perceptual value derived from service quality, customer value, and satisfaction.

Various variables can be used to assess service quality. SERVQUAL is a legitimate and reliable tool that identifies the strengths and weaknesses of an organization's services in terms of quality. It was created by Parasuraman et al. (1985). It is used to conduct gap analysis based on differences between perceptions and expectations of service quality.

Several empirical studies have been conducted using the SERVQUAL instrument to explore the applicability of the SERVQUAL paradigm in the telecommunications industry. Although SERVPERF is an alternative measuring tool created by Cronin and Taylor (1992) to address anticipation concerns, this model uses a different approach than SERVQUAL. Nevertheless, it has been shown to have more applications in the industries investigated (Cronin and Taylor, 1992). Lee and Yoo (2000) researched perceived service quality drivers to support this claim. According to their findings, the performance-based service quality measure (SERVPERF) operates better and identifies more significant changes in service quality.

Wang, Lo, and Yang (2004) also listed 'network quality as a determinant for customer-perceived quality assessment in the telecommunications industry. According to the findings of Wang, Lo, and Yang (2004), six essential elements determine the quality of service perceived by customers: tangible, reliability, responsiveness, assurance, empathy, and network quality. For the reasons stated above, the measurement of service quality in this study is based on the SERVQUAL model, given the importance of management to assess the model's applicability in the context of the Malaysian telecommunications industry.

3. Methodology

This study was based on the quantitative approached which employed the questionnaire as a tool of the study. The sample consisted of 300 internet users was gathered by using convenience sampling method. The questionnaire consists of two main parts; the first took into perspective the demographic, while the second part took into perspective related to the variables of the study.

The conceptual framework was developed from the variables were shown in Figure 1. In the research framework, the independent or explanatory variables (IVs) SERVQUAL which consists of Network quality, Empathy, Tangible, Reliability, Assurance and Responsiveness. Meanwhile, the dependent or response variable (DV) is customer satisfaction. The conceptual framework is employed to determine the direct effect of the relationship between SERVQUAL towards service customers satisfaction.

The earliest service quality model was introduced by Parasuraman et al. (1985), and was referred as SERVQUAL, including (1) Tangibles; (2) Reliability; (3) Responsiveness; (4) Assurance; (5) Empathy. Some researchers have extensively studied how to assess the service quality; two of the most well-known scales are the classical SERVQUAL and SERVPERF that can be applied for various service settings. Many authors (Wang and Lo, 2002; Wang et al., 2004; Negi, 2009; Abdel Rahman, 2018; Alnsour et al., 2014; Sattari et al., 2015; Hussain et al, 2018) agreed the significance of SERVQUAL model and its influence on customer satisfaction in the telecommunication sectors.

To conduct this study, statistical methods such as descriptive statistics, correlation and multiple linear regressions will be applied into this data. The study carried out by Ana B.

(2019) used multiple linear regression to look at the relationship between SERVQUAL model and customer satisfaction. A comparable study conducted by Choi (2018) also used linear regression to examine the impact between services quality and trust. The higher the trust, the better the seller's evaluation and the more positive the evaluation of the same experience (Singh and Sirdeshmukh, 2000).

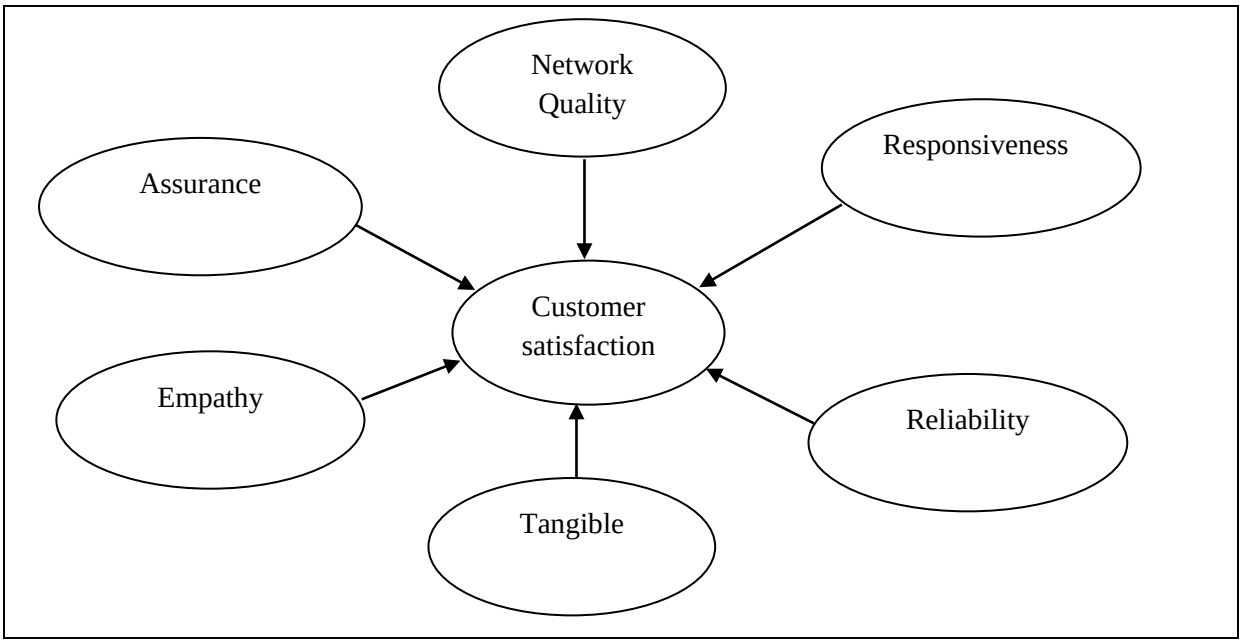

Figure 1: Conceptual research framework with hypothesized relationships

4. Analysis and findings

4.1 Descriptive statistics

This section examines the distribution of data based on the specific information.

Table 1. Descriptive statistics

	Frequency	Percentage
Time spends on internet per day		
Less than two hours	5	1.7
2-3 hours	39	13.0
4-8 hours	110	36.7
More than 8 hours	95	31.7
When needed	51	17.0
Frequency of changing internet provider		
1-3 times	155	51.7
More than 3 times	43	14.0
Never	102	34.0
Internet provider user		
Maxis	42	14.0

Digi	75	25.0
Celcom	75	25.0
U-mobile	75	25.0
TM	25	8.3
Others	8	2.7

Based on Table 1, the result revealed that 36.7% of respondents spent about 4-8 hours on the internet per day. 31.7% of the respondents spent more than 8 hours on the internet, and 17% used the internet when needed. Only 13% of the respondents spent 2-3 hours on the internet per day, and the least is less than two hours spent on the internet per day.

Based on the result, 25% of the respondents used Digi, Celcom, and U-mobile. 14% of the respondents choose Maxis as their internet provider. Meanwhile, 8.3% and 2.7% of them used TM and others as their internet providers, respectively. 155 or 51.7% of respondents have changed their internet service provider 1-3 times. 34% of respondents have never changed their internet service provider, and 14% have changed their internet provider more than three times.

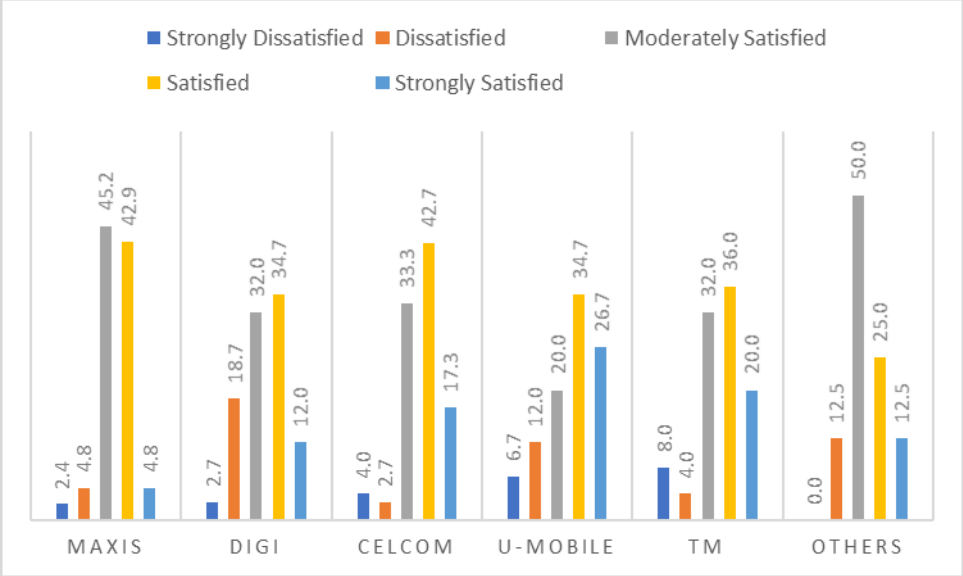

Figure 2: Percentage distribution of customer satisfaction for each internet provider

Figure 2 represent the distribution of customer satisfaction for each internet provider. As many as 45.2% of Maxis users were only 'moderately satisfied' with the service offered. Followed by 42.9% of users who are only 'satisfied' with the service provided. A total of 4.8% of users was 'strongly satisfied' and 'dissatisfied' with the service, and only 2.4% of users stated that they were 'strongly dissatisfied' with the service.

Most respondents (34.7%) who are Digi users stated that they were 'satisfied' with the services offered. However, this followed by 32% of users who were only 'moderately satisfied'; 18.7% stated they were 'dissatisfied'; 12% said 'strongly satisfied,' and only 2.7% of Digi users was strongly dissatisfied with the service offered.

A total of 42.7% of Celcom users stated they were 'satisfied' with the service provided. 33.3% of users indicated they were only 'moderately dissatisfied' with the service, followed by 17.3% of users who were 'strongly satisfied'. Only 4.0% and 2.7% of users stated that they were 'strongly dissatisfied' and 'dissatisfied' with the service provided.

U-mobile users stated that they are only 'satisfied' with the service provided (34.7%). This was followed by 26.7% of users who said they were 'strongly satisfied' with the service. Conversely, 20% of users stated they were only 'moderately satisfied' with the service, 12% and 6.7% of users were 'dissatisfied' and 'strongly dissatisfied' with the service offered, respectively.

As many as 36% of TM users stated that they were 'satisfied' with the service provided. On the other hand, 32% of users are only 'moderately satisfied', 20% of users are 'strongly satisfied', 8% of users are 'strongly dissatisfied,' and 4% of users are 'dissatisfied' with the service provided.

4.2 Correlation

Table 2 shows the correlation coefficients used to analyze the relationship between the six variables of the SERVQUAL model and customer satisfaction. The findings indicated a substantial and positive relationship between the six SERVQUAL variables and customer satisfaction. The highest value of the coefficient of correlation is between customer satisfaction and Reliability (r = 0.864), indicating the strongest relationship between them; this is followed by Tangibility and customer satisfaction (r = 0.784), Responsiveness and Reliability (r = 0.758), and Empathy and customer satisfaction (r = 0.756). The correlation coefficient between Assurance and Empathy is the lowest (r = 0.517). All of the correlation coefficients were positive, indicating that service quality and customer satisfaction are positively associated. In other words, the higher the level of customer satisfaction, the higher the level of service quality.

Table 2: Correlation

	User satisfaction	Network quality	Responsiveness	Reliability	Tangible	Assurance	Empathy
Customer satisfaction	1.000						
Network quality	0.703**	1.000					
Responsiveness	0.688**	0.674**	1.000				
Reliability	0.864**	0.700**	0.758**	1.000			
Tangible	0.784**	0.613**	0.691**	0.755**	1.000		
Assurance	0.659**	0.539**	0.680**	0.675**	0.663**	1.000	
Empathy	0.756**	0.584**	0.564**	0.714**	0.520**	0.517**	1.000

*Correlation is significant at the 1% level.

4.3 Regression Analysis

A multiple regression model was developed to study the six-dimensional effect of SERVQUAL on customer satisfaction. The explanatory or independent variables (IV) used in this study was the SERVQUAL dimensions, which is Network quality, Responsiveness, Reliability, Tangible, Assurance and Empathy. The dependent variable (DV) used was customer satisfaction. The following equation can be used to express the multiple regression models:

$$\text{Users' satisfaction} = b_0 + b_1\text{Network quality} + b_2\text{Responsiveness} + b_3\text{Reliability}$$
$$+b_4\text{Tangible} + b_5\text{Assurance} + b_6\text{Empathy}$$

Based on the above model, the taking hypotheses were derived

H_1: Network quality has a positive impact on customer satisfaction.
H_2: Responsiveness has a positive impact on customer satisfaction.
H_3: Reliability has a positive impact on customer satisfaction.
H_4: Tangible has a positive impact on customer satisfaction.
H_5: Assurance has a positive impact on customer satisfaction.
H_6: Empathy has a positive impact on customer satisfaction.

Table 3: Regression results for SERVQUAL towards customer satisfaction

Variables	Beta	T-test	Std. Beta	Sig.	Tol.	VIF
Constant	0.070	0.744		0.458		
Network quality	0.096	3.200	0.113	0.002	0.444	2.255
Responsiveness	0.077	1.937	0.079	0.054	0.335	2.984
Reliability	0.328	7.884	0.389	0.000	0.229	4.373
Tangible	0.305	7.728	0.301	0.000	0.367	2.727
Assurance	0.043	1.336	0.047	0.182	0.447	2.237
Empathy	0.234	7.995	0.275	0.000	0.471	2.124
Adjusted R squared	0.833			Durbin-Watson	2.114	
F value	250.39					
Significance	0.000					
Dependent variable: Customer satisfaction						

There are several model assumptions in regression analysis, such as multicollinearity and autocorrelation. If one or more assumptions are unmet, the model is no longer valid and cannot be used to estimate population parameters. One of the problems that may arise in regression is multicollinearity. Multicollinearity appears when one or more explanatory variables are associated. Effects from multicollinearity will make the regression coefficient is unreliable, the standard error become large and the regression coefficient become more difficult to interpret (Daoud, 2017).

A little multicollinearity can sometimes produce a significant problem, but when it is moderate or severe, it is a problem that must be addressed. In this study, the variance inflation factor (VIF) was used to determine the percentage of multicollinearity. According to Table 3, the VIF for all explanatory variables is less than 10, indicating no multicollinearity issues in this model. Simultaneously, there is no tolerance limit of less than 0.01.

Next, Durbin Watson (DW) statistics were used to detect the autocorrelation in the residual in the regression model. From the results, the DW statistic yields a value of 2.114, which is outside the range dL=0.877 and dU=1.606 from Durbin Watson's table. As a result, the explanatory variables in this model do not have any indication autocorrelation and It can be inferred that the assumption of residual is independent is satisfied (Hassan et al, 2019).

The result of the F-value in Table 3 reveals there is a statistically significant relationship between customer satisfaction and SERVQUAL dimensions since the p-value is less than the significance level ($0.000 < 0.05$). While, R^2 is the coefficient of determination represents the percentage of variation of the dependent variable explained by the explanatory variables, included in the model. The value of is 0.833, which means that about 83.3% of the variation in customer satisfaction is explained by SERVQUAL dimensions.

The next step is to apply the model to describe the mechanisms and the processes of the study. Based on the findings, H1 (Network quality), H3(Reliability), H4 (Tangible), and H6 (Empathy) give a significant impact on customer satisfaction with a significance value of 0.000<0.05. These findings suggest that four dimensions of SERVQUAL, which are Network quality, Reliability, Tangible, and Empathy, have a positive association with customer satisfaction.

Reliability has the highest beta at 0.389, indicating this dimension has the most influence on customer satisfaction with their internet provider. This finding is consistent with earlier studies (Leisen & Vance, 2001; Negi, 2009; Sattari et al., 2015), in which Reliability was found to have the most significant effect on customer satisfaction. In summary, the following is the link between customer satisfaction and all of the SERVQUAL dimensions in the telecommunication industry:

$$\text{Customer satisfaction} = 0.070 + 0.096\text{Network quality} + 0.077\text{Responsiveness} + 0.328\text{Reliability} + 0.305\text{Tangible} + 0.043\text{Assurance} + 0.234\text{Empathy}$$

5. Conclusion

The main goal of this study was to determine the characteristics that influence customer satisfaction with Malaysian Internet Service Providers. Based on a survey of 300 customers representing the internet user community, they suggest that Network quality, Reliability, Tangible, and Empathy are the most important factors influencing customer satisfaction. Furthermore, out of six dimensions, Reliability has a higher impact on customer satisfaction than other dimensions. Therefore, if internet service providers want to establish and retain a competitive advantage, they must increase service quality, give higher value, and thoroughly understand the customer's behavioural objectives.

These findings assist internet providers in understanding the significant aspects that influence customer satisfaction, improve their services and keep them loyal to their internet provider. For example, network quality is one factor that affects customer satisfaction. Thus, the internet service provider should consistently monitor their internet strength and the quality of the network.

Furthermore, customers usually evaluate the quality of the internet based on coverage area and the speed of the internet connection. Therefore, Internet service providers must strive to improve the quality of their services, especially in the eyes of their customers, to maintain a competitive advantage and increase customer satisfaction. Therefore, this is the quality of the internet as a tangible component.

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