

## IMPACT OF SERVICE QUALITY ON CUSTOMER LOYALTY: THE MEDIATING ROLE OF CUSTOMER SATISFACTION IN THE MALAYSIAN TELECOMMUNICATION SECTOR

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### ABSTRACT

*This study examines the impact of service quality on customer loyalty in the Malaysian telecommunication sector, with the mediating role of customer satisfaction. The study measures service quality using the SERVQUAL dimensions, including tangibility, reliability, responsiveness, assurance, and empathy with two additional dimensions: network quality and convenience. The study collects the data through a structured survey from 362 telecom users across Malaysia. The findings of the study reveal that service quality significantly influence customer satisfaction, which in turn significantly mediates the relationship between service quality and customer loyalty. The study highlights the importance of enhancing both service delivery and network-related features to foster stronger customer relationships and sustained loyalty in a competitive telecom market in Malaysia.*

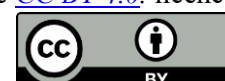
**Keywords:** Service quality, customer satisfaction, customer loyalty, telecommunication sector, SERVQUAL

### 1.0 INTRODUCTION

Service quality in the telecommunications industry has been intricately linked to customer loyalty because customers can easily switch to other service providers nowadays. As a result, most service providers have been competing with one another to provide better services to customers and take the competition to the next level in attracting new customers and retaining current customers. (Lin et al., 2023; Rasiah & Ren, 2023). Customer expectations today vary and evolve over time, and they become essential. They demand 24-hour service engagement with customer-contact employees via any channel of communication, and desire high-quality services at a cheaper price (Bruhn, 2023). Companies are battling for market share in a fiercely competitive environment. Companies have recognized over time that customer retention is the key to success (Ismail, 2023). With the present pace of development and severe competition, it is necessary to grasp the needs of consumers, and businesses are doing so. Because services are intangible, companies that provide them sometimes find it difficult for consumers to assess them (Bavdaž et al., 2023; Wirtz et al., 2023).

As a result of increased competition and deregulation, many service businesses, including telecommunication, are seeking viable methods to distinguish their offerings, and the Malaysian telecommunication industry is also not out of this equation. Malaysia is among the top ten telecommunication markets in Asia, and this industry has become one of Malaysia's fastest-expanding

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industries (Chen et al., 2023; Priharsari et al., 2023). Recent studies could reinforce this perspective, demonstrating that superior service quality leads to enhanced customer satisfaction which collectively fosters long-term customer loyalty (Awuku et al., 2023; Cachero-Martínez et al., 2023; Zaato et al., 2023). The telecom companies that prioritize and consistently deliver high-quality services are more likely to retain satisfied and loyal customers, ultimately leading to a competitive advantage in the market (Albarq, 2024; Rasiah & Ren, 2023)

While realizing the relationship between service quality and customer loyalty, various researchers have argued that customer satisfaction is a significant mediating variable between service quality and customer loyalty (Martio & Moko, 2023; Zaato et al., 2023). A plethora of research has urged that customer satisfaction, loyalty, and retention are all linked in a good way. Previous studies highlight that while service quality is important, customer loyalty mainly depends on how satisfied customers feel with the services (Ati et al., 2020; Elgarhy & Mohamed, 2023; Zariman et al., 2023). Numerous studies have been conducted to examine the influence of consumer satisfaction on repeat purchases, loyalty, and retention. Many studies (Abrate et al., 2021; Zhang et al., 2022; Serrano et al., 2018; and Hossain, 2019) have shown that satisfied customers share the individuals about their positive experiences which raises the brand image and lead to retain with the existing services providers (Gam et al., 2023). Unhappy customers are more likely to tell others about a bad experience than happy customers are to share a good one. (Yakin et al., 2023).

With all the mentioned issues, capturing and maintaining customer loyalty is critical to stay competitive in the telecommunication market. With the mediating role of customer satisfaction, the study aims to investigate the above issue in the context of telecommunication in Malaysia. People in the telecommunications industry should think about how service quality affects their customers satisfaction and loyalty. Thus, this study looks at how service competitiveness can help telecommunications providers boost customer satisfaction and loyalty. In reality, the relationship between service quality, customer satisfaction, and customer loyalty in the Malaysian telecom industry is likely to be more nuanced and interconnected than a simple debate (Saha et al., 2021).

## **2.0 LITERATURE REVIEW**

### **2.1 Service Quality and Customer Loyalty**

Consumer behaviour studies show a positive association between service quality and customer loyalty (Agarwal & Dhingra, 2023; Alzaydi, 2023; Kusumanegara & Rachmawati, 2023). A plethora of studies have examined service quality with different dimensions (Nashih et al., 2024; Singh et al., 2023). As such a recent study conducted by Abdulwasiiu (2023) establishes the link between service quality and customer loyalty and reveals that customer brand identification correlates significantly with customer brand loyalty. Similarly, Hossain et al. (2021) argued that customer loyalty is connected to service fairness, service quality, social influence, corporate image, and service satisfaction.. Similarly, a study by Sun and Pan (2023) investigates customer loyalty in self-service fitness centres, highlighting the critical roles of service quality, convenience, and customer satisfaction in influencing Word-of-Mouth and patronage intentions. The findings emphasize the importance of enhancing service quality and minimizing customer effort, with service convenience acting as a significant driver of loyalty.

One of the primary reasons for the prominence of the SERVQUAL dimensions is their comprehensive coverage of key aspects of service provision. The reliability dimension pertains to the ability of the service provider to deliver services accurately and dependably, which is crucial for establishing trust and confidence among customers. In this regards, Zhang et al. (2023) conducted the study by collecting the data from 289 m-shoppers to examine the relationship between service quality dimensions and customer loyalty. The study revealed that reliability is one of the significant dimensions of increasing customer loyalty. Similarly, Gabriella and Ruslim (2024) found the significant impact of reliability on mobile users in Jakarta. Responsiveness focuses on the promptness and willingness of the provider to address customer needs and inquiries, reflecting the importance of timely service delivery in meeting customer expectations. Yum and Yoo (2023) examined the impact of responsiveness on customer loyalty in Ethiopia and found that responsiveness and reliability are indicators of customer loyalty. The assurance dimension relates to the competence, courtesy, and credibility of the service personnel, emphasizing the role of employee professionalism and expertise in instilling confidence in

customers. Similarly, various other studies have used the SERVQUAL dimensions to examine their relationship with customer loyalty and found that these factors contribute to enhancing customer loyalty.

Based on the above literature, the present study hypothesizes that:

*H1: Service quality has a positive influence on Customer Loyalty*

## **2.2 Relationship Between Service Quality and Customer Satisfaction**

There has been much debate about whether perceived service quality leads to customer satisfaction or the other way around. In this regards Parasuraman et al. (1988) concluded that perceived service quality serves as a leading indicator of customer satisfaction, meaning that improvements in service quality typically lead to higher levels of satisfaction among customers. This perspective is widely supported in the literature, as numerous empirical studies have consistently demonstrated a strong and positive relationship between these two constructs (Johnny & Ali, 2024; Khawaja et al., 2021; Nashih et al., 2024).

The impact of perceived quality on customer satisfaction is examined by comparing what customers expected from a service with what they actually experienced.(Grönroos, 2001). To do this, several factors are measured, including corporate image, physical features, technology, and service quality. Numerous studies have examined service quality through various dimensions. A recent study by Afifah and Kurniawati (2021) establishes a link between service quality and customer satisfaction, revealing that higher service quality leads to increased customer satisfaction. Similarly, Agarwal and Dhingra (2023) discuss the relationship between customer satisfaction, service fairness, service quality and service satisfaction. A study by Hui et al. (2023) investigates customer satisfaction in e-commerce, highlighting the critical roles of service quality, convenience, and customer satisfaction in influencing positive customer outcomes. These findings emphasize the importance of enhancing service quality to achieve higher customer satisfaction.

The telecommunication sector has become the primary source of information in modern society. Discussing the role of service quality on customer satisfaction in the telecommunication industry in the Kurdistan Region (Abdullah et al., 2022; Al Ajaleen & Saadon, 2023; Johnny & Ali, 2024) identified key factors influencing customer satisfaction among telecommunication companies. Using convenience sampling, the research revealed significant positive relationships between service quality and service attitude, with customer satisfaction. Noor et al. (2023) investigated the impact of these service quality dimensions on customer satisfaction with a sample of 306 respondents, derived from a population of 1,500 consumers, and employed multiple linear regression for analysis. The findings revealed that tangible proof, dependability, responsiveness, assurance, and empathy collectively influenced consumer satisfaction by 79.4%, with physical evidence being the most significant variable at 67.3%. However, reliability did not significantly impact satisfaction. A study conducted Johnny and Ali (2024) in Malaysia utilized the SERVQUAL to examine these dynamics within the telecommunication sector. Data were gathered through a structured questionnaire targeting respondents aged 17 to over 40 years, and a total of 159 responses were analysed using SPSS and PLS regression techniques. . These insights emphasize the diverse needs and expectations within the customer base, reinforcing the importance of service quality as a key determinant of customer satisfaction in the telecommunication sector.

Based on the above literature, the present study hypothesizes that:

*H2: Service quality has a positive influence on customer satisfaction.*

## **2.3 Mediating role of customer satisfaction**

The mediation role of customer satisfaction in the relationship between service quality and customer loyalty has been a subject of extensive investigation in marketing literature. Various authors (Hajar et al., 2022; Kusumanegara & Rachmawati, 2023; Marcos & Coelho, 2022) have highlighted the pivotal role of customer satisfaction as an intermediary construct through which service quality influences customer loyalty. Service quality, characterized by dimensions such as reliability, responsiveness, assurance, and empathy, forms the foundation of customer perceptions and evaluations of service

experience When customers perceive high service quality, it often leads to greater satisfaction with their overall service encounters (Raza et al., 2020).

Prior studies have shown that satisfied customers are more likely to stay loyal by making repeat purchases, recommending the service to others, and resisting switching to competitors (Lesmana et al., 2021; Rane et al., 2023). In this context, a recent study conducted by Agarwal and Dhingra (2023) conducted a comprehensive study involving 419 cloud experts and users in India to explore these dynamics. Their findings underscore the partial mediating role of customer satisfaction in the link between service quality and customer loyalty. Similarly, Marcos and Coelho (2023) examine the relationships among service quality, customer satisfaction, and customer loyalty.

In the telecommunications industry, the mediation role of customer satisfaction between service quality and customer loyalty is of relevance due to the unique nature of the services offered and the competitive landscape. Telecommunication services, encompassing voice calls, data transmission, and internet connectivity, have become integral to daily life, making customer satisfaction a critical determinant of long-term success for telecom companies. In this regard, Johnny and Ali (2023) conducted a study that examined the complex relationships among service quality, customer happiness, and customer loyalty in Malaysia telecommunication industry. The study found that customer happiness acts as a crucial mediator, amplifying the direct influence of service quality on customer loyalty. It is worth mentioning that only two out of the seven variables related to service quality had a substantial impact on customer happiness. This satisfaction, in turn, played a crucial role in strengthening customer loyalty. Similarly, study by Johnson et al. (2023) underscores the significant impact of service quality (e-SQ) on customer satisfaction and loyalty within the telecom industry. Utilizing data from 9,249 respondents, the findings revealed that service quality has direct and mediating effect on customer loyalty. This suggests that by enhancing Service quality telecom providers can significantly improve customer satisfaction, which in turn, fosters greater customer loyalty.

Based on above literature review, the study hypothesizes that:

*H3: Customer Satisfaction mediates the relationship between Service Quality and Customer Loyalty*

### **3. METHODOLOGY**

The present study adopts a quantitative approach because it is suitable for the research question and objectives. According to Pilcher and Cortazzi (2024), this approach is appropriate to investigate inquiries that require numerical values. The study uses a self-administered questionnaire for data collection. Various researchers have employed the questionnaire as a reliable and successful strategy for collecting data from a large sample (Bell et al., 2022). A questionnaire is sent to the respondents via a Google Form link. This survey uses structured questions in two sections. Section A contains demographic components and Sections employs a 5-point Likert scale (ranging from 1 for strongly disagree to 5 for strongly agree) for all variables. The estimated time to complete the questionnaire is about 10-15 minutes.

#### **3.1 Population and Sampling**

The present study defines the population of interest to all mobile phone subscribers within Malaysia. This demographic includes individuals from diverse backgrounds, age groups, income levels, and geographic locations. The heterogeneity of this population is crucial for capturing a comprehensive view of the factors that drive customer loyalty across different segments of the market. According to the Kemp (2024), there are around 44.55 million mobile subscribers in Malaysia. Further, World Population Review (2024) and Wikipedia (2024) also report that Malaysia population is currently around 32.5 million people (Malaysia Population 2024; Wikipedia, 2024). However, this population is bifurcated in 13 states and 3 federal territories. To generalize the sample to the population, the researcher collected the data from all 13 states and 3 federal territories proportionally. This approach helps to collect the data from the diversified sample. This diverse sample will raise the level of confidence in generalisability as the sample fulfils the population characteristics.

While the sample is collected from all states and federal territories, it is also important to consider the distribution of the sample proportionately concerning respondents within each state and

federal territory. However, the study was again limited to collecting the accurate number of mobile subscribers from each city due to mobile users' data accessibility, therefore, the researcher divided the entire sample based on the population of each city. The study at the first stage divides the sample size over the total population of all 13 states and 3 federal territories and multiplies it by each state/territory to determine the proportion of the sample size from each city. Once the study finalizes the required number of samples from each state/territory, in the second stage, the study employs a convenience sampling method to select the subscriber who answers the online questionnaire. The study uses online social media platforms to approach the subscribers for this study.

The study adopts the guidelines provided by Krejcie and Morgan table (Krejcie & Morgan, 1970) for sample size, which is well known for sample size determination among behavioural and social science researchers, and has been recommended by various researchers (Bougie & Sekaran, 2019; Sarstedt et al., 2022). According to the KMT, a sample of 384 is enough for a population of 1,000,000 or more. Therefore, this study used 384 as the sample size, which is a number commonly adopted in many research articles and theses (Giner-Sorolla et al., 2024; Julious, 2023). Therefore, the present study also collects the minimum sample size which is 384.

### 3.2 Measurement of the variables

The study utilizes measures of telecommunication service quality, customer satisfaction, expectation confirmation, and customer loyalty. These measures are adapted and adjusted from previous research. The dimension structures are assessed using five-point Likert scales, ranging from strongly disagree (1) to strongly agree (5).

**Service Quality:** The study measures service quality as a high order construct with the 7 dimensions including 5 dimensions of the SERVQUAL model and an additional two dimensions which are relevant to service quality in the telecommunication sector. The SERVQUAL model dimensions including reliability (5 items), responsiveness (5 items), assurance (5 items), empathy (5 items), tangibles (5 items) and additional two items, network quality (7 items), and convenience (5 items) adopted from previous studies (Abd-Elrahman et al., 2020; Belwal & Amireh, 2018).

**Customer satisfaction:** The study measures customer satisfaction with 5 items adopted from previous studies (Boonlertvanich, 2019; Yıldız & Duyan, 2019). The sample item includes “*Compared to other service providers, I am satisfied with the quality of service offered by my service provider*”.

**Customer Loyalty:** The study measures customer loyalty with 5 items adopted from (Boonlertvanich, 2019; Yıldız & Duyan, 2019) studies. The sample item includes “*I will continue my subscription with my service provider in the near future*”

### 3.3 Profile of the Respondents

The study distributed the online questionnaire to 384 respondents. However, the total of 362 responses are utilized for final analysis. Table 1 provides the respondents’ profiles based on gender, age, education level, income level and mobile service subscription with years.

**Table 1:** Demographic profile

Demographics	Frequency	Percentage
<b>Gender</b>		
Male	152	42%
Female	210	58%
<b>Age category</b>		
18 to 25 years	96	27%
26 to 35 years	143	40%
36 to 45 years	83	23%
46 to 55 years	33	9%

56 years and above	7	2%
<b>Education</b>		
Secondary school	21	6%
Foundation/Diploma	53	15%
Degree	168	46%
Master's degree	104	29%
Doctor of Philosophy (PhD)	11	3%
Professional qualification	5	1%
<b>Income level (Monthly)</b>		
B40:RM5250 or less	218	60%
M40: Between RM 5251 and RM 11819	133	37%
T20: RM11820 or above	11	3%
<b>Current service provider</b>		
U Mobile	94	26%
Maxis	109	30%
CelcomDigi	106	29%
Unifi Mobile	53	15%
Others	0	0%
<b>Duration of subscription</b>		
Less than one year	109	30%
1 to 3 years	143	40%
3 to 5 years	89	25%
More than 5 years	21	6%
<b>Sector</b>		
Government Employee	86	24%
Private Sector	187	52%
Business Owner	89	25%
Others	0	0%

## 4. RESULTS

### 4.1 Reflective Measurement Model Assessment

The measurement model evaluates the constructs' reliability and validity before testing structural relationships. This is to ensure that the constructs used measure what they are supposed to measure theoretically, which was used in this study. The assessment incorporates construct reliability, convergent validity, and discriminant validity together, assessing the quality of the measurement model (Sarstedt et al., 2023). Furthermore, outer loadings are checked to ensure each indicator is strong enough to contribute to the respective construct.

Reliability assessment is one of the key steps in the evaluation of a measurement model. Table 3 shows the values of internal consistency as well as composite reliability for all the constructs in this study where all of them exceed the value of the minimum threshold that was proposed by Hair et al (2021). In any measurement model, the outer loadings are important as they signify the extent to which the observed indicators align with their respective latent construct. This shows the outer loadings are generally large, denoting that the indicators measure the construct to be measured, and thus very important for construct validity. The outer loadings of variables are considered adequate if it is  $\geq 0.70$ . As Table 3 depicts values of outer loadings, the study finds that all items' values are greater than 0.7 except CN4. However, the study retains this item because eliminating this item does not significantly improve the reliability of the study scale. The AVE should be greater than 0.5 for the construct for the convergent validity to be strong. It indicates that more than 50% of the variance of its indicators is explained by the construct. The AVE values are above the threshold specified in Table 3.

**Table 3:** Internal Consistency, Reliability and Composite reliability, Loadings and AVE

Construct	Items	Loadings	Cronbach Alpha	Composite Reliability	AVE
Assurance	AS1	0.794	0.907	0.931	0.729
	AS2	0.847			
	AS3	0.836			
	AS4	0.884			
	AS5	0.903			
Convenience	CN1	0.780	0.808	0.865	0.563
	CN2	0.791			
	CN3	0.705			
	CN4	0.655			
	CN5	0.810			
Empathy	EP1	0.809	0.905	0.929	0.725
	EP2	0.825			
	EP3	0.859			
	EP4	0.902			
	EP5	0.859			
Network quality	NQ1	0.914	0.935	0.949	0.757
	NQ2	0.874			
	NQ3	0.799			
	NQ4	0.914			
	NQ5	0.832			
	NQ6	0.883			
Reliability	RE1	0.812	0.900	0.926	0.714
	RE2	0.850			
	RE3	0.844			
	RE4	0.855			
	RE5	0.863			
Responsiveness	RS1	0.854	0.862	0.899	0.641
	RS2	0.708			
	RS3	0.836			
	RS4	0.863			
	RS5	0.727			
Tangible	TN1	0.841	0.856	0.897	0.635
	TN2	0.788			
	TN3	0.724			
	TN4	0.751			
	TN5	0.873			
Customer Loyalty	CL1	0.902	0.933	0.949	0.789
	CL2	0.910			
	CL3	0.920			
	CL4	0.800			
	CL5	0.904			
Customer Satisfaction	CS1	0.878	0.922	0.941	0.763
	CS2	0.900			
	CS3	0.901			

CS4	0.841
CS5	0.847

Heterotrait–monotrait (HTMT) ratio and Fornell-Larcker criterion are the approaches used to assess discriminant validity. In this study, all values meet the required criteria for the three tests, confirming that discriminant validity is established. The results of the Fornell-Larcker criterion and HTMT ratio are presented in Table 4 and Table 5 respectively.

**Table 4:** Heterotrait-monotrait ratio (HTMT) - Matrix

Construct	Items	Loadings	Cronbach Alpha	Composite Reliability	AVE
Assurance	AS1	0.794	0.907	0.931	0.729
	AS2	0.847			
	AS3	0.836			
	AS4	0.884			
	AS5	0.903			
Convenience	CN1	0.780	0.808	0.865	0.563
	CN2	0.791			
	CN3	0.705			
	CN4	0.655			
	CN5	0.810			
Empathy	EP1	0.809	0.905	0.929	0.725
	EP2	0.825			
	EP3	0.859			
	EP4	0.902			
	EP5	0.859			
Network quality	NQ1	0.914	0.935	0.949	0.757
	NQ2	0.874			
	NQ3	0.799			
	NQ4	0.914			
	NQ5	0.832			
	NQ6	0.883			
Reliability	RE1	0.812	0.900	0.926	0.714
	RE2	0.850			
	RE3	0.844			
	RE4	0.855			
	RE5	0.863			
Responsiveness	RS1	0.854	0.862	0.899	0.641
	RS2	0.708			
	RS3	0.836			
	RS4	0.863			
	RS5	0.727			
Tangible	TN1	0.841	0.856	0.897	0.635
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	TN3	0.724			
	TN4	0.751			
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Customer Loyalty	CL1	0.902	0.933	0.949	0.789
	CL2	0.910			
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customer Satisfaction	CS1	0.878	0.922	0.941	0.763
	CS2	0.900			
	CS3	0.901			
	CS4	0.841			
	CS5	0.847			

Note: AS =Assurance, CN= Convenience, CL= Customer Loyalty, CS= Customer Satisfaction, EP= Empathy, NQ= Network Quality, RE= Reliability, RS= Responsiveness, TN= Tangible

**Table 5:** Fornell-Larcker criterion

	AS	CN	CL	CS	EP	NQ	RE	RS	TN
AS	0.854								
CN	0.568	0.750							
CL	0.574	0.669	0.888						
CS	0.637	0.571	0.786	0.874					
EP	0.618	0.515	0.655	0.608	0.851				
NQ	0.665	0.602	0.730	0.829	0.657	0.870			
RE	0.479	0.286	0.521	0.421	0.496	0.436	0.845		
RS	0.639	0.297	0.329	0.325	0.615	0.458	0.538	0.801	
TN	0.451	0.261	0.371	0.322	0.568	0.370	0.493	0.415	0.797

## 4.2 Formative Measurement Model

The evaluation of formative measurement model is required when the study develops the model based on formative indicators or dimensions. Formative indicators/dimensions are not interchangeable as reflective constructs and can make a different contribution to the construct. The formative measurement model assessment is often based on the three main aspects: collinearity, indicator weight, and significance and relevance of the indicators.

Table 6 provides the weights and significance of seven dimensions of service quality. The outer weights in formative measurement models indicate the relative contribution of each dimension to the higher-order construct. In this study, the second-order construct Service Quality is formed by seven dimensions including Assurance (AS), Convenience (CN), Empathy (EP), Network Quality (NQ), Reliability (RE), Responsiveness (RS), and Tangibility (TN). The results demonstrate that all outer weights are positive and significant at  $p < 0.001$ , obtained through bootstrapping. The Variance Inflation Factor (VIF) is used to diagnose potential collinearity issues among the indicators of a formative construct (See Table 6). A VIF value below 5.0 suggests that collinearity is not a concern (Hair et al., 2019). In this study, the VIF values for the dimensions of Service Quality are well below the threshold of 5. This indicates that multicollinearity is not an issue, and each dimension provides distinct and valuable information to the higher-order construct Service Quality.

**Table 6:** Weights, Significance and Collinearity

	Beta	SD	T-Value	P values	Collinearity
AS -> Service Quality	0.213	0.008	27.950	0.000	2.742
CN -> Service Quality	0.151	0.011	13.568	0.000	1.810
EP -> Service Quality	0.219	0.007	30.037	0.000	2.770
NQ -> Service Quality	0.307	0.015	20.706	0.000	2.431

RE -> Service Quality	0.161	0.009	18.319	0.000	1.670
RS -> Service Quality	0.120	0.011	10.439	0.000	2.219
TN -> Service Quality	0.121	0.014	8.448	0.000	1.662

### 4.3 Hypotheses Testing

Hypothesis testing was conducted using path coefficients, t-statistics, and p-values to assess the statistical significance of the relationships. A t-value above 1.96 and p-value below 0.05 indicate a significant relationship. The results confirm that all hypothesized relationships are statistically significant at  $p < 0.05$ , supporting the theoretical model.

**Table 7:** Hypothesis Testing

Hypothesis	Beta	SD	T-values	P values
Customer Satisfaction -> Customer Loyalty	0.491	0.041	11.918	0.000
Service Quality -> Customer Loyalty	0.390	0.038	10.394	0.000
Service Quality -> Customer Satisfaction	0.758	0.018	42.158	0.000
Service Quality -> Customer Satisfaction -> Customer Loyalty	0.372	0.033	11.256	0.000

The results in Table 7 above indicate that service quality has a direct and significant impact on customer loyalty (H1:  $\beta = 0.390$ ,  $t = 10.394$ ,  $p < 0.000$ ), suggesting that better service quality enhances customer loyalty. Furthermore, service quality significantly influences customer satisfaction (H2:  $\beta = 0.758$ ,  $t = 42.158$ ,  $p < 0.000$ ), reinforcing the idea that superior service enhances satisfaction levels. Additionally, customer satisfaction positively impacts customer loyalty which we require to further test for mediation effect ( $\beta = 0.491$ ,  $t = 11.918$ ,  $p < 0.000$ ), demonstrating that satisfied customers are more likely to remain loyal. Indirect effects of service quality on customer loyalty are examined to determine the role of customer satisfaction as mediation variable. The result reveals that indirect paths reach statistical significance ( $p < 0.000$ ) indicating that mediation effect is present in the model.

## 5. DISCUSSION

The findings of the study indicate that there is a positive influence of service quality on customer loyalty, consistent with previous studies (Agarwal & Dhingra, 2023; Alzaydi, 2023; Kusumanegara & Rachmawati, 2023). This result confirms that high service quality retains customers, reiterating the belief that satisfied customers stick with their service provider. Prior researchers such as Abdulwasiiu (2023) and Hossain et al. (2021) insist that service quality dimensions—reliability, responsiveness, assurance, attitude, etc.—are determining factors of customer loyalty. Similarly, the results from this study demonstrated a statistically significant and positive relationship between service quality and customer satisfaction, consistent with previous studies (Johnny & Ali, 2024; Khawaja et al., 2021). The findings are consistent with the well-known view that quality service leads to higher customer satisfaction especially in telecommunications sector.

These findings provide support to the theory that ensuring reliability, responsiveness and service quality from providers leads to higher satisfaction from customers, leading to loyalty and long-term engagement (Afifah & Kurniawati, 2021). Furthermore, the importance of network quality as a critical service quality dimension is gaining increasing recognition in recent research. Twum et al. (2023) found that network quality has a substantial influence on customer satisfaction, further validating this study results. This study corroborates that customers value seamless connectivity, high-speed internet, and minimal service disruptions, which are fundamental aspects influencing overall satisfaction with telecom services.

These findings are in accordance with the SERVQUAL framework which has been extensively used to measure service quality in numerous industries, including telecommunications (Raja Kamal et al., 2024). The importance of reliability and responsiveness in this study reflects the conclusions of Zhang et al. (2013) study. Likewise, with regards to the telecom sector of Ethiopia, Yum and Yoo (2023) found that among other service quality variables, responsive and reliability are the most essential ones for customer

retention. The significant role of reliability, responsiveness, assurance, and empathy in this study aligns with past research in different sectors, including e-commerce and telecommunications.

Prior studies found that network reliability and consistent service delivery are crucial in ensuring customer satisfaction, which is consistent with this study findings (Kusumanegara & Rachmawati, 2023; Tarkang et al., 2023). These scholars highlighted that dimensions such as tangibility, assurance, and reliability play a crucial role in customer retention, further validating the results of this study. Similarly, Al Ajaleen and Saadon (2023) found that responsiveness and reliability are strong predictors of loyalty in the Jordanian telecom sector, reinforcing the notion that customers appreciate service quality consistency.

The mediating role of customer satisfaction in the relationship between service quality and customer loyalty has been widely explored in marketing and service management literature. This study confirms the significant mediating effect of customer satisfaction in this relationship, indicating that high service quality enhances satisfaction, which in turn fosters stronger customer loyalty. The findings are in line with existing studies that highlight customer satisfaction as an essential intermediary in the service quality-loyalty nexus. For instance, Agarwal and Dhingra (2023) examined this relationship in the cloud service sector and found that customer satisfaction partially mediates the effect of service quality on loyalty, demonstrating that while service quality directly influences loyalty, the effect is significantly amplified when customers are satisfied with the service experience.

Similarly, Marcos and Coelho (2022) examined this relationship in the financial services sector and emphasized that although service quality directly affects customer loyalty, satisfaction acts as a key enabler that strengthens this connection. Customer satisfaction therefore plays an important mediating role within the telecommunications sector as services provided are chiefly intangible and intensely competitive in nature. Telecommunication service providers' ability to provide seamless connectivity, rapid service response, network assurance and other attributes behind the scenes are critical in delivering customer satisfaction that ultimately leads to loyalty.

## **5.1 Implications of Findings for Long-Term Industry Sustainability**

Beyond their theoretical contributions, the findings of this study offer important implications for the long-term sustainability of the telecommunications industry. By demonstrating that service quality—particularly dimensions such as reliability, responsiveness, assurance, and network quality—significantly enhances customer satisfaction and loyalty, the results highlight service quality as a strategic sustainability lever rather than merely an operational concern. Sustained customer loyalty reduces customer churn, lowers acquisition costs, and stabilizes revenue streams, thereby strengthening the financial sustainability of telecom service providers in highly competitive markets. Moreover, consistent network quality and reliable service delivery contribute to operational sustainability by minimizing service disruptions, complaint handling costs, and reputational risks. From a social sustainability perspective, improved service quality ensures equitable access to reliable communication services, which is critical for digital inclusion and long-term customer trust. Collectively, these findings suggest that telecom firms investing in continuous service quality improvement and customer-centric strategies are more likely to achieve economic resilience, operational efficiency, and sustained competitive advantage, thereby supporting the industry's long-term sustainability in an increasingly digital and service-driven environment.

## **5.2 Conclusion**

The present study examines the impact of service quality on customer loyalty through customer satisfaction among telecommunication users in Malaysia. The study finds that service quality measured with seven dimensions are significant contributing factor in retention customers. The results of the study strengthen the case for telecom service providers to focus their efforts on the efficiency of delivering service, reliability of underlying technology, and engagement with customers to maintain a competitive advantage. Telecommunication service providers must make incremental advancements in quality of service to provide enhanced service experience to customers for increased customer retention, loyalty and reduced churn rate.

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