



# ASSESSING THE EFFECT OF ONLINE BANKING SERVICE QUALITY ON CUSTOMER LOYALTY IN MALAYSIAN BANKING INDUSTRY: THE MEDIATING ROLE OF CUSTOMER SATISFACTION

<sup>1</sup>Noormajidah Nordin, <sup>2</sup>Selvan Perumal, <sup>3</sup>Maria Abdul Rahman

*School of Business Management, Universiti Utara Malaysia*

## ABSTRACT

DOI No: 10.36713/epra16504

Article DOI: <https://doi.org/10.36713/epra16504>

*Technological improvements have greatly transformed the modern banking business, specifically through the substantial expansion of online banking. Online banking represents an innovative information system consuming the creative resources of the Internet to facilitate access for bank customers to an increasing array of financial services. Understanding the importance of high-quality online banking services in promoting customer loyalty is necessary for remaining competitive and establishing success in this rapidly changing and competitive industry. In response to this fundamental change, the banking industry has used digital methods to improve the way services are provided and to increase customer satisfaction and loyalty. This paper aimed to evaluate the effect of online banking service quality on customer loyalty in the Malaysian context. A survey is conducted for this purpose and a sample of 268 respondents is chosen which includes males and females. A self-administered questionnaire is used for data collection. The study found significant factors affecting the adoption of online banking, involving convenience, website quality, privacy, and security. This study provides important advertising understanding for banking professionals involved in the development and implementation of online banking products. Furthermore, the study has ramifications for policymakers seeking ways to encourage an online environment by highlighting key issues that require careful attention.*

**KEYWORDS:** *Banking Industry in Malaysia, Loyalty, Online Banking Service Quality, Customer Satisfaction.*

## 1.0. INTRODUCTION

The worldwide banking sector has experienced significant transformations in recent years due to the rapid growth of internet-based technology. The transformation mentioned has profoundly changed the way organizations engage with their customers. As consequently, the banking industry has become an important sector that depends extensively on the Internet to provide online banking services to its customers (Azzam et al., 2021; Redda, 2023). Online banking is an electronic system enabling customers to perform financial transactions without visiting a physical bank branch, encompassing services conducted through the Internet, such as fund transfers, bill payments, and online investments (Aburrous et al., 2010; Jolly, 2016; Manoharan et al., 2022; Sathye, 1999). It operates through internet portals and can be accessed using devices such as smartphones, tablets,

and ATMs. This provides customers with the convenience of conducting transactions from any location (Abualrejal et al., 2022).

Online banking encompasses four essential services: monitoring transaction history and balances, making bill payments, managing traffic violation fines, and paying accommodation fees (Abualrejal et al., 2022). The advancement of technology has an enormous effect on different industries, particularly in banking. Online banking services provide greater convenience and faster financial transactions compared to old manual services.

Despite these advancements, effective bank management must prioritise customer satisfaction and develop loyalty. Currently, the corporate landscape places a growing importance on the online service quality and the loyalty of customers. Loyalty has

played an important part in determining the long-term achievement of a banking service provider during economic competition (Redda, 2023). If customers find the service, they receive to be satisfactory and meeting their expectations, they are likely to feel satisfied, trust the company, and build a strong sense of loyalty.

The significance of loyal customers is critical for all companies, particularly those in service-based businesses like banking, where maintaining strong customer relationships can be indicative of the general success of the organisation. When customers consider the service, they receive as excellent or matching their expectations, they will probably experience happiness, put trust in the firm, and develop a profound feeling of loyalty (Sleimi et al, 2020). Customer loyalty is an essential requirement for all companies, especially service-oriented industries such as banking. Good relationships with customers may act as an accurate indicator of a company's success (Saibil, 2020).

The main purpose of this paper is to assess the level of understanding within the banking sector about the effects of online banking service quality on customer loyalty in the Malaysian banking industry specifically in the Northern Region of Malaysia. The variables examined include convenience, website quality, privacy, and security. This report will involve an examination of the study, the methodology used, the findings obtained, and the conclusion made.

## 2.0. LITERATURE REVIEW

### 2.1. An overview of the banking industry in Malaysia

Malaysia's banking sector implemented online banking in June 2000, spearheaded by Maybank, the largest domestic commercial bank in the country. The industry comprises 26 commercial banks, of which 8 are domestically held and 18 are foreign-owned. These banks jointly cater to over 30 million customers (Bank Negara Malaysia, 2014). These banks, whether local or foreign, primarily provide standardized products and services, which in turn contribute to the advancement of today's infrastructure that generates revenue. Maybank, the leading domestic bank in terms of assets and distribution, was the pioneer in providing online banking services through their website at [www.maybank2u.com](http://www.maybank2u.com) (Bank Negara Malaysia, 2014). Their range of services comprised banking inquiries, account summaries, records of transactions, bill settlements, credit card repayments, and fund transfers.

Since June 2000, before receiving approval from the Malaysian Central Bank, several banks such as Hong Leong Bank, CIMB Bank, Alliance Bank, and Public Bank have implemented online

banking services (Raviadaran et al., 2019). Presently, nearly all local domestic banks provide online banking services. The anticipated outcome of this transformation is an achievement of cost efficiencies and growth prospects for banks, alongside the provision of focused on customer transactions, enhanced accessibility, and decreased expenditures on travel and parking (Raviadaran et al., 2019).

### 2.2. Loyalty

Kim et al. (2004) defined customer loyalty as a combination of customers' favourable attitudes toward services and repurchase intentions. Scholars believe customer loyalty is a competitive weapon for organisations (H. H. Al-Dmour et al., 2019). Loyalty is said to have two components, behavioural and attitudinal. Attitudinal loyalty can be defined as "a deeply held commitment to repurchase or patronize a preferred product/service consistently in the future, thereby causing repetitive same brand-set purchases despite situational influences and marketing efforts having the potential to cause switching behaviour", while behavioural loyalty is "an ongoing propensity to buy the brand, usually as one of several" (Oliver, 1999). Attitudinal loyalty is gauged by a commitment of a psychological nature to a company, product, or brand while behavioural loyalty concentrates on a gauge of the proportion of purchases of a particular brand (Hawkins & Vel, 2013; Redda, 2023).

(Anderson & Srinivasan, 2003) defined online loyalty as the repeated satisfaction of a customer with a specific e-commerce website that keeps them coming back to purchase products or services. Besides that, online loyalty refers to a consumer's intention to buy from an online site or the intention to purchase from a certain online site (Hur et al., 2011). In the banking sector, customer loyalty building requires more emphasis on the value of its products or services and maintaining a good relationship with the customer. According to (Aghdaie et al., 2015; Sasono et al., 2021) customer satisfaction and loyalty increase when system quality and information quality are remarkable in the banking industry.

A different approach should be used to build a loyal customer base rather than simply building a market share. During the past decade, the financial service sector has undergone drastic changes, resulting in a marketplace which is characterized by intense competition, little growth in primary demand, and increased deregulation. Furthermore, customer loyalty is said to be one of the ways to build a competitive

advantage and an important issue in the online banking debate to achieve higher profits (Lotko, 2022).

Several previous studies have stated that there is a significant relationship between online banking and customer satisfaction and loyalty (Amin, 2016). Meanwhile, customer loyalty and satisfaction increase when the quality of the information system is extraordinary in the banking industry (Aghdaie et al., 2015). Musiime and Ramadhan also found that there is a relationship that is directly proportional to customer loyalty and online banking (Chauhan, 2020).

### 2.3. Online Banking Service Quality

According to Gronroos (1984), electronic services can be described as acts, efforts, or performances that are supported by information technology, such as the web, information kiosks, and cellular handsets. The concept of service quality gained significant popularity in the early 1980s through the works of Gronroos (1984) and Lehtinen and Lehtinen (1982). Parasuraman et al. (1985) identified ten unique aspects of service quality, including reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangibles.

The dimensions of service quality are measured using a 22-item scale called "SERVQUAL" (Parasuraman et al., 1985). SERVQUAL is a method utilized to evaluate service quality in various service sectors, such as appliance repair and maintenance firms, retail banks, long-distance telephone providers, security brokers, and credit card companies. This approach involves evaluating service quality from multiple perspectives, which has led to the creation of a standardized scale that can be used to measure service quality through different types of service organizations (Parasuraman et al., 1985).

Nevertheless, these items have been reduced to five specific dimensions, namely reliability, assurance, tangibles, and empathy (Parasuraman, 1998). The idea of service quality is complicated, and scholarly data indicates that it is a construct with multiple dimensions (Buttle, 1996; Parasuraman et al., 1985; Parasuraman et al., 1988; Redda, 2023). According to Parasuraman et al. (1985), customers form their judgments of service quality by comparing their initial expectations of the service with their impressions after experiencing the actual service. The gap refers

to the difference between customers' expectations of a service and the actual performance of the service.

There is a growing body of studies focusing on service quality and customer satisfaction in the business sector. Several studies have identified a direct correlation between customer satisfaction and service quality (Afthanorhan et al. 2019; Aggarwal, 2019; Budianto, 2019; Phi & Huong, 2023; Tseng, 2019; Zameer et al. 2019). According to (Eryigit et al., 2021; Goutam et al., 2021; Goutam et al., 2018; Haudi et al., 2022) service quality was found to be a strong predictor of customer satisfaction. Research in different industries has investigated the relationship between service quality (dimension) and telecommunications customer satisfaction. Hospitals, hotel services, travel agents, and internet services (Mwiya et al., 2022).

Furthermore, in this paper, the phrase "online banking service quality" pertains to the customers' comprehensive evaluation and assessment of the excellence and quality of electronic service provisions accessible through the Internet platform (Redda, 2023). The importance of service quality is expanding in the modern banking business, with a growing focus on evaluating the benefits of improving this component (Elradi et al., 2017). This phenomenon is especially noticeable in various online banking services, where service quality plays a crucial role in increasing the probability of individuals using these services. The SERVQUAL scale was widely employed to determine the quality of service provided by online banking services (Namahoot & Laohavichien, 2018; Zafar et al., 2012).

The current competitive trend in the banking sector demonstrates that customer satisfaction increases the performance of a bank (Siddiqi, 2010). Therefore, commercial banks need to control the quality of their services regularly to satisfy customers better and to improve customer retention and thereby enhance their loyalty (Phi & Huong, 2023). To achieve a better level of service quality, bank managers develop services whose service quality is assured to increase customer satisfaction (Ladeira et al. 2016). Indeed, many studies found a positive relationship between service quality and satisfaction in the banking industry (Islam et al., 2021; Phi & Huong, 2023; Supriyanto et al. 2021).

There is a lack of knowledge regarding the factors that influence the connection between

satisfaction and service quality, indicating a need for more studies (Phi & Huong, 2023). Customer satisfaction is a broader concept than service quality, which only plays a partial role in it (Alan et al., 2016). There is a lack of knowledge on the factors that influence the relationship between satisfaction and service quality, which provides opportunities for further study (Phi & Huong, 2023). Besides there are other factors that contribute to customer satisfaction including service delivery and customer experience. However, it is currently argued that product and service quality will also affect customer satisfaction directly. In terms of service quality dimensions, automated banking has been found to affect customer satisfaction (Mwiya et al., 2022).

The study demonstrates a positive relationship between service quality and behavioural intentions to use, indicating that online banking services are vital for banks and customers want to take advantage of these services (Namahoot & Laohavichien, 2018). According to (Halim et al., 2023), establishing strong relationships between customers and financial institutions provides an incentive for customers to remain loyal. This, in turn, gives financial institutions a distinct advantage over their competitors. To preserve competition, companies must comprehend the importance of online banking service quality and its effect on consumer satisfaction (Kachalla, 2023). It is important to enhance the service quality of online banking services. Businesses typically depend on the quality of online banking services to achieve an ongoing competitive edge. In this paper, convenience, website quality, and privacy and security are three online banking quality variables that have been identified as influencing customers' intention to adopt online banking.

### 2.3.1. Convenience

In contemporary times, convenience is viewed as a significant determinant of customer service provision in electronic-based banks (Sathiyavany & Shivany, 2018). Studies have demonstrated that there is a strong correlation between convenience and service delivery, which plays an important part in the adoption of online banking (Sathiyavany & Shivany, 2018). Hence, it is established that convenience imposes a significant influence on the delivery of customer service. These findings are also consistent with other research findings conducted by Ali et al. (2016) & Aliyu et al. (2014). (Saibil, 2020) have demonstrated that online banking offers a greater level of convenience, allowing customers to access

banking services at any time and from anywhere in the world.

Customers persistently seek faster and more efficient methods to carry out their everyday duties. The primary cause for this is primarily attributed to limitations in both time and financial resources. This also applies when clients engage in their banking transactions. They constantly seek convenient methods; therefore, online banking provides the necessary convenience. Marketing and customer behaviour aspects, such as customer satisfaction, intention, and loyalty, have also been linked to convenience (Ali et al., 2016). Rowley (2005) observed that convenience can influence brand repetition and affection.

According to Ali et al. (2016) and Seiders et al. (2005), convenience plays a crucial role in determining whether a purchase would be repeated. Furthermore, as stated by Black et al. (2002), online banking providers who provide convenience services are successful in retaining customers, as customers feel no obligation to make immediate decisions and can conveniently carry out their daily banking tasks at any time and location. (Massilamany & Nadarajan, 2017) emphasised that time-saving and round-the-clock accessibility are crucial factors contributing to the ease of online banking services. These factors of convenience play an important part in the acceptance of online banking by facilitating ease of use.

Moreover, the level of serviceability has a strong positive correlation with consumer satisfaction when it comes to using online banking services. Customers prioritise convenience, comfort, and empathy when considering the adoption of online banking services. Convenience and comfort have been found to significantly impact consumer satisfaction, according to Ma (2012). Convenience has a positive influence on customer satisfaction, security and accessibility have a positive influence on customer satisfaction (Harb et al., 2022). Therefore, the hypothesis that can be proposed is:

H<sub>1</sub>: Convenience has a significant and positive effect on Satisfaction.

### 2.3.2. Website Quality

The term "website quality" describes how people perceive a website overall, taking into account its functionality, aesthetic value, ease of use, and design. Customers' degree of trust in an unknown online merchant may be impacted by this view (K. Souheila et al., 2016). The phrase "website quality" indicates the higher standard

that businesses can use to build consumer trust and relieve frequent worries about the safety of online transactions (Aladwani & Palvia, 2002). According to Susanto et al. (2013), system and information quality are both included in the concept of website quality.

Customer satisfaction can be attained by an online banking provider that efficiently provides customers with the best in terms of website quality, as stated by Casalo et al. (2008). The content displayed on online banking websites or applications is a significant determinant of online banking acceptability. Internet consumers will derive satisfaction from utilising technology that offers high-quality displays, design, and content on websites (Loonam & O'Loughlin, 2008).

The design of a website or application and its quality are important factors to consider when assessing the overall service quality (Hussien & Abd El Aziz, 2013; Amin, 2016; Ayo et al., 2016). To determine the preferences of their online customers, the first thing they do is to provide the best possible service and a well-designed website that caters to the specific requirements of the customer (Casalo et al., 2008). Customer satisfaction can be achieved by the online banking provider if they properly provide the optimal features their customers require, particularly in terms of website design quality (Iqbal, 2019). The content displayed on online banking websites or applications is a significant determinant of online banking acceptability (Indrasari et al., 2022).

Nevertheless, there is a scarcity of research papers that have examined the influence of website quality and service quality on subsequent online transactions. Furthermore, it is anticipated that online banking will possess a keen sensitivity to customer needs since satisfaction is an important factor that has been demonstrated to impact enduring relationships using retention (Susanto et al., 2013). In addition, Ting et al. (2016) utilized the E-SERVQUAL model to evaluate the correlation between website quality, satisfaction, and loyalty in the context of online buying. Researchers discovered that the quality of a website has significant effects on customer loyalty (Susanto et al., 2013). This correlation was noted in other industries, such as the banking and hospitality sectors. From the information presented, the following hypothesis has been proposed:

H<sub>2</sub>: Website Quality has a significant and positive effect on Satisfaction.

### 2.3.3. Privacy & Security

Privacy and security refer to the degree to which customers observe the website as resistant to hacking and safeguard personal information published on the platform (Shankar & Jebarajakirthy, 2019). Abualrejal et al. (2022) define security as the capacity to protect online banking customers from possible risks. Customer data and financial transactions are protected by this safety precaution. Abualrejal et al. (2022) found that customers' adoption of online banking services is mostly motivated by safety issues. Customers often display reluctance to embrace electronic business or technological services, such as online banking, due to apprehensions of potential interruptions to their private information.

When assessing service quality, it is important to take into account the factors of privacy and security, since they are significant dimensions (Amin, 2016; Ayo et al., 2016; Pahala et al., 2021; Ricardianto et al., 2022). The acceptance of online banking as a technological breakthrough relies heavily on the importance of security and privacy. Moreover, customers express enormous anxiety over the possible threat of identity theft and the declaration of personal information in the context of online banking (Mogos & Jamail, 2021). Their worry arises from the possibility of the bank breaching their privacy by using their information for marketing and other purposes without gaining the customer's consent.

People often feel considerable dissatisfaction when they receive phone calls soliciting credit cards or insurance offerings (Mahajan et al., 2022). Therefore, banks must pay attention to these feedbacks and embrace improvements, since they are the key factors that will directly influence customer satisfaction, as well as the reputation and performance of the banking institutions. Privacy has a significant influence on customer satisfaction (Harb et al., 2022). Based on the abovementioned literature review, the following hypotheses in this study are proposed:

H<sub>3</sub>: Privacy and Security have a significant and positive effect on Satisfaction.

### 2.4. Satisfaction

Satisfaction is described as an assessment of the user's mental state formed by combining emotions about the disconfirmed expectations with the user's earlier emotions about their experience of usage (Oliver, 1980). Satisfaction is the emotional response of pleasure or disappointment experienced by an individual

when comparing a product's real performance to their anticipated performance (Raza et al., 2019). Satisfaction in online banking service quality refers to how satisfied customers are with their past transaction experiences with a certain bank (Anderson and Srinivasan, 2003).

Consumer satisfaction is crucial for the performance of banks, and the introduction of online banking channels has significantly influenced and transformed the level of consumer satisfaction in the digital age (Harb et al., 2022). Customer satisfaction is positively correlated with banks that integrate payment services with their customer accounts and effectively resolve issues through online platforms or social media (Babrovich, 2017; Harb et al., 2022).

A study conducted on the factors affecting consumer satisfaction with online banking services in Thailand, analysing a sample of 310 respondents, reveals that customer satisfaction is influenced by their expectations regarding the quality and value of the service (Rompho & Unyathanakorn, 2014). A study conducted in Kenya examined how online banking affects customer satisfaction and found that the speed and reliability of online banking were deemed satisfactory. Customers claimed that transactions conducted on online Banking Channels were significantly faster than those done in physical branches. This study indicates that transaction speed has a beneficial impact on customer satisfaction (Harb et al., 2022).

Several research has presented empirical evidence showing that customer satisfaction is positively correlated with repurchase intention and customer loyalty (Amin, 2016; Esfidani, 2014; Eryiğit et al. 2021; Haudi et al., 2022; Kashif et al., 2015; Mwiya et al., 2022; Raza et al., 2020). Consistent customer satisfaction decreases transaction costs by reducing the need for customers to seek out other service providers. Customer satisfaction decreases perceived risk and fosters greater customer loyalty, serving as an effective barrier to competitor entry. As a consequence, this study hypothesises as follows:

H<sub>4</sub>: Satisfaction has a significant positive direct effect on Loyalty.

## 2.5. Customer satisfaction as a Mediator

Customer satisfaction is seen as a mediating factor between service quality and customer loyalty (Vinita Kaura & Sharma, 2015). According to (R. H. Al-Dmour & Al-Alwan, 2019), satisfaction is viewed as a mediator between service quality and loyalty. Studies indicate that enhancing online

services results in higher customer satisfaction (Vinita Kaura & Sharma, 2015). Increased satisfaction will result in customers making repeat purchases from the same bank and recommending its services to others through positive word-of-mouth. This will ultimately improve the loyalty of online customers. (Khan et al., 2023), discovered that higher-quality online banking services lead to satisfied customers, resulting in increased customer loyalty in online banking.

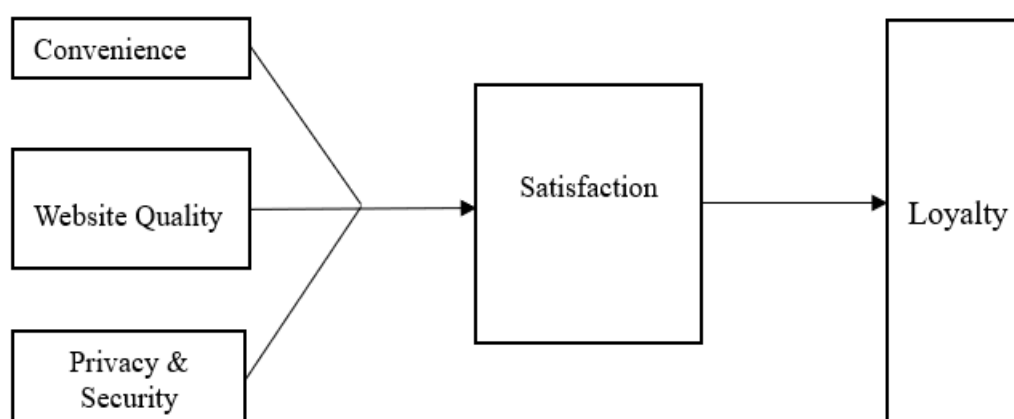
Marimon, et al., (2012) observed an important relationship between satisfaction and future purchasing intention. Satisfaction not only affects purchase behaviour but also enhances behavioural activities on the internet, such as viewing webpages and the duration spent on a webpage. Several scholars (R. H. Al-Dmour & Al-Alwan, 2019; Pizzutti and Fernandes, 2010; Rafiq et al., 2012) have noted that when it comes to online services, customer satisfaction fosters loyalty. They have also discovered that disgruntled customers are more likely to look for other options by researching and visiting other businesses, as well as to be reluctant to build a relationship with the company.

Additionally, an empirical study conducted by Redda, 2023. has shown that satisfaction acts as a mediator between service quality and loyalty in offline company settings (Redda, 2023). Other empirical investigations have also identified satisfaction as a mediator between service quality and loyalty in an electronic context (Redda, 2023; Sleimi et al., 2020). The study begins by describing the connection between online banking service quality, customer satisfaction, and loyalty. A mediated model will be used to explore this relationship in more detail. The study aims to establish and explain the relationship between the quality of online banking services and customer loyalty by introducing satisfaction as a mediating factor of the proposed framework. The study offers empirical evidence to help scholars and businesses enhance their comprehension of the complex linkages between service quality, satisfaction, and loyalty in online banking (Redda, 2023).

H<sub>5</sub>: Satisfaction mediates the relationship between Convenience and the Loyalty of banking customers

H<sub>6</sub>: Satisfaction mediates the relationship between Website Quality and the Loyalty of banking customers

H<sub>7</sub>: Satisfaction mediates the relationship between Privacy and Security and the Loyalty of banking customers



**Figure 1: Proposed Conceptual Framework**

### 3.0. METHODOLOGY

The subject for this paper was online banking customers in North Malaysia. The online banking customers mentioned can be online banking customers who access banking websites through computers (laptop or desktop), tablets, and mobiles. The quantitative method has been applied in this research study. Respondents were randomly selected to answer the questionnaire questions. A sample of 268 online banking customers considerably represents the total population of online banking customers in North Malaysia. The questionnaire was distributed online using WhatsApp, Telegram, and Facebook in the form of Google Forms respondents. The data have been coded to the SPSS program in the form of the data derived from surveys to analyse the information easily. The questionnaire contains two sections namely Section A and Section B. Sections A, briefly covers questions on demographic variables and

statistics on respondent's online banking services. Whereas Section B is inclusive of five subsections with their measurements. The study's variables were derived from prior studies. Convenience, website quality, privacy and security, satisfaction, and loyalty were each analysed using items adapted from specific sources: Poon (2008), Aladwani & Palvia (2002), Casaló et al. (2007), Setiady et al. (2018), and Yee & Faziharudean (2010) respectively.

### 4.0. RESULTS

268 participants with online banking expertise were selected to complete the questionnaire for this study. This research utilised SPSS 27 for statistical data analysis. The reporting process begins with the reliability test and is subsequently followed by the correlation analysis. The subsequent paragraphs go into the detailed multiple and hierarchical regression analysis of each hypothesis.

**Table 1: Reliability of Scales**

Variable	Number of Items	Cronbach alpha
Loyalty	5	0.975
Satisfaction	5	0.978
Website Quality	7	0.975
Privacy & Security	10	0.976
Convenience	5	0.969
Total Item	32	

The results of Cronbach's Alpha for the study variables are presented in Table 1. The Cronbach's Alpha coefficients for loyalty, satisfaction, website quality, privacy and security, and convenience were found to be 0.975, 0.978, 0.975, 0.976, and 0.969, respectively,

all beyond the acceptable level of 0.7. It demonstrates a high level of reliability, and the reliability test has been completed.

**Table 2: The Result of Correlation Analysis**  
*Pearson correlations between independent and dependent variables*

	C	WQ	PS	S	L
Convenience (C)	1				
Website Quality (WQ)	.872**	1			
Privacy & Security (PS)	.842**	.870**	1		
Satisfaction (S)	.849**	.845**	.858**	1	
Loyalty (L)	.828**	.792**	.816**	.876**	1

\*\* Correlation is significant at the 0.01 level (2-tailed)

the strongest relationship is between satisfaction and loyalty, 0.876 and the lowest is between privacy and security and loyalty, 0.792.

**Table 3: The Result of Regression Analysis**

R	R Square	Adjusted R Squared	Standard Error of Estimate	Durbin Watson
.893 <sup>a</sup>	.798	.794	.462	1.373

a. Predictors: (Constant), SATISFACTION, WEBSITE\_QUALITY, CONVENIENCE, PRIVACY\_AND\_SECURITY

b. Dependent Variable: LOYALTY

From the summary table of the model above, four independent variables namely convenience, website quality, privacy & security and satisfaction indicate that collectively they affect 79 percent of the variance (R square / (R<sup>2</sup>) coefficient of determination). This indicates that convenience, website quality, privacy & security and satisfaction variables predict 79 percent

of the loyalty model as a set of predictors and the remaining 21 percent is contributed by other factors not included in the study. Overall, the loyalty confirms that the variables of convenience, website quality, privacy & security and satisfaction affect 79 percent of loyalty of online banking customers.

**Table 4: Multiple Regression Analysis for H<sub>1</sub>, H<sub>2</sub> & H<sub>3</sub>**

Variables	Standardize Coefficients Beta	T	Sig
Convenience	0.849	26.224	0.000
Website Quality	0.845	25.791	0.000
Privacy & Security	0.858	27.250	0.000

Dependent Variables: Satisfaction

From the above Tables it can be concluded that convenience ( $\beta = 0.849$ ,  $t = 26.224$ ,  $p = 0.000$ ), website quality ( $\beta = 0.845$ ,  $t = 25.791$ ,  $p = 0.000$ ) and privacy & security ( $\beta = 0.858$ ,  $t = 27.250$ ,  $p = 0.000$ ) have a significant positive relationship with satisfaction. These results supported the hypotheses H<sub>1</sub>, H<sub>2</sub>, and H<sub>3</sub> which stated, 'convenience has a significant and positive effect on satisfaction', 'website quality has a significant and positive effect on satisfaction' and 'privacy & security has a significant and positive effect on satisfaction, respectively. The analyses also show the predictors; convenience, website quality and privacy & security accounted for 80 percent of the variance in satisfaction ( $R^2 = .800$ ,  $F = 351.15$ ,  $p <$

.000). Cohen (1988) classified R<sup>2</sup> into three; 0.02 as weak, 0.13 moderate, and 0.26 as substantial. Based on this classification, the value of R<sup>2</sup> (.800) in this study is considered substantial. The coefficients for convenience, website quality and privacy & security were positive. However, privacy & security had more predictive value ( $\beta = .858$ ,  $t = 27.25$ ,  $p < 0.00$ ) compared to convenience ( $\beta = .849$ ,  $t = 26.224$ ,  $p < 0.000$ ) and website quality convenience ( $\beta = .845$ ,  $t = 25.791$ ,  $p < 0.000$ ). The findings indicate that a change in convenience results in .849 change in satisfaction, while change in website quality results in .845 change in satisfaction and a change in privacy & security results in .858 changes in satisfaction.

**Table 5: Multiple Regression Analysis (IV, MV to DV) – H<sub>4</sub>**

Variables	Standardize Coefficients Beta	T	Sig
Satisfaction	0.876	29.661	0.000

Dependent Variables: Loyalty

From the above Table 5 it can be concluded that satisfaction ( $\beta = 0.876$ ,  $t = 29.661$ ,  $p = 0.000$ ), has a significant positive relationship with loyalty. Thus, H<sub>4</sub> is supported.

#### Mediation Result

To test Hypothesis 5, 6, and 7, Baron and Kenny's (1986) three conditions for mediation must be met; First, the independent variable must be significantly



related to the mediator (Path a). Second, the mediator must be shown to be significantly related to the dependent variable (Path b), and third, the independent

variable should be significantly related to the dependent variable (Path c).

### Result of Satisfaction on the relationship between convenience and loyalty - H<sub>5</sub>

Multiple Regression Analysis (IV to MV) – Step 1 Baron & Kenny

Variables	Standardize Coefficients Beta	T	Sig
Convenience	0.849	26.224	0.000
Website Quality	0.845	25.791	0.000
Privacy & Security	0.858	27.250	0.000

Dependent Variables: Satisfaction

Multiple Regression Analysis (IV, MV to DV) – Step 2 & 3 Baron & Kenny

Variables	Standardize Coefficients Beta	T	Sig
Convenience	0.828	24.110	0.000
Website Quality	0.792	21.187	0.000
Privacy & Security	0.816	23.009	0.000
Satisfaction	0.876	29.661	0.000

Dependent Variables: Loyalty

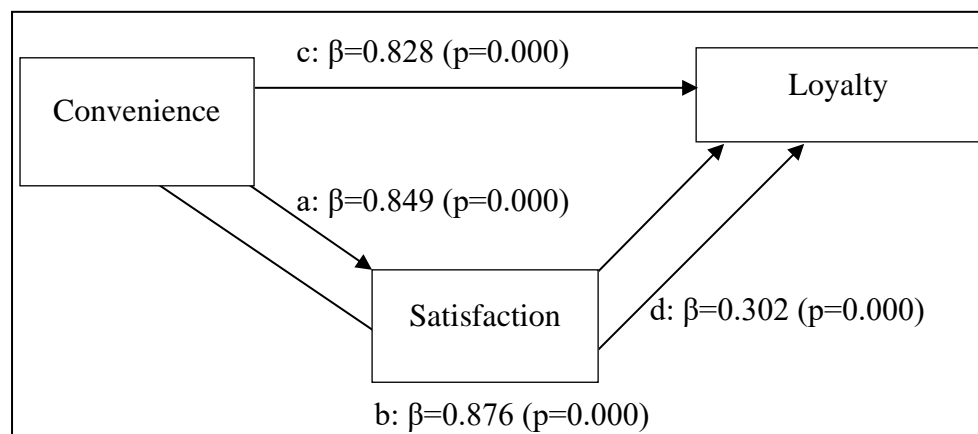
Hierarchical Regression for H<sub>5</sub> (IV – MV- DV) - Step 4 Baron & Kenny

Independent Variables	Standardized Coefficients Beta	T	Sig
Convenience	0.828	24.110	0.000
Convenience	0.302	5.707	0.000
Satisfaction	0.620	11.722	0.000

Dependent Variable: Loyalty

**Table 6: Result of Satisfaction on the relationship between convenience and loyalty**

Significant Relation of Variables	Beta coefficient in regression5 (DV on IV)	Beta coefficient in regression (DV on IV and MV)	Result
Convenience	0.828 (p=0.000)	0.302 (p=0.000)	Partial mediation
Satisfaction	0.876 (p=0.000)	0.620 (p=0.000)	



First Path a (convenience to satisfaction) was assessed through regression analysis and revealed a significant relationship ( $\beta = .849$ ,  $t = 26.224$ ,  $p < 0.000$ ). Next Path

b (satisfaction to loyalty) was assessed and found significant ( $\beta = .876$ ,  $t = 11.722$ ,  $p < 0.000$ ). Then Path c (convenience to loyalty) was assessed through

regression analysis and was found significantly supported ( $\beta = .828$ ,  $t = 24.110$ ,  $p < 0.000$ ). Finally, Path 'c' was assessed for complete mediation by controlling Path 'a' and Path 'The hierarchical regression analysis revealed the relationship between

convenience and loyalty was still significant ( $\beta = .302$ ,  $t = 5.707$ ,  $p < 0.000$ ) but with a reduced beta value. Thus, it can be concluded that partial mediation had occurred in this relationship and **H<sub>5</sub>** is supported.

#### Result of Satisfaction on the relationship between Website Quality and Loyalty – H<sub>6</sub>

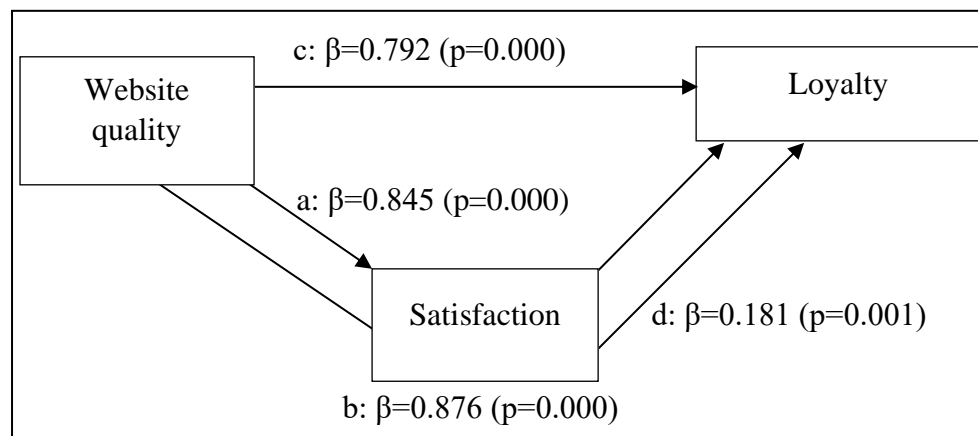
*Hierarchical Regression for H<sub>6</sub> (IV – MV- DV) - Step 4 Baron & Kenny*

Independent Variables	Standardized Coefficients Beta	T	Sig
Website Quality	0.792	21.187	0.000
Website Quality	0.181	3.343	0.001
Satisfaction	0.723	13.328	0.000

*Dependent Variable: Loyalty*

**Table 7: Result of Satisfaction on the relationship between Website Quality and Loyalty- H<sub>6</sub>**

Significant Relation of Variables	Beta coefficient in regression (DV on IV)	Beta coefficient in regression (DV on IV and MV)	Result
Website quality	0.792 ( $p = 0.000$ )	0.181 ( $p = 0.001$ )	Partial mediation
Satisfaction	0.876 ( $p = 0.000$ )	0.723 ( $p = 0.000$ )	



First Path a (website quality to satisfaction) was assessed through regression analysis and revealed a significant relationship ( $\beta = .845$ ,  $t = 25.791$ ,  $p < 0.000$ ). Next Path b (satisfaction to loyalty) was assessed and found significant ( $\beta = .876$ ,  $t = 13.328$ ,  $p < 0.000$ ). Then Path c (website quality to loyalty) was assessed through regression analysis and was found significantly supported ( $\beta = .792$ ,  $t = 21.187$ ,  $p < 0.000$ ).

Finally, Path 'c' was assessed for complete mediation by controlling Path 'a' and Path 'The hierarchical regression analysis revealed the relationship between convenience and loyalty was still significant ( $\beta = .181$ ,  $t = 3.343$ ,  $p < 0.000$ ) but with a reduced beta value. Thus, it can be concluded that partial mediation had occurred in this relationship and **H<sub>6</sub>** is supported.

#### Result of Satisfaction on the relationship between Privacy & Security and Loyalty – H<sub>7</sub>

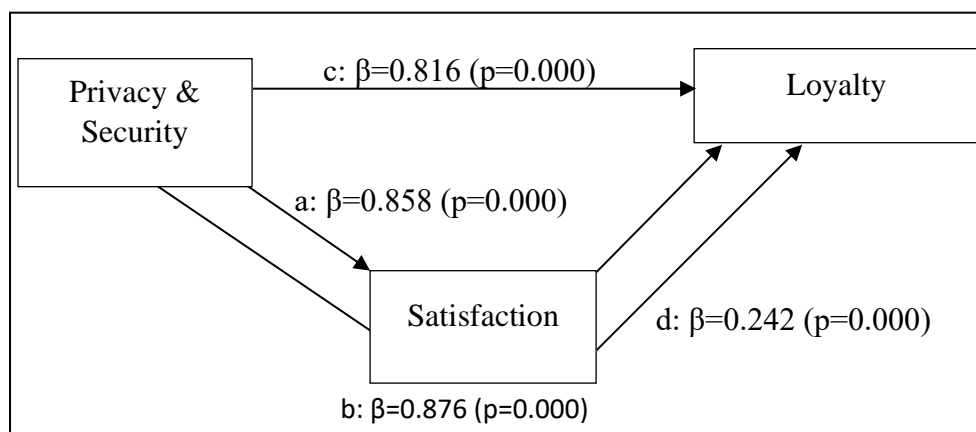
*Hierarchical Regression for H<sub>7</sub> (IV – MV- DV) - Step 4 Baron & Kenny*

Independent Variables	Standardized Coefficients Beta	T	Sig
Privacy & Security	0.816	23.009	0.000
Privacy & Security	0.242	3.323	0.000
Satisfaction	0.668	12.002	0.000

*Dependent Variable: Loyalty*

**Table 8: Result of Satisfaction on the relationship between Privacy & Security and Loyalty – H<sub>7</sub>**

Significant Relation of Variables	Beta coefficient in regression (DV on IV)	Beta coefficient in regression (DV on IV and MV)	Result
Privacy & Security	0.816 (p=0.000)	0.242 (p=0.000)	Partial mediation
Satisfaction	0.876 (p=0.000)	0.668 (p=0.000)	



First Path a (privacy & security to satisfaction) was assessed through regression analysis and revealed a significant relationship ( $\beta = .858$ ,  $t = 27.250$ ,  $p < 0.000$ ). Next Path b (satisfaction to loyalty) was assessed and found significant ( $\beta = .876$ ,  $t = 12.002$ ,  $p < 0.000$ ). Then Path c (privacy & security to loyalty) was assessed through regression analysis and was found significantly supported ( $\beta = .816$ ,  $t = 23.009$ ,

$p < 0.000$ ). Finally, Path 'c' was assessed for complete mediation by controlling Path 'a' and Path 'The hierarchical regression analysis revealed the relationship between convenience and loyalty was still significant ( $\beta = .242$ ,  $t = 3.323$ ,  $p < 0.000$ ) but with a reduced beta value. Thus, it can be concluded that partial mediation had occurred in this relationship and H<sub>7</sub> is supported.

**Table 9: Results Summary for the Hypotheses Tested**

No.	Hypothesis	Result
1.	Convenience has a significant and positive effect on Satisfaction.	Supported
2.	Website Quality has a significant and positive effect on Satisfaction	Supported
3.	Privacy and Security have a significant and positive effect on Satisfaction.	Supported
4.	Satisfaction has significant and positive direct effect on Loyalty.	Supported
5.	Satisfaction mediates the relationship between Convenience and the Loyalty of banking customers.	Supported (partial mediator)
6.	Satisfaction mediates the relationship between Website Quality and the Loyalty of banking customers.	Supported (partial mediator)
7.	Satisfaction mediates the relationship between Privacy and Security and the Loyalty of banking customers.	Supported (partial mediator)

## 5.0. DISCUSSION

This section will explain the proposed hypotheses based on the research findings. The objective of this study was to gain a deeper understanding of the factors that affect customer loyalty towards online banking services among customers of commercial banks in North Malaysia. The study's literature assessment and findings indicate that convenience, privacy and security, and website quality in online banking services have a significant positive effect on customer loyalty in the banking sector. The results are aligned with previous studies in the banking industry in other countries that were found by previous studies, for

example, with the results from the study done in Bangladesh by Karim (2019)

Based on the findings, it can be indicated that customers recognise the importance of online banking as both individuals and banks adapt to keep pace with current technology and the digital environment. Banks may enhance customer loyalty by prioritising convenience, privacy and security, and website quality in their online banking services. The study's findings can serve as a reference point for banks that provide online banking services, such as Maybank, CIMB, BIMB, RHB, Public Bank, and others. This study offers an understanding of enhancing customer loyalty

in online banking, perhaps contributing to a bank's performance.

## 6.0.CONCLUSION

Despite the current era of technological advancement and the rapid expansion of the Internet, online banking services have become necessary for conducting daily banking operation. This study's significant contribution is its potential as a guiding tool for government officials and policymakers to enhance banks, especially local banks in Malaysia, by addressing online banking service quality comprehensively. Future research should address additional characteristics of online service quality, such as reliability, personal demands, and mediators and moderators.

Ensuring website security is crucial for encouraging customers to use online banking and fostering loyalty. The banking sector must clearly show a commitment to security. Banking industries need to implement strategies to reduce online fraud to attract a broader customer demographic, regardless of age, gender, education level, or income. Banks have organised awareness initiatives to instruct customers on managing and safeguarding themselves from privacy and security concerns. Customers need to use precaution and avoid sharing their password, username, and account number with any third party to reduce risk and improve satisfaction, which could foster loyalty to the institutions. Last but not least, the bank must take into account the millions of dollars invested in the internet banking system. It is crucial to ensure customers utilise it and obtain satisfaction. Attention must be focused on improving the user-friendly system.

## REFERENCES

1. Aburrous, M., Hossain, M.A., Dahal, K. and Thabtah, F. (2010), "Experimental case studies for investigating e-banking phishing techniques and attack strategies", *Cognitive Computation*, Vol. 2 No. 3, pp. 242-253, doi: 10.1007/s12559-010-9042-7
2. Abualrejal, H. M., Shahirahmat, R., Al-Ormuza, T. K., Mohamad, M., Almazroi, A. A., & Kafi, M. A. (2022). Factors Affecting Online Banking Adoption among Students During COVID-19: Case of Universiti Utara Malaysia-UUM. *International Conference on Intelligent Technology, System and Service for Internet of Everything, ITSS-IoE 2022*, 1-4. <https://doi.org/10.1109/ITSS-IoE56359.2022.9990959>
3. Al-Dmour, H. H., Ali, W. K., & Al-Dmour, R. H. (2019). *The Relationship Between Customer Engagement, Satisfaction, and Loyalty*. 10(2), 35-60. <https://doi.org/10.4018/IJCRMM.2019040103>
4. Al-Dmour, R. H., & Al-Alwan, A. (2019). *The Mediating Role of E-Satisfaction on the Relationship between E-Service Quality and Customer E-Loyalty in Internet Banking*. *Jordan Journal of Business Administration*, 15(2), 209-226.
5. Aladwani, A. M., & Palvia, P. C. (2002). *Developing and validating an instrument for measuring user-perceived web quality*. *Information and Management*, 39(6), 467-476. [https://doi.org/10.1016/S0378-7206\(01\)00113-6](https://doi.org/10.1016/S0378-7206(01)00113-6)
6. Anderson, R. E., & Srinivasan, S. S. (2003). *E-Satisfaction and E-Loyalty: A Contingency Framework*. *Psychology and Marketing*, 20(2), 123-138. <https://doi.org/10.1002/mar.10063>
7. Azzam, Z., Ali, M. W., LShaikh, M., Khanfar, I., & Ismai, A. R. (2021). *Factors affecting the use of electronic banking services provided by Jordanian commercial banks from customers' point of view. A case study: Jordan Ahli Bank in Northern Region/Jordan*. 2021 22nd International Arab Conference on Information Technology, ACIT 2021, 1-12. <https://doi.org/10.1109/ACIT53391.2021.9677295>
8. Casalo, L. V., Flavián, C., & Guinalíu, M. (2007). *The role of security, privacy, usability and reputation in the development of online banking*. *Online Information Review*, 31(5), 583-603. <https://doi.org/10.1108/14684520710832315>
9. Chauhan, K. and D. V. (2020). *Role of E-Banking in Building Customer Loyalty: An approach to*. 30, 3261-3272.
10. Elradi, M., Abdullah, R., Jusoh, Y. Y., & Jabar, M. A. (2017). *Internet Banking Service Quality in Malaysia: An Empirical Investigation*. *Journal of Telecommunication, Electronic and Computer Engineering*, 9(3-4 Special Issue), 151-156.
11. Harb, A., Thoumy, M., & Yazbeck, M. (2022). *Customer satisfaction with digital banking channels in times of uncertainty*. *Banks and Bank Systems*, 17(3), 27-37. [https://doi.org/10.21511/bbs.17\(3\).2022.03](https://doi.org/10.21511/bbs.17(3).2022.03)
12. Kachalla, B. (2023). *EFFECT OF SERVICE QUALITY ON CUSTOMER School of Business Studies Federal Polytechnic Damaturu, Yobe State Tertiary Education Trust Fund (TET Fund) Sponsored Study*. 3(4), 68-87.
13. Khan, F. N., Arshad, M. U., & Munir, M. (2023). *Impact of e-service quality on e-loyalty of online banking customers in Pakistan during the Covid-19 pandemic: mediating role of e-satisfaction*. *Future Business Journal*, 9(1). <https://doi.org/10.1186/s43093-023-00201-8>
14. Lotko, A. (2022). *The Influence of the Quality of Internet Banking Services on Customer Loyalty*. In *European Research Studies Journal*: Vol. XXV.
15. Mahajan, R., Kumar, V., & Malati, N. (2022). *Investigation of Customer Satisfaction in online banking services through Electronic Service Quality*. In *International Journal of Early Childhood Special Education (INT-JECS)* (Vol. 14).
16. Manoharan, S., Katuk, N., Hassan, S., & Ahmad, R. (2022). *To click or not to click the link: the factors influencing internet banking users' intention in responding to phishing emails*. *Information and Computer Security*, 30(1), 37-62. <https://doi.org/10.1108/ICS-04-2021-0046>
17. Mwiya, B., Katai, M., Bwalya, J., Kayekesi, M., Kaonga, S., Kasanda, E., Munyonzwe, C., Kaulungombe, B., Sakala, E., Muyenga, A., & Mwenya, D. (2022). *Examining the effects of*

- electronic service quality on online banking customer satisfaction: Evidence from Zambia. *Cogent Business and Management*, 9(1).  
<https://doi.org/10.1080/23311975.2022.2143017>
18. Namahoot, K. S., & Laohavichien, T. (2018). Assessing the intentions to use internet banking: The role of perceived risk and trust as mediating factors. *International Journal of Bank Marketing*, 36(2), 256–276.  
<https://doi.org/10.1108/IJBM-11-2016-0159>
19. Oliver, R. L. (1999). Whence Consumer Loyalty? *Journal of Marketing*, 63(special issue), 33.  
<https://doi.org/10.2307/1252099>
20. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of services quality and its implications for future research. *American Marketing Association*, 49(4), 41–50.  
<https://doi.org/10.2307/1251430>
21. Phi, H. D., & Huong, D. P. (2023). Effect of Service Quality on Customer Loyalty: the Mediation of Customer Satisfaction, and Corporate Reputation in Banking Industry. *Eurasian Journal of Business and Management*, 11(1), 1–16.  
<https://doi.org/10.15604/ejbm.2023.11.01.001>
22. Poon, W.-C. (2008). Users' adoption of e-banking services: the Malaysian perspective. *Journal of Business & Industrial Marketing*, 23(1), 59–69.  
<https://doi.org/10.1108/08858620810841498>
23. Raviadaran, H., Dastane, O., Yusnorizam, M., Arif, M. ', Safie, N., & Satar, M. (2019). Impact of Service Quality Dimensions on Internet Banking Adoption, Satisfaction and Patronage. *International Journal of Management, Accounting and Economics*, 6(10), 709–730. [www.ijmae.com](http://www.ijmae.com)
24. Raza, S. A., Umer, A., Qureshi, M. A., Dahri, A. S., Ighomereho, O. S., Afolabi, T. S., Oluwakoya, A. O., Mir, R. A., Rameez, R., Tahir, N., Nasri, W., Alarifi, A. A., Husain, K. S., Mahrakani, N., Shammot, M. M., Nusairat, N. M., Zamil, A. M. A., Areiqat, A. Y., Adiandari, A. M., ... Das, S. (2019). Internet banking service quality, e-customer satisfaction and loyalty: the modified e-SERVQUAL model. *TQM Journal*, 34(3), 352–362. <https://doi.org/10.1108/TQM-02-2020-0019>
25. Redda, E. H. (2023). E-banking quality and customer loyalty: The mediating role of customer satisfaction. *Banks and Bank Systems*, 18(2), 177–188.  
[https://doi.org/10.21511/bbs.18\(2\).2023.15](https://doi.org/10.21511/bbs.18(2).2023.15)
26. Saibil. (2020). Does the banking information system affect customer satisfaction and loyalty? *Journal Ekonomi Dan Bisnis*, December 2020, 353–364.
27. Sasono, I., Jubaedi, A. D., Novitasari, D., Wiyono, N., Riyanto, R., Oktabrianto, O., Jainuri, J., & Waruwu, H. (2021). The Impact of E-Service Quality and Satisfaction on Customer Loyalty: Empirical Evidence from Internet Banking Users in Indonesia. *Journal of Asian Finance, Economics and Business*, 8(4), 465–473.  
<https://doi.org/10.13106/jafeb.2021.vol8.no4.0465>
28. Setiady et al. (2018). Impact of Servqual Development on Corporate Image and Impact of Servqual Development on Corporate Image and Customer Satisfaction To Build Customer. *International Journal of Novel Research in Marketing Management and Economics*, 5(July), 65–80.
29. Sleimi et al. (2020). E-Banking services quality and customer loyalty : The moderating effect of customer service satisfaction : Empirical evidence from the UAE banking sector. *Management Science*, 10, 3663–3674.  
<https://doi.org/10.5267/j.msl.2020.6.027>
30. Vinita Kaura, C. S. D. P. and S. S., & Sharma, V. K. C. S. D. P. S. (2015). service quality, service convenience, price and fairness, customer loyalty, and the mediating role of customer satisfaction. *Service Quality, Service Convenience, Price and Fairness, Customer Loyalty, and the Mediating Role of Customer Satisfaction*, 33(4), 404–422.  
<https://doi.org/doi.org/10.1108/IJQRM-05-2013-0075>
31. Yee, B., & Faziharudean, T. M. (2010). Factors Affecting Customer Loyalty of Using Internet Banking in Malaysia. *Journal of Electronic Banking Systems*, 2010, 1–22. <https://doi.org/10.5171/2010.592297>
32. Zafar, M., Zafar, S., Asif, A., Hunjra, A.I. and Ahmad, H.M. (2012), "Service quality, customer satisfaction and loyalty: an empirical analysis of banking sector in Pakistan", *Information Management and Business Review*, Vol. 4 No. 3, pp. 159-167.