

The Effect of Digital Banking Service Quality on Customer Loyalty: A Case of Malaysian Commercial Banks

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Article Received: 07 October 2019

Article Accepted: 19 January 2020

Article Published: 11 February 2020

ABSTRACT

This research paper is conducted to investigate the relationship between digital banking service quality and loyalty in Malaysia. Specifically, the study examined the digital service quality factors that affects customer loyalty. The study employed a quantitative research approach with a planned data collection and analysis using correlational survey design. A developed and validated questionnaire was used to collect data from the sample of 384 participants selected from the 5 major commercial banks (Maybank, Hong Long Bank, CIMB Bank, RHB Bank and Muamalat). The data collected were analysed using Partial Least Square Structural Equation Modeling (PLS-SEM) using SmartPLS software. Measurement and structural model were assessed with all adequate validity and reliability evidences. The findings revealed that, reliability, tangibility, responsiveness, empathy and assurance has a positive influence on customer loyalty (P-value 0.05). In line with the findings and discussions, the study recommends among others that, the regulatory bodies responsible for regulating financial regulations in Malaysia should provide a standard guideline and encourage all banks in the country to properly implement an improved digital services quality.

Keywords: E-banking, Digital service, Customer loyalty, Customer satisfaction and Malaysian Commercial Banks.

1. INTRODUCTION

The banking industry in Malaysia has demonstrated vigour fundamentally because of government bolster and strict controls established by the central bank. Banking industry is a standout amongst the most difficult and flourishing division of the economy. Regardless of the financial mash over the globe, the banking industry has indicated colossal development in the previous decade. In Malaysia there are 27 commercial banks (8 nearby and 19 foreign banks), 18 Islamic banks, and 11 venture banks working in the nation (BNM, 2017). Customer loyalty speaks to a cutting edge approach for service quality in banks and serves the advancement of a genuinely customer centred service and culture. Estimating consumer loyalty offers a quick, important and target input about customers' inclinations and desires. Along these lines, bank's performance might be assessed in relationship to a lot of loyalty measurements that demonstrate the solid and the feeble purposes of banking service (Mihelis, et al., 2001). Given the high components in this field and the necessity for brisk, by compelling authoritative answers, any academic bits of information on the impact of managerial measures in the computerized banking field will be significantly extraordinarily (Gomber et al., 2017).

Commercial banks ought to progressively receive measures that make the utilization of the most recent banking innovative advancements increasingly routine for the customers, such as, enabling customers to apply for advance through web banking mode as it were. Albeit a portion of the previously mentioned practices have been started by numerous banks by and by, yet these practices ought to be thoroughly utilized by the banks so as to upgrade the individual demeanour of the customers towards technology reception with basic spotlight on improving their esteem discernment (Magotra, 2018). In contrast to other budgetary organizations, commercial bank should completely agree to enactment. (Aisyah, 2018) consequently in everything works on; including the service quality offered by commercial bank should likewise appropriate to commercial standards and qualities. Instead of applying

a regular estimation of service quality, this study will reveal insight into estimation of banks' service quality. The exponential transformation brought by emerging technologies have put the banking sector in a tight corner to adapt to these recurring changes to their clients and as well retain their loyalty.

In Malaysia, the challenges faced by financial institutions, especially in the banking sector, have resulted in more burdens to these banks in developing various strategies to attract huge number of customers and again win their heart (Tadic et al., 2018).

Customers are serving to more flexible where the trendy digital are the preferred method and hat in for market when transactions are easily performed with another bank or another provider (Asian Banking and Finance Retail Banking Forum 2017). They emphasised that in all digital lot of Malaysian banks weather decreasing customer loyalty as fintech booms money has been spend by banks on loyalty programs, but not all of them yield the exacted return. Therefore, the main objective of this research work is to examine what digital service quality factors positively affect customer loyalty.

2. LITERATURE REVIEW

The central bank of Malaysia has opened its banking area ways to foreign banks. Throughout the most recent couple of years, the quantity of foreign banks and their branches working in Malaysia has expanded after some time. Section of outside banks has made Malaysian banking focused and presented incredible difficulties to banks working in Malaysia on the financial performance as well as on gifted staff, inventive products, and service quality and consumer satisfaction. Then again, the expanding rivalry likewise prompts rising requests and desire for customers. As the quantity of banks builds, the customers can pick their financiers that offer better quality services. Consequently, these two sorts of banks are putting forth new as well as inventive products and services at ordinary interims to satisfy customers. Given this expansionary pattern of banks, it is reasonable for acknowledge that every one of these progressions have some effect on service quality and consumer satisfaction's and loyalty, that was found in Universal Journal of Bank Marketing (Moghavvemi, 2018).

Malaysian financial system and its competitiveness (Bank Negara Malaysia, 2012) throughout this period, the financial landscape experienced better institutional capacity building, improved financial infrastructure development, regulatory reforms, greater usage of technology and efficient delivery channels. In the recent move, Bank Negara Malaysia has expressed that the next phase of transformation will involve a financial ecosystem that heightens the competitiveness and vigour of the financial sector. Under the Financial Sector Blueprint (2011–2020), Bank Negara Malaysia envisages the banking sector growing to three times the gross domestic product by 2020, while the financial sector contribution to GDP is projected to be between 10% and 12% (Bank Negara Malaysia, 2012). Based on the above discussion, it seems pertinent to assess the performance of digital banking service quality and customer's satisfactions for commercial banks in Malaysia (Hadid at al., 2020).

According to Auka, Bosire, and Matern, 2013 service quality is one of the critical success factors that influence the competitiveness of a service organization. A bank can differentiate itself from competitors by providing quality service. Otherwise customer will not hold or purchase service products from the bank. If the bank ensures the

service quality, then the customer will be loyal to the bank to take the service. Customers feel secured when they get quality service. As a result, the main duty of the bank is to ensure the quality services to the prospective customers. Researchers have proven that providing good service quality to customers.

2.1. Underpinning Theory

2.1.1 Theory Related with Digital Banking Service Quality (DBSQ)

As of late, service quality has appeared more prominent consideration in commercial explore because of its job as a standout amongst the most essential factor that can build banks focused position. The term service quality methods how banks customer's desires are accommodating with conveyed service (Al-Hawary et al., 2017), as indicated by (Ma and Zhao, 2012) service quality can be characterized as a judgment of customers over a bank's performance; it tends to be fantastic, prevalence or negative. Thus, banks endeavour to create and keep up amazing service quality for their customers to hold and make them faithful to the banks. In the event that the service quality is unprecedented, the customer would purchase a similar service, however in the event that a bank can't convey great support of their customers, it would lead negative effect on commercial due to unfavourable word of mouth (Ma and Zhao, 2012). Therefore, the contender would have the capacity to create amazing and high service to catch those customers and exploit decreased service nature of different banks. Service quality is the contrast between what an association gives to their customers and what customer anticipates from an organization. There are a few scales created by various researchers. For instance, (Parasuraman et al., 1991) created 22 scale to gauge different components of service quality, for example, dependability, substantial quality measurement, compassion, responsiveness, and affirmation.

2.1.1.1 Reliability

The online Oxford dictionary's meaning of 'reliability' is 'the quality of being trustworthy or of performing consistently well'. In general understanding, when we say 'something' is reliable it connotes many positive aspects of that 'something'. For example, when we say that a person is reliable it indicates that the transaction (financial or social) we want to have with the person will be successfully accomplished without any disruption. That is, the reliability of the person makes other persons who deal with him feel secure, that their task will be accomplished, in control, and that the other persons are forthright due to that person's overall outstanding performance, which we can say is due to the integration of many excellent characteristics (Jokisuu et al., 2016). Due to which customers feel independent, accomplished, confident, novel, enjoyable, empowered, and engaged (Chun-Wei et al., 2016).

2.1.1.2 Tangibility

Dimension: The data highlights the difference in the perceptions of the public sector banks and private sector banks with the respective customers on the tangibility dimension. The data reveals the private sector banks are exceeding the perceptions while comparing to public sector banks.

Public sector banks at the lower side on perceptions of their customers on the dimension of service quality when compared to private sector banks. The factors such as up to date equipment, banks physical facilities, well dressed

and neat appearance, and the facilities used in banks are comparatively at the lower end as perceived by the banks customers (Shrivastava and Shah, 2018).

2.1.1.3 Empathy

Individual attention, customized service and convenient banking hours are very much important in today's service (Malik, 2018).

2.1.1.4 Assurance

Customer expects that the bank must be secured and the behavior of the employees must be encouraging (Malik, 2018).

2.1.1.5 Responsiveness

Customers expect that the banks must react their request quickly. Responsiveness depicts how frequently a bank deliberately gives services that are essential to its customers. Analysts analysing the responsiveness of banking services have featured the significance of seen service quality and consumer satisfaction (Malik, 2018).

Service quality is so vital for bank long run achievement. As a matter of first importance, service quality speaks to a unique upper hand for association against different contenders from banks (Ayo et al., 2016). Taking service quality as a standout amongst the most vital needs upgrade bank to deliver services with prevalent quality dimensions (Amin, 2016). Achieving this objective in certainty can assist the manage an account with stabilizing their long haul productivity and it upgrades their chances to even now make due later on (AL-Adwan and AL-Tarawneh, 2017). This isn't all, it is vital for banks to keep up their service quality and enhance it over the time, this is on the grounds that customer recognitions are generally ascending by time (AlSudairi, 2016).

All things considered, the contrast between customary service and Internet-based service is generous. These days, computerized service like web based banking and distinctive applications impact the bank's service and its customers. Rowley (2006) characterized digital service as an intuitive service among customer and bank utilizing the web. Parasuraman et al., 2005 additionally included digital service is a mechanism of collaboration among customer and friends where the organization needs to ensure about the productivity and adequacy of their services. Along these lines, banks must tune in to their customer's need and desire to get by in this focused commercial world (Santos, 2003). In this way, the customer has more power in the event of online based services in light of the fact that numerous contenders are putting forth the equivalent or surprisingly better services. The customer can move to different banks with no expense if the present bank does not enhance their services. Santos (2003) expressed that computerized service quality is a procedure of customer's evaluation and an official choice on serve (Hadid at al., 2020).

2.1.2 Theory Related with Customer Loyalty (CL)

Consumer satisfaction is a centre promoting idea which produces customer's reliability. (Kotler, 2000) referenced consumer satisfaction is an individual positive or negative inclination in the wake of utilizing product or service, which originates from looking at between product or service's apparent esteem and real esteem. More often than not,

the customer can't pass judgment on the genuine exhibitions previously the utilization. As per (Anderson and Srinivasan, 2003) satisfaction depends on the real product performance as well as pre and post buying background. Pre-acquiring knowledge includes product looking, assessing, etc. Then again, post-acquiring background incorporates after deals services, for example, returning product, discounting cash thus (Mckinney et al. 2002) discovered two distinctive approaches to satisfy the online customer. The principal route is to guarantee the nature of data to customers and second way is framework performance to convey data. Satisfaction is a standout amongst the most basic factors to make customer faithful (Castaneda et al., 2009). Anderson and Srivasan (2003) referenced disappointed customers like to scan for more data from various choices however the satisfied customer does not move easily to other organization. Satisfied customer as often as possible visits a similar site when they have to purchase something later on (Alba and Hutchinson, 2007). As indicated by (Taylor and Baker, 1994), consumer satisfaction is one of the key determinants to customer loyalty. In this way, there can be a relationship between consumer satisfaction, and faithful customer (Hadid at al., 2020).

From the commercial point of view, it centers on the customer's involvement of digital banking services. Right customer's encounters drove them to reuse the services. Variables influencing consumer satisfaction will make them steadfast by meeting their desire. At the point when a customer comes to utilize a particular service, they endeavour to see whether their desires met by the services. Customers would be satisfied if their desires meet. All things considered, they will proceed with their web based banking services later on. Despite what might be expected, if their desires don't fit with the services, they will be exceptionally reluctant to utilize same services. In addition, satisfaction fills in as a middle person among elements and loyalty. Internet banking instalment framework is most famous in Finland. Nature of service will urge the customers to reuse similar services if there are sufficient advantages from computerized banking services (Miah, 2018).

The normal for customer loyalty had been classified into four successive stages (Oliver, 1999; Rai and Srivastava, 2012). In the first place, cognitive loyalty. The customer trusts a product, service, the brand or the association is unrivalled as opposed to other people and picks it over others and the data about it will influence shopper purchasing choice. Second, affective loyalty. Emphasized affirmations of customer desires lead to full of feeling type of loyalty where an especially ideal disposition gets created towards the product, service, the association or the brand. Third, conative faithfulness. High association and thought processes energized by solid purchasing expectations will offer route to the advancement of an exceptional type of loyalty. Fourth, action reliability. Solid inspirations that eventually lead to activities guided by the need to evacuate each conceivable issue that may ruin the loyalty driven choice of buying a particular product, service, the brand or the association.

2.2. Uses of digital banking

Digital banking given the significant changes in the interest for financial services, the banks are reacting to the computerized test by utilizing distinctive methodologies and at different paces. A digital wallet that facilitates fast, convenient, and secure commerce using a mobile electronic device (or non-mobile electronic device) and stores information associated with transactions. The digital wallet can store information for use in transactions, including

information associated with one or more financial accounts, user information, and shipping information. To complete an online purchase, the digital wallet can interact with a merchant's website to obtain information regarding the purchase (Von Behren and Wall, 2017). According to Lipton et al., 2016 digital wallet digital wallet is essential for digital commerce and ecosystems built on value-added services. In addition, it optimizes transaction costs for customers and funding costs for banking operations.

Internet banking (or E-banking) means any user with a personal computer and a browser can get connected to his banks website to perform any of the virtual banking functions. Internet banking system the bank has a centralized database that is web enabled (Khan, 2009).

2.3 Usefulness of Digital Banking

Understanding the customer loyalty and how they affect new digital banking service digitally. Main objective on the usefulness of digital banking is by observing the usage, how they interact with the services like these, its usefulness to them, and their satisfaction level. Also, customer's attitudes toward the usefulness of and willingness to use Internet e-retail banking were identified and measured. The data showed that expectations of accuracy, security, network speed, user friendliness, user involvement and convenience were the most important quality attributes underlying perceived usefulness (Mutahar et al., 2018).

A study on critical factors affecting consumer acceptance of online banking by Maditinos et al. (2013) suggested the important aspect of perceived usefulness, security risk and performance risk on the intention to use internet banking. On the contrary, the impact of perceived ease of use and quality of the internet relationship seemed to have only an indirect effect on internet banking adoption. Data analysis on factors influencing the choice of internet banking by Juwaheeret et al. (2012) revealed that perceived ease of use and perceived usefulness have a direct influence on the adoption of internet banking.

2.4 Ease of Use Digital Banking

Those who use digital banking service the specifically mobile banking application also appreciated the ease of use and also its simplicity, free of charge locus and the possibility to follow the money flow and control spending and saving. The data showed that mobile banking is a big part of consumers' daily activities because it is a valuable service to complete the activities because it is so fast, clear and easy to use and it actually affects everyday life and behavior (Komulainen et al., 2018). Most banks attempt to tailor the services and information on their websites in a way that meets customers' needs. In order to assess the level of customer satisfaction towards such websites, many researchers have used classic theories or information systems acceptance models. Davis et al.(1989) postulate that perceived ease of use and usefulness factors influence customers' behavior in using new technology; meanwhile, perceived usefulness, trust, and self-efficacy are predictors of customers' use of digital banking service (as cited in Mbama and Ezepue, 2018)

2.5 Research Framework

The aim of this study is to determine the effect of digital service quality on customer loyalty.

Figure 1 shows the conceptual framework developed for this study. This conceptual framework has been formulated based on the theories of existing literature and adapted the existing frameworks of past research works (Oliver, 1999; Rai and Srivasta, 2012; Akhter and Zaherr, 2014; Hamzah et al., 2015; Fasal et al., 2016; Aisyah 2018).



Figure 1: Conceptual framework

2.6 Hypotheses Development

The hypotheses are directly related to the theory of research which are determined by the literature review. A hypothesis is a statement about the relationship of two or more variables which suggests the answer of research objectives. These hypotheses are derived logically from previous findings or the predictions of specific theory.

No	Objectives	Hypotheses
1	To examine what are the digital service quality factors that positively affects customer loyalty in commercial banking sector.	<p>H1a: Reliability has a positive influence on customer loyalty in commercial banking sector.</p> <p>H1b: Tangibility has a positive influence on customer loyalty in commercial banking sector.</p> <p>H1c: Empathy has a positive influence on customer loyalty in commercial banking sector.</p> <p>H1d: Responsiveness has a positive influence on customer loyalty in commercial banking sector.</p> <p>H1e: Assurance has a positive influence on customer loyalty in commercial banking sector.</p>

2.6.1 Literature supporting the hypotheses

2.6.1.1 Relationship of reliability with customer loyalty (R, CL) (H1a)

The relationship between service quality and customer dependability is a positive one, and one that is basic for the survival of a bank. There is an impact of service quality on the primary concern of performance of a bank through upgraded customer reliability whereby the apparent service surpasses the service level required by customers (Caruana, 2002). There is a solid proof that bolsters the recommendation that service quality recognitions are a critical determinant of customer loyalty (Beerli et al., 2004; Lam and Burton, 2006). These investigations contend

that the arrangement of predominant bank service impacts a customer's decision of bank. Generally, a bank that offers better service in correlation than its rivals gives customers a motivating force to choose and keep up a continuous association with that bank; correspondingly, a bank that offers second rate service is probably unable to sustain the customers (Ennew and Binks, 1996).

H1a: Reliability has a positive influence on customer loyalty in commercial banking sector.

2.6.1.2 Relationship of tangibility with customer loyalty (T, CL) (H1b)

The banks have likewise recreated their digital banking services to have an upper hand over their rivals. It can likewise be completed, in light of the discoveries that banks are altering their computerized banking services, giving individualized consideration and are keen on taking care of customers' issues. Likewise, because of rivalry the banks must be dependable. the banks are exceptionally enthusiastic about having many contact focusing with customers, span of service being quick and giving services right immediately. It is very well may be inferred that communication quality, sympathy and dependability impact customer loyalty altogether however adversely. This suggests the expansion utilization of the measurements by the bank did not really prompt an increment in customer faithfulness. It tends to be presumed that service quality separation measurements' impact customer loyalty yet contrarily. This implies there are different elements that impact customer faithfulness that merit examining, for example, area (Kibithe and Chebii, 2018).

H1b: Tangibility has a positive influence on customer loyalty in commercial banking sector.

2.6.1.3 Relationship of empathy with customer loyalty (E, CL) (H1c)

As rule, service quality is viewed as a basic factor for a bank achievement. There is a relationship between service quality and the utilization of computerized banking service to better choices and comprise customer faithfulness. The relationship between by and large service quality and individual service faithfulness measurements has additionally been inspected observationally (Boulding *et al.*, 1993; Cronin and Taylor ,1992) concentrating exclusively on repurchase expectations, while Boulding *et al.*(1993) concentrated on both repurchase aims and readiness to prescribe. In the investigation by Cronin and Taylor (1992), service quality did not seem to have a critical (positive) impact on expectations to buy once more, while Boulding *et al.*(1993) discovered positive relationships between service quality and repurchase expectations and the ability to suggest. Loyalty under differing estimating conditions, is the eagerness to pay an excellent cost and to stay steadfast notwithstanding when costs increases, has not gotten much consideration in the service quality literature. Just Zeithaml *et al.*, (1990) announced a positive relationship between service quality and the two previously mentioned dependability measurements.

H1c: Empathy has a positive influence on customer loyalty in commercial banking sector.

2.6.1.4 Relationship of responsiveness with customer loyalty (Re, CL) (H1d)

Service quality and customer loyalty has been identified as potentially important determinants of service switching (Ennew and Binks, 1996). Consequently, there have been calls for resolving issues such as establishing

discriminant validity between service quality and satisfaction, as well as assessing their causal ordering and interactive relationships in predicting customer switching intentions. The results of this study indicated that service quality and satisfaction are indeed distinct constructs and that quality is an antecedent to satisfaction (Bansal and Taylor, 2015).

H1d: Responsiveness has a positive influence on customer loyalty in commercial banking sector.

2.6.1.5 Relationship of assurance with customer loyalty (A, CL) (H1e)

The arrangement of prevalent bank service requires that banks comprehend the necessities of their customers. It tends to be presumed that banks have put a great deal of accentuation on their representatives to guarantee they interface well with customers by being considerate, warm, lovely, and respectful and having the capacity to meet customers' solicitations rapidly.

H1e: Assurance has a positive influence on customer loyalty in commercial banking sector.

3. METHODOLOGY OF RESEARCH

3.1 Population and sample of the Study

Population is defined as the entire group (persons or objects) that provides the relevant research information. The participants must share at least a single attribute of interest (Creswell, 2003). Population is the target audience that a researcher intends to conduct a study. In the context of this study, the target population of this study comprises the entire local commercial banks' customers that use digital services in Malaysia. Target population refers to the group of participants with the specific attributes specified for a research investigation based on interest and relevance (Salkind, 2011; Personal, 2016).

According to the official records from Malaysian authorities from central bank of Malaysia, the five of the most prominent commercial banks are Maybank, Hong Leong Bank, CIMB Bank, RHB Bank and Muamalat. There are 201,000 customers spread among five major banks in Malaysia from where the sample of this study is to be drawn. This target population data is presented on Table 3.1.

Table 3.1: Distribution of Study's Population

No.	Banks	N	%
1	Maybank	60,000	29.85%
2	Hong Leong Bank	50,000	24.88%
3	CIMB Bank	40,000	19.90%
4	RHB Bank	45,000	22.4%
5	Muamalat	6,000	3.0%
Total	201,000	100%	

In this table, N= population size

This study intends to employ Stratified random sampling procedure to select the required sample for the study. Since the entire population is varying and therefore the need to divide them into different sub-groups (Banks) to ensure fairness in the distribution of sample.

Stratified Random Sampling Procedure used to select the sample based on the contribution of each Bank to the study's population (Proportionate). This is to ensure fair representation of all the Banks because all the banks customers are receiving the same digital banking in different platforms.

Thus the questionnaire was used in this study contained four sections, section A, Section B, section C and Section E. Section A refers information regarding the respondent profile. These are age, race, level of education, bank and type services and etc. Section B, C, D and E used likert scale numerical values from 1 strongly disagree to 5 strongly agree focusing on factors digital banking services quality and customer satisfaction and loyalty. The variable in this study was adopted and developed from previous research constructs. Additionally, the poll intended for this study thought about the accompanying issues: The motivation to choose the beneath referenced things was as per the prerequisite of the subject of this investigation. Reliability analysis is concerned with the accuracy, precision and consistency of a measure but not validity, which focuses on the question of what is actually being measured. Cronbach's alpha was used as a reliability coefficient that shows how well the items in a set were positively correlated to one another (Cronbach, 1951).

Before going for the actual data collection, a preliminary reliability study was carried out to determine whether the questionnaire reliable and appropriate. In the preliminary survey questionnaire was distributed to 19 customers from of the customers of the following banks (RHB, CIMP, Maybank, Hong Loang and Muamalat) . The data collected through survey were entered into SPSS manually to check the Cronbach Alpha of each factor. Table 3 summarizes the pilot study factor development of all the items. The pilot study suggested that the reliability analysis is satisfied for the variables as the cronbach alpha value was significant to the threshold value of 0.844 and total value 0.959.

Table 3.2 Error! No text of specified style in document.: Reliability Coefficient Value

No			Items	Cronbach's Alpha (P)
B	Digital banking service	DBS	29	.959
1	Digital banking service(Reliability)	R	7	.934
2	Digital banking service(Tangibles)	T	6	.844
3	Digital banking service(Empathy)	E	7	.904
4	Digital banking service (Responsiveness)	Re	4	.851
5	Digital banking service(Assurance)	A	5	.851
D	Customer loyalty	CL	12	.876

Data analysis enables the researcher to organize and bring meaning to large amounts of data collected in a study (Struwig and Stead, 2001). It is an organized synthesis of data to address the study's objectives. To analyse the data collected in this study the descriptive and inferential statistical methods will be used. Frequency and percentage will be used to describe the demographic characteristics of the respondents. Measurement model and structural Model. The measurement model and structural model are formed by hypothesizing the model to be tested by CFA techniques. The statistical program SmartPLS 3.0 software will be utilized.

According to Byrne (2010) and Hair et al., (2010) SEM is the best statistical technique to use when investigating simultaneous effects of multiple exogenous and endogenous variables. Further SEM is widely acknowledged as a confirmatory analytical tool where it estimates the vigor of hypothesized relationships of constructs in the proposed cause and effect mode (Hair et al., 2010). There are many reasons for using SEM as a statistical technique. First, SEM is more suitable for confirmation of a research model based on existing theory than it is for exploring a new model. With the confirmatory approach, SEM researchers can verify if a proposed model is valid (Hair et al., 2010).

Second, SEM is known as an extremely powerful substitute to factor analysis, path analysis, multiple regression, and analysis of covariance because nonlinearities, correlated independents, measurement error, correlated error terms, multiple exogenous and endogenous variables, each with multiple observed variables, are reflected in the SEM (Byrne, 2010). Third, SEM allows researchers to compare the proposed model with an alternative model which results in the possibility of testing a better model for the proposed hypotheses (Penke & Deary, 2010). The reason behind this popularity is that SEM as a confirmatory tool to enriches the researchers with enough information to effectively assess and modify' theoretical models, when necessary (Browne, 1984; Jöreskog, 1978). In context of consumer behaviour SEM is preferred over other tools.

4. DATA ANALYSIS

A total number of 450 questionnaires were distributed in Johor Bahru banks name May Bank, CIMB Bank, RHB Bank, Muamalat Bank and Hong Leong Bank, 23 were returned back without any participation whereas 17 were returned incomplete information which was considered as not useable. 26 questionnaires were not returned with a response rate of 94%. Total 384 questionnaires were used for the final analysis with the rate of used response 84%. Based on Table 4 the statistical analysis for the current research is associated with 384 respondents from customers of bank branches.

Table 4.1 Error! No text of specified style in document.: Response rate for the survey questionnaire

No	Description	Results
1.	Questionnaires distributed	450
2.	Blank questionnaire returned	23
3.	Returned and useable	384
4.	Returned and not useable	17

5.	Not returned	26
6.	Response rate	94
7.	Rate of useable response	84.33%

The analysis of the demographic details of the user involved in the survey is given. From the given analysis, it is clearly viewed that most of us are using the digital banking for their day to day transaction. Here a total of 384 surveys are taken and it is proved that all those 384 users are involved in the digital banking transactions. Out of 384 an overall of 196 males and 188 females are involved in the survey. They all fall under the age group of 75 users are between 18-25 years, 156 users are between 26-35 years, 128 users are between 36-45 years, 15 users are between 46-55 years, 10 users above 55 years. 226 of them are Malay people, 75 of them are Chinese people, 53 of them are Indians and 30 are from the other states. These all users have an educational level of the following; 106 have a qualification of secondary education, 165 completed are doing their degree diploma course, 98 are master/ PHD graduates are going to be graduated in these fields and the remaining 15 have different qualification levels except the above mentioned levels. These are the basic and personal demographic details of the users involved in the survey.

The analysis of the usage of banks and the digital banking services, duration of using the digital banking services for their life time and the frequency of use of digital banking service is given as follows. Out of 384 surveys, 114 uses Maybank, 87 of them uses RHB bank, 97 of them are using Hong Leong bank, 74 of them are using CIMB bank and 12 of them uses Muamalat bank. The types of services used in the banking are individual banking, business banking, digital banking and also for loan purposes. Here out of all 384, 279 of them are using Digital Banking. The types of digital banking services available are tax alerts, Electronic statements, “need help” service, online mobile and tablet banking, checking accounts, Treasury services (payroll services, deposit service), Discover cent, the quick money transfer tool, Mobile check deposit (Online pay), Debit and credit cards. From the above, the services like electronics statements (106) and the account checking services (105) are the often used services on digital banking from the customers and the treasury services like payroll services and deposit services are the minimum used services (23) from the digital banking customers.

Many of them like 166 customers are using the digital banking services for more than 5 years. 120 of them are using it for around 3years to 5 years, 76 users are using it for a period of 1 to 3 years and 22 are using it for less than 1 year. From this analysis we came to know that most of the customers using the digital banking are continued to be using it for a long time. A frequency of using the digital banking services for once every month is by 22 customers, 159 customers using the digital banking for twice every month, 44 are using it for 3 times in every month, 15 are using it 4 times in every month and 144 out of 384 are using it for more than 4 times a month and none of them are not using the digital services for a single month. Thus the digital banking services are mostly used by all of the banking customers at least for a single purpose in a month.

Table 4.2: Duration of Using Digital Banking

No	How Long Digital Banking Service Have Been Used	Respondents
1	< 1 year	22
2	1 year to 3 years	76
3	3 years to 5 years	120
4	Above 5 years	166

Table 4.3: Frequency of Use of Digital Banking

No	Frequency of Use of Digital Banking Services	Respondents
1	Once every month	22
2	Twice every month	159
3	3 times every month	44
4	4 times every month	15
5	More than 4 times a month	144
6	Never	0

From the above analysis it is proved that the most of the bank customers are using the digital services. In this survey, out of 384, almost all are using digital banking service rather than offline banking. Once they used these services, they are continuing it for a long time. About 51% of males and 48% females are using the digital banking services. So approximately gender is not a much focused attribute for using these services and the people within the age group of 26 to 45 are using it more than the other age group people. And none of them above the age group of 55 are using the digital banking. It might due to the lack of awareness about online banking. The most used services in the banking is the digital banking services when compared to the individual banking, business banking and for loan payments. They are all using the digital banking for the purpose of online mobile and tablet banking and for checking the accounts.

Almost many of them are using the digital banking services for a long time once they have tried these services and continuing it for more than 5 years. They are all using those services for at least once in every month and mostly they are using it for more than 4 times a month for their banking needs.

Assurance, Reliability, Responsiveness and Tangibility have a positive influence on customer loyalty in commercial banking sector.

To test the above hypotheses, the result of the SEM structural model as shown in Table 7 showed that assurance, reliability, responsiveness and tangibility has a positive influence on customer loyalty in commercial banking sector. Consequently, the results revealed that the hypothesis was supported. Thus, there is positive and significant effects of relationships between digital banking service quality and customer loyalty in commercial banking sector in Malaysia.

HYPOTHESES TESTING (DIRECT RELATIONSHIP)

To test the study's formulated hypotheses, a structural model result is used to obtain the path coefficients or beta (β), corresponding t-values, P-values and the effect sizes (R^2) and interprets the results as recommended by Hair et al. (2017) and Ringle et al. (2015).

The digital banking service quality is based on Reliability, tangibility, empathy, responsiveness, and assurance. The structural model assessment in PLS-SEM reveals the evaluation of the hypothesized relationships. Emphasis is placed on the bootstrap procedure because it produces the relevant statistics for estimating the statistical significance of the path coefficients (Hair et al., 2013). The bootstrapping procedure involves a resampling process, from the original sample with replacement (Chin, 2001; Ramayah et al., 2016).

4.1.1 Hypotheses One (1a): Reliability has a positive influence on customer loyalty in commercial banking sector

Reliability has a positive influence on customer loyalty in commercial banking sector ($\beta=0.486$, $t=6.681$; $p < 0.05$). Therefore, the results revealed that the hypothesis was supported. Thus, reliability has a positive influence on customer loyalty in commercial banking sector in Malaysia.

4.1.2 Hypotheses One (1b): Tangibility has a positive influence on customer loyalty in commercial banking sector

To address the above hypothesis, the result of the SEM structural model as presented shows that tangibility has a positive influence on customer loyalty in commercial banking sector ($\beta=0.197$, $t=2.505$; $p < 0.05$). Hence, the results revealed that the hypothesis was supported. Thus, tangibility has a positive influence on customer loyalty in commercial banking sector in Malaysia.

4.1.3 Hypotheses One (1c): Empathy has a positive influence on customer loyalty in commercial banking sector

To test the above hypothesis, the result of the SEM structural model as shown in Figure 2 & 3 showed that empathy has a positive influence on customer loyalty in commercial banking sector ($\beta=0.062$, $t=1.049$; $p > 0.05$). Consequently, the results revealed that the hypothesis was not supported. Thus, empathy has a positive but insignificant influence on customer loyalty in commercial banking sector in Malaysia.

4.1.4 Hypotheses One (1d): Responsiveness has a positive influence on customer loyalty in commercial banking sector

To test the above hypothesis, the result of the SEM structural model as shown showed that responsiveness has a positive influence on customer loyalty in commercial banking sector ($\beta=0.262$, $t=3.846$; $p < 0.05$). Consequently,

the results revealed that the hypothesis was supported. Thus, there is positive and significant relationship between responsiveness and customer loyalty in commercial banking sector in Malaysia.

4.1.5 Hypotheses One (1e): Assurance has a positive influence on customer loyalty in commercial banking sector

To test the above hypothesis, the result of the SEM structural model as shown in Figure 2 and 3 showed that assurance has a positive influence on customer loyalty in commercial banking sector ($\beta=0.460$, $t=7.901$; $p < 0.05$). Consequently, the results revealed that the hypothesis was supported. Thus, there is positive and significant effect of relationship between assurance and customer loyalty in commercial banks sector in Malaysia.

Table 4.4: Structural estimates (Direct Effect/Relationship)

No.	Path	Beta (β)	T-Value	p-value	Decision
H1a	Assurance---->Customer Loyalty	0.460	7.901	0.000	Supported
H1b	Empathy---->Customer Loyalty	0.062	1.049	0.294	Not Supported
H1c	Reliability--->Customer Loyalty	0.486	6.681	0.000	Supported
H1d	Responsiveness---> Customer Loyalty	-0.262	3.846	0.000	Supported
H1e	Tangibility ---> Customer Loyalty	0.197	2.505	0.012	Supported

Notes: Critical t-values. *1.96 ($P < 0.05$).

5. SUMMARY OF FINDINGS

This study investigated the relationship between digital banking service quality, customer loyalty in Malaysia. The study was conducted in Malaysia using a cross-sectional survey design.

In this study, descriptive analysis (frequency and percentages) was used to describe the demographic information of the respondents. The demographic information of the respondent presented comprised of gender, age, highest educational qualification, experiences, and position of responsibility commercial banks customers in Malaysia.

The summary distribution of the respondents shows that, the distribution of the respondents based on digital banking utilization, gender, age, race and highest educational qualifications, the data revealed that all the different groups of respondents based on demographic information were fairly represented.

Based on the data analysis and interpretation, the major significant findings are: Reliability, Tangibility, Responsiveness, and assurance have a positive influence on customer loyalty in commercial banking sector. However, Empathy has positive but insignificant relationship with the customer loyalty in commercial banking sector in Malaysia.

6. DISCUSSION OF FINDING

The results of results were obtained using survey instruments and analysed as presented in the methodology of this study. The findings were described based on the statistical information generated from the analysis. The results as

presented are discussed in this section in relation to the findings of other relevant studies, expert opinions, and other validated assertions:

To examine what are digital service quality factors that positively affects customer loyalty in commercial banking sector.

The first objective of this study was to examine what are digital service quality factors that positively affects customer loyalty in commercial banking sector. The findings using five hypotheses revealed that, reliability, tangibility, responsiveness and assurance have a positive influence on customer loyalty in commercial banking sector.

However, empathy has positive but insignificant relationship with the customer loyalty in commercial banking sector in Malaysia. This study highlighted an important trend in banking services provision, the findings is consistent with many similar studies. In order to upgrade profitability and enhance consumer satisfaction and loyalty, the digital quality services are important and necessary (Demoulin and Djelassi, 2016). Some other studies found that, digital services quality enhanced customers' satisfaction and bring them closer to the institution. Wolfenbarger and Gilly (2003) found out that there is a vital relationship among consumer satisfaction, loyalty and service quality. Another study, found solid relationship among service quality and consumer loyalty in web retailing setting (Ribbink and Streukens, 2004). Also online commercial industry perceived positive relationship among electronic service quality and consumer satisfaction (Ribbink and Streukens, 2004).

Similarly, the finding of this study coincided with the other findings where provision of convenience services improves customer loyalty (i.e Lin and Hsieh, 2006, Al-Alak, 2009; Jeong et al., 2016) whereby those studies indicate that quality services is seen as a satisfactory factor that enhances customer acceptance and loyalty to the particular organization and the product because of its normal potential to satisfy customer's goals (Taylor, 2014; Cronin et al., 2000; Loudon and Della Bitta, 1993).

Moreover, in a study conducted by Kibithe and Chebii (2018), it was very well inferred that services quality factors impact customer loyalty altogether however adversely. This suggests the expansion utilization of the measurements by the bank did not really prompt an increment in customer faithfulness. It tends to be presumed that service quality separation measurements impact customer loyalty yet contrarily. This implies there are different elements that impact customer faithfulness that merit examining, for example, area. In another study, the data showed that mobile banking is a big part of consumers' daily activities because it is a valuable service. To complete the activities, the mobile banking app is employed because it is fast, clear and easy to use; and it actually affects everyday life and behavior (Komulainen et al., 2018).

7. IMPLICATIONS IN MALAYSIAN CONTEXT

The research findings from the study highlight some important implications that are specific to the Malaysian context. Customers are serving more flexibly and the preferred method in for when transactions are easily performed with another bank or another provider rather than the Malaysian banks. To improve this, the above study was done. The banks in Malaysia have been business for integrating the mobile banking, internet banking and

automated digital banking to satisfy the client's needs. Results shows that the objective of the digital banking service quality is varied according to the customer loyalty. But the service quality impacts the customer customer loyalty individually in Malaysia.

8. RECOMMENDATIONS TO THE ORGANIZATION

- 1) The tool used for measuring digital quality services and loyalty used in this study is a reliable and valid instrument. The researcher suggests that banks in Malaysia can adapt this model to enhance its digital quality services to enhance customer satisfaction and improve banks services delivery and performances.
- 2) That bank should provide them with superior services as compared to other services. The customers are the only resources to recommend the digital banking service provided by the current bank to others.
- 3) The customers should continue the usage of the digital banking service of their current bank and consider them to be loyal to their current bank digital banking services.

9. LIMITATION OF FINDINGS

The study investigated the relationship between digital banking service quality and loyalty in Malaysia. The study was successfully implemented with sound result that has important implication for policy making, theory and practices. However, study of this nature could have been successfully conducted without any challenges which may affect the generalization of the study's findings. In the process of conducting this study certain limitations are highlighted below:

- 1) First, this study was conducted with a sample of only 384 participants that involved the customers using digital banking services in Johor alone, the sample can be considered moderately adequate looking at the nature of banking sector and the users in Malaysia. Thus, the findings of this study might be generalised to the entire bank customers in Malaysia.
- 2) The duration of this study is very limited and that leads to only the utilization of only one tool (questionnaires) for the data collections. It was burdensome as the customers have a tight schedule and the researcher had very limited time leading to more simple methodology obtained to collect data to generate the research findings.
- 3) Besides that, this study concentrates on major commercial banks and only one state in Malaysia, Johor Bharu, which is also only one location in the country (Malaysia), this make the result penalization of the result almost unrealistic.
- 4) Lastly, the quantitative technique employed that survey questionnaire was incapable to disclose how respondents respond during answering the questionnaire irrespective of the respondents were influenced by environment. It was also incapable of identifying whether participant fully understands the questions.

10. CONCLUSION

The present study examined the relationship between digital banking service quality and loyalty in Malaysia. The study was based on the quantitative questionnaire survey the presented to the bank's customers; for example, ,

Maybank, CIMB Bank, Muamalat Bank, RHB Bank, and Hong Leong Bank. The objective of the study is to analyse the impact of digital banking services on customer loyalty of different Malaysian Banks that offer the digital banking services. This study fills the gap in the literature survey since it leads to the digital banking issue completely without making avoidance in Malaysia. Finally, contributions of the study, and several other directions were analysed. Findings from the studies are expected to improve the existing knowledge on the practices of digital banking and its usage by the customers.

Acknowledgement

This research project is supported by Universiti Tun Hussein Onn Malaysia (UTHM). The authors wish to thank the respondents who have spent their precious time and patience for participating in this project.

I would like to express my sincere gratitude to my research supervisor, Prof. Dr. Ng Kim Soon for giving me the opportunity to conduct this paper and providing invaluable guidance throughout this paper. His dynamism, vision, sincerity and motivation have deeply inspired me. My appreciation to Assist. Dr. Haj, Ali Abusalah Amreeghah for his full support. I would also like to thank him for his friendship, empathy, and great sense of humour.

REFERENCES

- [1] Aisyah, M. (2018). Islamic Bank Service Quality and Its Impact on Indonesian Customers' Satisfaction and Loyalty. *Al-Iqtishad Journal of Islamic Economics*, 10(2), 367-388.
- [2] Akhtar, A., & Zaheer, A. (2014). Service Quality Dimensions of Islamic Banks: A Scale Development Approach. *Global Journal of Management and Business Research*, 14(5), 110-123.
- [3] Al-Adwan, A. S. A., & AL-Tarawneh, S. S. (2017). The Impact of Electronic Banking Service Quality in Enhancing Performance (A study on Jordanian Commercial Banks). *International Journal of Human Resource Studies*, 7(3), 148–163.
- [4] Alba, J., Hutchinson, W. (2007), "Dimensions of consumer expertise", *Journal of Consumer Research*, Vol. 13, pp. 411–454.
- [5] Al-Hawary, S., & Al-Smeran, W. (2017). Impact of electronic service quality on customers satisfaction of Islamic banks in Jordan. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 7(1), 170-188. <http://dx.doi.org/10.6007/IJARAFMS/v7-i1/2613>
- [6] AlSudairi, M. A. T. (2016). E-service quality strategy: Achieving customer satisfaction in online banking. *Journal of Theoretical and Applied Information Technology*, 38(1), 6–24.
- [7] Amin, M. (2016). Internet banking service quality and its implication on e-customer satisfaction and e-customer satisfaction. *International journal of bank marketing*, 34(3), 280-306.
- [8] Anderson, R.E. and Srinivasan, S.S. (2003), "E-satisfaction and e-loyalty: a contingency framework", *Psychology and Marketing*, Vol. 20 No. 2, pp. 123-38.

- [9] Auka, D. O., Bosire, J.N. and Matern, V. (2013). Perceived service quality and customer loyalty in retail banking in Kenya. *British Journal of Marketing Studies*, 1(3), 32-61.
- [10] Auka, D. O., Bosire, J.N. and Matern, V. (2013). Perceived service quality and customer loyalty in retail banking in Kenya. *British Journal of Marketing Studies*, 1(3), 32-61.
- [11] Ayo, C. k., Oni, A. A., Adewoye, O. J., & Eweoya, I. O. (2016), "E-banking users' behaviour: e-service quality, attitude, and customer satisfaction", *International Journal of Bank Marketing*, Vol. 34 No.3, pp. 347–367.
- [12] Bansal, H. S., and Taylor, S. (2015). Investigating the relationship between service quality, satisfaction and switching intentions. In *Proceedings of the 1997 Academy of Marketing Science (AMS) Annual Conference* (pp. 304-313). Springer, Cham.
- [13] Beerli, A., Martin, J.D. and Quintana, A. (2004), "A model of customer loyalty in the retail banking market", *European Journal of Marketing*, Vol. 38 Nos 1/2, pp. 253-275
- [14] Browne, M. W. (1984). Asymptotically distribution-free methods for the analysis of covariance structures. *British Journal of Mathematical and Statistical Psychology*, 37(1), 62-83.
- [15] Boulding, W., Kalra, A., Staelin, R., & Zeithaml, V. A. (1993). A dynamic process model of service quality: from expectations to behavioral intentions. *Journal of Marketing Research*, 30(1), 7-27
- [16] Byrne, Barbara. "M.(2010) Structural equation modeling with AMOS: Basic concepts, applications and programming."
- [17] Castaneda, J.A., Rodriguez, M.A. and Luque, T. (2009), "Attitudes' hierarchy of effects in online user behavior", *Online Information Review*, Vol. 33 No. 1, pp. 7-21.
- [18] Caruana, A. (2002). Service Loyalty: The Effects of Service Quality and the Mediating Role of Customer Satisfaction, *European Journal of Marketing*, 36(7):811-828
- [19] Chun-Wei Lin, and Lee, Chien-Chiang. 2016. Globalization, Political Institutions, Financial Liberalization, and Performance of the Insurance Industry. *The North American Journal of Economics and Finance* 36: 244–66.
- [20] Creswell, J. W. (2003). A framework for design. *Research design: Qualitative, quantitative, and mixed methods approaches*, 9-11.
- [21] Cronbach, L. J., & Warrington, W. G. (1951). Time-limit tests: estimating their reliability and degree of speeding. *Psychometrika*, 16(2), 167-188.
- [22] Cronin Jr, J., Taylor, S.A., 1992. Measuring Service Quality: A re-examination and extension. *J. Mark.*, 55–68.
- [23] Davis, F. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technologies", *MIS Quarterly*, Vol. 13 No. 3, pp. 319-340.
- [24] Ennew, C.T., Binks, M.R., 1996. The impact of service quality and service characteristics on customer retention: small businesses and banks in the UK. *Br. J. Manag.* 7, 219–230

- [25] Faisal, M., Shabbir, M. S. S., Javed, S., & Shabbir, M. F. (2016). Measuring Service Quality and Customer Satisfaction in Pakistan: Evidence Based on Carter Model. *International Business Management*. Vol. 10 (20): 5011-5016.
- [26] Gomber, P., Koch, J. A., and Siering, M. (2017). Digital Finance and FinTech: current research and future research directions. *Journal of Commercial Economics*, 87(5), 537-580.
- [27] Hadid, K. I., & Soon, N. K., & Amreeghah, A. A. E. (2020). The Effect of Digital Banking Service Quality on Customer Satisfaction: A Case Study on the Malaysian Banks. *Asian Journal of Applied Science and Technology (AJAST)*, 4(1), 06-29.
- [28] Hair, J. F. (2010). Black, Wc, Babin, Bj, & Anderson, Re (2010). *Multivariate data analysis*, 7.
- [29] Hamzah, N., Ishak, N. M., & Nor, N. I. M. (2015). Customer Satisfaction on Islamic Banking System. *Journal of Economics, Business and Management*. Vol.3 (1): 140-144.
- [30] Jokisuu, E., McKenna, M., Smith, A. W., & Day, P. (2016). Evaluating touchscreen PIN entry with visually impaired users. *Contemporary Ergonomics & Human Factors*, 290-295.
- [31] Jöreskog, K. G. (1978). Structural analysis of covariance and correlation matrices. *Psychometrika*, 43(4), 443-477.
- [32] Khan, M. S., & Mahapatra, S. S. (2009). Service quality evaluation in internet banking: an empirical study in India.
- [33] Kibithe, T. W., and Chebii, W. C. (2018). Influence of Service Quality Differentiation Strategy on Customer Satisfaction in Commercial Banks within Nakuru Municipality. *Journal of Strategic Management*, 2(2), 62-82.
- [34] Kotler, P. (2000), "Marketing Management", 10th ed., Prentice Hall, Englewood Cliffs, NJ.
- [35] Kotler, P., & Keller, K.L. (2011) *Marketing Management*. Upper Saddle River, NJ: Prentice Hall.
- [36] Komulainen, H., Saraniemi, S., Ulkuniemi, P., and Ylilehto, M. (2018). End-customer value restructuring the financial service supply chain. *Marketing Intelligence and Planning*, 36(6), 709-720.
- [37] Lam, R. and Burton, S.(2006), "SME banking loyalty (and disloyalty):a qualitative study in Hong Kong", *International Journal of Bank Marketing*, Vol.24 No.1, pp.37-52.
- [38] Lipton, A., Shrier, D., and Pentland, A. (2016). *Digital banking manifesto: the end of banks?* Massachusetts Institute of Technology.
- [39] Ma, Z. and Zhao, J. (2012), "Evidence one-banking customer satisfaction in the China commercial bank sector", *Journal of Software*, Vol. 7 No. 4, pp. 927-933.
- [40] Magotra, I., Sharma, J., and Sharma, S. K. (2018). Investigating linkage between customer value and technology adoption behaviour:A study of banking sector in India. *European Research on Management and Commercial Economics*,24(1),17-26.)

- [41] Malik, D. P. (2018). Service quality dimensions: a 69235. Key words: Reliability, Responsiveness, Tangibility, Assurance, Empathy, Perception, Satisfaction. Corresponding author.
- [42] Martínez, P., and del Bosque, I. R. (2013). CSR and customer loyalty: The roles of trust, customer identification with the company and satisfaction. *International Journal of Hospitality Management*, 35, 89-99.
- [43] Mbama, C. I., & Ezepue, P. O. (2018). Digital banking, customer experience and bank financial performance: UK customers' perceptions. *International Journal of Bank Marketing*, 36(2), 230-255.
- [44] McKinney, V., Yoon, K. and Zahedi, F.M. (2002), "The measurement of web-customer satisfaction: and expectation and disconfirmation approach", *Information System Research*, Vol. 13 No. 3, pp. 296-315.
- [45] Miah, M. M. (2018). Users' Satisfaction of Digital Banking Services in Finland.
- [46] Mihelis, G., Grigoroudis, E., Siskos, Y., Politis, Y., & Malandrakis, Y. (2001). Customer satisfaction measurement in the private bank sector. *European Journal of Operational Research*, 130(2), 347-360.
- [47] Mutahar, A. M., Daud, N. M., Thurasamy, R., Isaac, O., and Abdulsalam, R. (2018). The Mediating of Perceived Usefulness and Perceived Ease of Use: The Case of Mobile Banking in Yemen. *International Journal of Technology Diffusion (IJTD)*, 9(2), 21-40.
- [48] Moghavvemi, S., Lee, S. T., and Lee, S. P. (2018). Perceived overall service quality and customer satisfaction: a comparative analysis between local and foreign banks in Malaysia. *International Journal of Bank Marketing*, 36(5), 908-930.
- [49] Oliver, R.L.(1999). Whence consumer loyalty? *Journal of marketing*, 63(4_suppl1),33-44.
- [50] Parasuraman, A. Zeithaml, V, Malhotra A, (2005). E-S-QUAL, A Multiple- Item Scale for Assessing Electronic Service Quality, *Journal of Service Research*,7(3):213-23.
- [51] Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1991). Refinement and reassessment of the SERVQUAL scale. *Journal of retailing*, 67(4), 420.
- [52] Penke, L., & Deary, I. J. (2010). Some guidelines for structural equation modelling in cognitive neuroscience: the case of Charlton et al.'s study on white matter integrity and cognitive ageing. *Neurobiology of Aging*, 31(9), 1656-1660.
- [53] Personal, M., & Archive, R. A Manual for Selecting Sampling Techniques in Research Mohsin Hassan Alvi, (70218). 2016.
- [54] Rai, A. K., & Srivastava, M. (2012). Customer loyalty attributes: A perspective. *NMIMS management review*, 22, 49-76.
- [55] Rowley, J. (2006). An analysis of the e-service literature: towards a research agenda. *Internet research*, 16(3), 339-359.

- [56] Santos, J. (2003), "E-service quality: a model of virtual service quality dimensions", *Managing Service Quality*, Vol. 13 No. 3, pp. 233-46.
- [57] Salkind, N. J. (2011). 100 questions (and answers) about research methods. SAGE.
- [58] Shrivastava, M., Shah, N., & Navaid, S. (2018). Assessment of change in knowledge about research methods among delegates attending research methodology workshop. *Perspectives in clinical research*, 9(2), 83
- [59] Struwig, M., Struwig, F. W., & Stead, G. B. (2001). *Planning, reporting & designing research*. Pearson South Africa.
- [60] Tadic, D., Aleksic, A., Mimovic, P., Puskaric, H., and Misita, M. (2018). A model for evaluation of customer satisfaction with banking service quality in an uncertain environment. *Total Quality Management and Business Excellence*, 29(11-12), 1342-1361.
- [61] Taylor, S. A., & Baker, T. L. (1994). An assessment of the relationship between service quality and customer satisfaction in the formation of consumers' purchase intentions. *Journal of retailing*, 70(2), 163-178.
- [62] Von Behren, R., & Wall, J. (2017). U.S. Patent No. 9,691,055. Washington, DC: U.S. Patent and Trademark Office.
- [63] Zeithaml, V. A., Parasuraman, A., Berry, L. L., & Berry, L. L. (1990). *Delivering quality service: Balancing customer perceptions and expectations*. Simon and Schuster.