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### AN EMPIRICAL EXAMINATION OF CUSTOMER PERCEPTION ON VIRTUAL BANKING SERVICES OF COMMERCIAL BANKS IN TRINCOMALEE DISTRICT

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#### ABSTRACT

Banks are the financial intermediates which have contributed a lot for the economy of the country and there have been lots of changes taking place around the world. The major change implemented in the recent past is virtual banking. Objectives of the study have threefold *firstly*, to identify the level of virtual banking service quality offered by commercial banks in Trincomalee district, *secondly*, to identify the level of customer satisfaction of virtual banking of commercial banks in the district, *thirdly*, to examine how virtual banking service quality influence on customer satisfaction of commercial banks in the district. The survey was conducted within the customers of commercial banks in the district who have virtual banking connections. Primary data were assembled through a set of questionnaires issued to customers and 390 respondents were selected as a sample for this survey by using convenience sampling method. There were six hypotheses developed to evaluate the impact of customer perception in relation to virtual banking. Data were analysed with the help of descriptive, bivariate and multivariate analysis. Results show that the level of virtual banking service quality as well customer satisfaction of virtual banking of commercial banks are higher level in the district. The empirical findings concluded that virtual banking

**service quality has a positive influence on customer satisfaction. Further, it emphasizes that privacy, fulfilment and responsiveness are having greater influence on customer satisfaction of virtual banking in Trincomalee. Nevertheless, efficiency, system availability and compensation are not significantly influenced on customer satisfaction. Moreover, compensation does not reflect a valuable relationship with customer satisfaction. The study has given a model to understand the real influence of virtual banking service quality on customer satisfaction and needful recommendations are also discussed.**

**Keywords: e-Banking, e-Customer Satisfaction, Service quality, Virtual Banking**

## **1. INTRODUCTION**

Every industry spots light that good service quality is the key success of bringing better customer satisfaction. It is not exceptional to banks as banks are the financial service providers and their success depends on the amount of service quality offered to customers (Andaleeb, Rashid, & Rahman, 2016). The financial world is eager to capture the new developments in virtual banking since they have experienced that it has a huge influence on the financial performance of the economy in developed countries (Cajetan, 2018). Virtual banking means that customers can open accounts, deposit money, obtain loans, and perform other banking services through web, email, mobile app and ATM without visiting a physical bank (Li & Zhong, 2005; Steven, 2002). Banks offer virtual banking services via electronic channels to cope up with incredible changes in the competitive world.

E-banking users not only expect the online process of banking but also, they expect better service, good customer experience, brand name, product strength (Barquin & Vinayak, 2015). As a service sector, consumers are the major stakeholders of banking industry (Islam & Niaz, 2014). Managing customers with extreme levels of satisfaction helps to retain the customers and survive the banking industry for many years in the competitive environment by maintaining a gainful relationship with customers rather than providing just a product or service (Alfrin, 2012).

Banks adopt virtual banking as it diminishes the operational cost of banks. Similarly, customers also desire it as it provides secured quick service in whole days. Further, service quality of online banking enhances the satisfaction level of existing customers as well as potential customers (Cajetan, 2018). Therefore, presently banks concentrate to generate perceived service quality to customers through virtual banking services to retain them with satisfaction (Andaleeb et al., 2016).

In the meantime, banks in emerging countries like Sri Lanka also step forward into this concept with the growth of dimensions in virtual banking services and it has been penetrating in different market segments with competitive and innovative features to enhance the competitive advantage. All commercial banks are offering almost the same products and services with little differences in Sri Lanka. The time is emerging to enlighten the importance of digital banking to customers as it is identified as an important tool to maintain close and stable relationships with the customers. Banks have to take initiatives to identify the customer preferences and take necessary actions to deliver quality services which can provide extreme customer satisfaction and loyalty (Zeithaml, Parasuraman & Malhotra, 2000). Therefore, Sri Lankan banks invest more on electronic banking modernization, implementing new strategies and various marketing efforts to upgrade the service quality of online banking (Albert, Goes, & Gupta, 2004).

Most of the Sri Lankan commercial banks' annual reports reveal that the customer's tendency to move towards digital banking is continuously increasing within the recent years. Some of the extractions are subsequently highlighted as evidence. Details were extracted from Bank of Ceylon (2017), "Customers registered for Smart passbook 41,567", "67% growth observed on e-statement registration", "Bank has invested 3.6Bn in the development of physical and digital infrastructure", "62.9Mn ATM transactions recorded". As per Hatton National Bank PLC (2017), "Online transaction value increased to 23.8% and an increase of 31.9% observed in online transaction numbers validity", "Out of the total withdrawals 82.5% of withdrawals were carried out through ATM network", "HNB has invested 632 Million in technology". Moreover, according to Commercial Bank of Ceylon PLC (2017), "86,662 customers enrolled for e-passbook", "There is a growth of 16.44% observed in online banking users and 25.90% of growth identified in mobile banking usage", "Online banking customers increase to over 800,00".

Though banks in Sri Lanka invested a large amount in the infrastructural development of technological DNA still a significant segment of people prefer the old-fashioned banking. Especially the people in rural areas still believe that cash is the preferred option to do transactions. According to 2018 statistics, the proportion of people living in urban areas in Sri Lanka is just 19% and the remaining people are in rural areas. They are still expecting the face-to-face interaction and beyond the screen relationship. Thus, the recent fully pledged paperless digitized convenient mobile APPs launched by Sri Lanka Commercial Banks within the recent two years (FriMi – NTB, FLASH-Commercial Bank of Ceylon PLC, NDB neos – NDB) could not reach the entire customers. The market is penetrating to digitalization however the move is slow compared to the technophobic countries (Euromoney, 2019).

On the other hand, Jayasiri and Weerathunga (2008) and Premaratne and Gunatilake (2016) pointed out that online banking usage is very low level in spite of literacy level and technology adoptions which were comparatively high in Sri Lanka. In 2020, CBSL states that out of the 23Mn debit cards issued in the market just 15% of cards are in the circulation of making payments. This highlighted that the majority of the public know the usage of virtual banking though they are reluctant to perform all the transactions through virtual banking due to privacy and security issues.

The user habit and behaviour of the public is identified as the main barrier for adopting digital banking since, they are struggling to change their conventional banking aspects due to there is a huge difference to perceive the service quality through web based virtual banking which is entirely different from the traditional banking (Alsajjan & Dennis, 2010). Furthermore, some of the customers have reported displeasure of online banking in Sri Lanka such as unable to reach call centres immediately, security issues, applications are designed in English, issues in withdrawing cash in ATM amongst others, albeit there are advantages in virtual banking. Moreover, the Central Bank of Sri Lanka (2020) declared 2020 as the year of digital transaction in order to minimize the usage of cash where WHO revealed that currency notes can carry Coronavirus.

Hence, identifying the problems associated with the usage of virtual banking service quality of commercial banks in Sri Lanka is utmost important to safeguard the data, identify the virtual banking process in the country, customer satisfaction level towards virtual banking and to take care of the wealth of customers which directs to customer satisfaction. A very few research studies were conducted in the topic of customer perception towards virtual banking service quality in Sri Lanka did not not touched the entire virtual banking concept. It is difficult to conduct the research considering the entire country within the limited time. Therefore, selecting a district which represents the whole country in all aspects like people with cultural differences, various economic scales, different educational backgrounds, proportion of technological acceptance, the recent developments in the banking environment and the lack of empirical studies in the geographical area have led to conduct the research in Trincomalee district. Furthermore, it attempts to fill the gap by adding empirical evidence with the existing body of knowledge about how virtual banking service quality influences customer satisfaction of commercial banks in Trincomalee district. Objectives of the research are as follows,

- To identify the level of virtual banking service quality offered by commercial banks in Trincomalee district.
- To identify the level of customer satisfaction of virtual banking of commercial banks in Trincomalee district.

- To examine how virtual banking service quality influences customer satisfaction of Commercial banks in Trincomalee district.

The remainder of the paper commences with reviewing trends in virtual banking. This is followed by methods of the research are given. Pen ultimately, results are discussed. Finally, conclusions, implication of the study and future research opportunities are presented.

## **2. LITERATURE REVIEW**

### **2.1. Theoretical background for virtual banking**

Various customer perceptions of adoption and acceptance of virtual banking are dramatically focused by researchers as it highly influences on the customer attitudes, user behaviour and customer satisfaction. Theoretical approaches have been used by many scholars to investigate the acceptance and adoption of technology usage which is very relevant to predict the relationship of customer attitude and belief in virtual banking. The most accepted theories are Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), Innovation Diffusion Theory (IDT) and Theory of Reasoned Action (TRA).

Out of these, TAM has been proved that this is the widely accepted theory to predict technology adoption behaviour which is related to the variables of perceived usefulness and perceived ease of use (Chaouali et al., 2016; Mital et al., 2018). However, some studies based on this model proved that this model has to extend due to its insufficient guidance in network influences and securities in e-banking (Koo et al., 2015). TPB is used to predict the intention of an individual's behaviour which is influenced by the attitude of the user. IDT consists of five characteristics of innovations that are affecting their diffusion. Those characteristics are, relative advantage, compatibility, complexity, trial-ability, and observability (Shy, 1997; Dandago & Rufai, 2014).

The integration of TAM, TPB and IDT is best suited to examine the virtual banking services as acceptance and process of technology adoption have been proved in several researches (Awa et al., 2015; Motak et al., 2017; Chen, 2016). While several indicators are derived from the above three theories, some other e-service qualities and customer satisfaction variables are also taken into consideration as this study focuses to gain in depth understanding of the phenomenon between service quality and customer satisfaction pertaining to virtual banking services.

## **2.2. Virtual Banking**

Virtual banking can explain the offering of banking services to the customer's door step through electronic devices in a secured and fastest way (Shahriari, 2014). Customers can perform innovative services through digital platforms which leads to better experiences. It can deliver better quality services to cater the customer aspirations by fastest and convenience transactions 24/7 access. This can fulfill unmatched customer satisfaction than the traditional banking system and routed to long term customer relationships by providing accurate information (Nupur, 2010). Mobile stats of the US reveal that 89% account holders use mobile to manage their accounts and just 20% of consumers are still visiting the branch premises. Banks from time to time introduce new developments in virtual banking products and services for changing behaviour of customers and try to retain the existing customers and attract untapped customer segments (Nimako, Gymfi & Wandaogou, 2013; Priyanath, 2018).

## **2.3. Customer Satisfaction**

The overall experience of the customer about a product or services they purchase compared with their expectation is known as customer satisfaction. Kottler (2000) defined customer satisfaction as "a person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance or outcome in relation to his/her expectations". Customer satisfaction is an important tool used by the banks for stand out for years by delivering pleasurable customer experience in the competitive market. Customers expect a consistent experience through Omni channels and it's the bank's responsibility to deliver the services without resistance. Though banks introduce new products, customers concern how they respond to them and how they solve the problems in relation to the services they access.

SERVQUAL model, introduced by Parasuramn, Zeithmal and Berry (1985), was used to analyse the gap between customer's expectations and customer's perception. Tangibility, reliability, responsiveness, empathy, assurance are the service quality dimensions identified through the SERQUAL model. Customer satisfaction is about a firm's service quality which can be evaluated by comparing customer's expectation and customer's perception of the actual services delivered to the customers. If perception exceeds the customer expectation this is considered as ultimate customer satisfaction. Different models were applied by scholars to understand the customer satisfaction in various contexts. However, in this study it is more appropriate to use a customer satisfaction model developed by Chen, Hsiao & Hwang (2012) to evaluate customer satisfaction based on the dimensions content, accuracy, ease of use, timeliness and safety due to the problems analysed in related to customer perception of virtual banking acceptance.

## **2.4. Virtual banking service quality and customer satisfaction**

Virtual banking service quality is explained by the overall judgment of the quality of services consumed by the customers through the digital banking network (Zeithaml et al., 2002; Amin, 2016). E-satisfaction is the pleasant and positive experience of the customer from the E-service delivery of the banks and financial institutions. Service quality and web site designs are the main two factors that influence e-customer satisfaction (Kim, 2005). This research is trying to find out to what extent the quality of virtual banking services offered by banks would contribute to the satisfaction level of customers based on customer's perception of Trincomalee. Several researches carried out in various countries to find the relationship between e-banking service quality and customer satisfaction in different perspectives.

According to the research conducted in Pakistan on impact of e-banking on customer satisfaction based on the key dimensions of SERQUAL model and emphasizes that people evaluate e-banking service quality mainly on three key dimensions: Responsiveness, Reliability and Assurance (Toor et al., 2016). Some researchers pointed out those e-banking services help to retain customers with good customer satisfaction (Martins et al., 2014). Ranaweera and Neely (2003) stated that E-service quality is the initial step which develops customer satisfaction. A research carried by Adil (2013) verified that quality services retain the customers with the bank and illustrated there is a direct relationship between electronic service quality and customer satisfaction.

In Sri Lanka, most of the previous researches focused on the customer satisfaction only for the usage of internet and mobile banking. There are several researches conducted to identify the factors influencing the adoption of internet banking (Jayasiri, Gunawardana & Dharmadasa, 2016), mobile banking and the impact of internet banking on customer satisfaction (De Silva & Abeysekara, 2012). However, these researches do not consider the entire virtual banking services provided by banks and to analyse how these service qualities impact on customer satisfaction. Tharnikaran et al. (2017) conducted within the e-banking users who have accounts in licensed commercial banks in Batticaloa district to identify the customer satisfaction considering the e-service quality dimensions: efficiency, system availability, fulfilment, privacy, responsiveness, compensation.

**Table 1: E-service dimensions used in different contexts**

<b>Authors</b>	<b>Dimensions</b>	<b>Context</b>
Yoo and Douthu (2001)	Ease of use, aesthetic design, processing speed, and security (SiteQual)	Online retailing
Parasuraman et al. (2005)	Efficiency, system availability, fulfillment, privacy, responsiveness, compensation and contact (E-S-Qual and e-RecS-Qual)	E-service
Akinci and Aksoy (2010)	Based on Parasuraman et al. (2005) e-service quality model: efficiency, system availability, fulfillment, privacy, responsiveness, compensation and contact (E-SERVQUAL)	E- banking
Zavareh et al., (2013)	Assurance, fulfillment, efficiency, system availability, privacy, contact-responsiveness, and website aesthetics and guide	E Banking
Amin (2016)	Personal Need, Site organization, User Friendliness, Efficiency of website	Internet Banking
Toor et al., (2016)	Dimensions of SERVQUAL Model Reliability, Responsiveness, Assurance, Tangibles, Empathy	E- banking
Tharanikaran et al., (2017)	Efficiency, system availability, fulfillment, privacy, responsiveness, compensation and contact	E-banking
Priyanath, (2018)	E-service quality model: efficiency, system availability, fulfillment, privacy, responsiveness, compensation and contact	Internet Banking
Zhou et al., (2019)	Functional completeness, performance, interface and interaction quality, content and information, support or service	E- services in telecom
Sathiyavany and Shivany (2018)	Website design, Content, E-trust, E-convenience, E- cost effectiveness, E-response/Support	E-banking
Aruna (2019)	Accessibility, Awareness, Bank functions, Cost, Ease of Use	Internet Banking

Source: Author Constructed

As per the Table 1, numerous models were developed by various scholars to evaluate the e-service quality in different countries with different perspectives and it has been found that E- SERVQUAL developed by Parasuraman (2005) is identified as the best model to suit the analysis of e-service quality since it is the conjuncture of two different models of E-S-QUAL (dimensions of



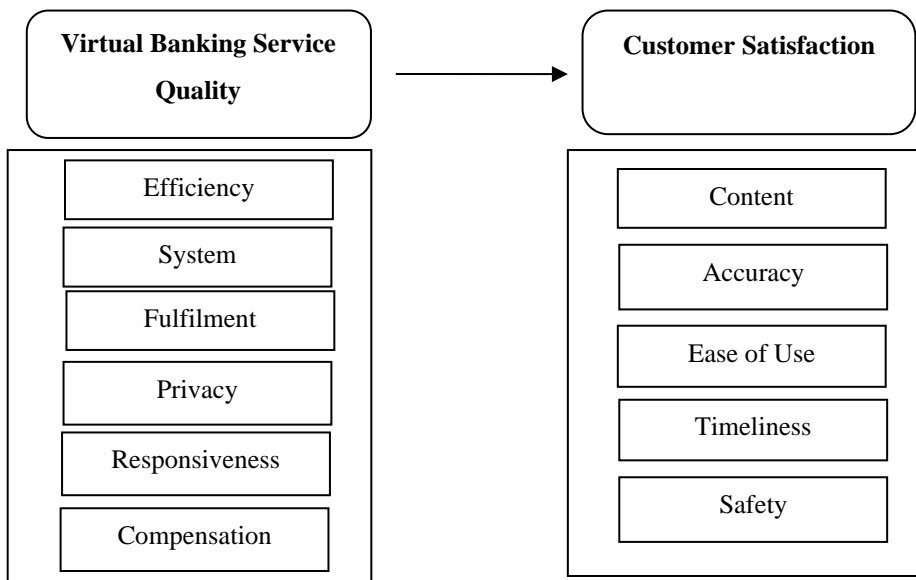
efficiency, fulfilment, system availability and privacy) and E-Rec-S-QUAL (Dimensions of Responsiveness, compensation and contact) which has been used and accepted by many researchers to test the e-service quality. Hence, this research also tries to examine the virtual banking service quality by considering the e-service quality dimensions to obtain best understanding.

### 3. METHODOLOGY

A positivist perspective was applied to identify how virtual banking services offered by banks influence customer satisfaction in Trincomalee district through the customer's perceptions.

#### 3.1. Conceptual Framework of the research

Conceptual Framework of the study is shown in Figure 1.



**Figure 1: Conceptual Framework of the research**

Source: Parasuraman et al., 2005; Chen et al., 2012

**Efficiency:** The ability of accessing the system easily and trying to find out the preferred services and information without spending too much time and struggle (Zethaml et al., 2002). Previous studies highlighted that efficiency has a significant impact on customer satisfaction (Akinici et al., 2010;

Herington and Weaven, 2009; Zethaml et al., 2002; Priyanath, 2018). Therefore, the following hypothesis is formulated.

**H1:** There is a significant positive relationship between efficiency and customer satisfaction in virtual banking of commercial banks in Trincomalee district.

**System availability:** How the website or system is organized for business with correct technical functions and the operating ability of the website. Zeithaml et al. (2000), Ling et al. (2015), Zeithaml et al. (2002), Priyanath (2018) concluded that system availability enhances the customer satisfaction. Therefore, the relevance of system availability in virtual banking hypothesis as follows.

**H2:** There is a significant positive relationship between system availability and customer satisfaction in virtual banking of commercial banks in Trincomalee district.

**Fulfilment:** Ability to offer promised services consistency with the same expected standards which fulfil the expectations of customers within a time frame (Zethaml et al., 2002). Fulfilment has been identified as an essential predictor for customer satisfaction (Toor et al., 2016; Nupur, 2010; Akinci et al., 2010). Hence, this research study hypothesizes that,

**H3:** There is a significant positive relationship between fulfilment and customer satisfaction in virtual banking of commercial banks in Trincomalee district.

**Privacy:** Data governance and data security assures safety transactions and brings trust to customers that banks have the ability to maintain their financial and personal information confidentiality (Ling et al., 2015). Previous research emphasized that privacy has a positive influence towards customer satisfaction (Tharanikaran, 2017). Hence, the following hypothesis is presented.

**H4:** There is a significant positive relationship between privacy and customer satisfaction in virtual banking of commercial banks in Trincomalee district.

**Responsiveness:** The tendency of responding customers immediately in order to provide timely services (Parasuraman et al, 1988). Several researchers concluded that responsiveness has the ability to exceed the level of customer satisfaction (Sakhaei et al., 2014; Zeithaml et al., 2002; Nupur, 2010; Toor et al., 2016). Hence, the relevance of responsiveness hypothesis that,

**H5:** There is a significant positive relationship between responsiveness and customer satisfaction in virtual banking of commercial banks in Trincomalee district.

**Compensation:** The bank's ability to compensate the losses occurred to the customers due to inconvenience and unexpected problems that arise while performing transactions through digital channels (Kumbhar, 2011). It has been proved in several researchers (Parasuraman et al., 2005; Akinci et al., 2010; Tharanikaran et al., 2017; Priyanath, 2018). Therefore, the following hypothesis has been developed,

**H6:** There is a significant positive relationship between compensation and customer satisfaction in virtual banking of commercial banks in Trincomalee district.

### **3.2. Sampling and Data analysis**

#### **3.2.1. Population and sampling**

The population selected for this study was the customers who enjoy any mode of virtual banking services provided by state and private sector commercial banks in Trincomalee district. Krejcie and Morgan (1970) (cited in Sekaran, 2007, p.294) stated that a maximum 384 respondents are sufficient to conduct a large population. By considering the argument, 390 customers who have virtual banking connections in various commercial banks of Trincomalee were selected as a sample. Convenience sampling was used to select the respondents due to the difficulty of obtaining details of virtual banking customers from the banks in Trincomalee.

#### **3.2.2. Data Collection and Analysis**

It was a quantitative research where primary data were gathered through a set of questionnaires and measured by using a 5-point Likert scale. Secondary data were gathered through the banks' websites by referring to the annual reports and related publications. SPSS version 22 was used to analyse the data. Descriptive analysis, Pearson's correlation and multiple regression were used to analyse the primary data collected from the respondents. The descriptive analysis has considered being most appropriate to evaluate the variables based on individual responses which include percentages, mean value and standard deviation. The mean value ( $\bar{X}$ ) ranges and decision attributes are as follows,

- $1.0 \leq \bar{X} < 2.5$  Lower level
- $2.5 \leq \bar{X} < 3.5$  Moderate level
- $3.5 \leq \bar{X} \leq 5.0$  Higher level

## **4. DATA ANALYSIS AND FINDINGS**

### **4.1. Reliability Test**

Total of 413 filled questionnaires received. Out of that only 390 were completely fit to use this research study, the rest of the 23 were incomplete. Cronbach's alpha reliability test was carried out to evaluate the internal reliability of the items measured. The overall Cronbach's value is found as 0.919 (Table 2) and it suggests a strong reliability according to George and Mallery (2003).

**Table 2: Reliability Test**

	Cronbach's Alpha	No of Items
Total Reliability	0.919	38

Source: Survey data, 2019

### **4.2. Univariate Analysis**

#### **4.2.1. Respondents by Banks**

Table 3 reveals that customers having virtual banking connections with private and government sector banks in Trincomalee district were selected as respondents for the purpose of this study. Out of this 390 customer's majority of the respondents are dealing with the two state banks with 41% due to most of the government employees' salaries are directed to these banks. Followed to this, two main private sector banks Commercial bank of Ceylon and Hatton National Bank are 18% and 13% respectively. Rest of the 38% respondents are dealing with all other remaining banks.

**Table 3: Respondents by Banks**

<b>Bank</b>	<b>Frequency</b>	<b>Percent</b>
Hatton National Bank	49	13.0
Commercial Bank	72	18.0
BOC	92	24.0
People's Bank	65	17.0
Sampath Bank	35	9.0
Seylan Bank	25	6.0
NDB	22	6.0
DFCC	9	2.0
NTB	12	3.0
Others	9	2.0

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NDB	22	6.0
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NTB	12	3.0
Others	9	2.0
<b>Total</b>	<b>390</b>	<b>100.0</b>

Source: Survey Data, 2019

#### **4.2.2. Most preferable virtual banking channel**

Table 4 indicates that 41% of respondents prefer ATM networks, 29% of customers prefer internet banking and 28% of respondents prefer mobile banking. Almost all customers give the same preference to internet banking and mobile banking.

**Table 4: Most preferable digital banking channel**

<b>Virtual banking channel</b>	<b>Frequency</b>	<b>Percent</b>
Internet banking	112	29.0
Mobile banking	109	28.0
ATM	160	41.0
Others	9	2.0
<b>Total</b>	<b>390</b>	<b>100.0</b>

Source: Survey Data, 2019

#### **4.2.3. Mostly carryout virtual banking services**

As per the Table 5, Most of the respondents are inquiring account balances (20%), view transaction details (18%), performing fund transfers (20%) and withdrawing cash (19%) by using ATM machines. Respondents have shown a lesser interest in paying utility bills through digital banking (10%) and performing online purchasing transactions (10%) due to security concerns and non-real time updates. The participants using digital access for account opening and loan processing is comparatively below average and it's just 3%. For account opening and to process a loan still customers are visiting the

branches. These results indicate that even the people who are using virtual banking are not familiar to perform all the available services and they only carry out the routine transactions.

**Table 5: Mostly carryout virtual banking services**

<b>Virtual banking services</b>	<b>Frequency</b>	<b>Percent</b>
Balance inquiry	79	20.0
Transaction history	70	18.0
Fund transfer	77	20.0
Utility bill payment	38	10.0
Online purchasing	39	10.0
Cash withdrawal	75	19.0
Account opening and loan processing	12	3.0
<b>Total</b>	<b>390</b>	<b>100.0</b>

Source: Survey Data, 2019

#### **4.2.4. Descriptive Analysis of Research information**

Table 6 shows that the highest mean value extracted for each service quality dimension and customer satisfaction dimensions indicate that overall virtual banking service quality is highly perceived by the customers in Trincomalee district and they are fairly satisfied with the usage of virtual banking. Banks have to concentrate more on system development since the mean value is in a moderate level.

**Table 6: Descriptive Analysis of Research information**

<b>Virtual Banking Service quality</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Customer Satisfaction</b>	<b>Mean</b>	<b>Std. Deviation</b>
Efficiency	3.63	0.63	Content	3.83	0.86
System Availability	3.34	0.73	Accuracy	3.79	0.74
Fulfilment	3.50	0.67	Ease of use	4.00	0.72
Privacy	3.67	0.76	Timeliness	3.78	0.78
Responsiveness	3.59	0.69	Safety	3.72	0.75
Compensation	3.78	0.71			

Source: Survey data, 2019

#### 4.3. OLS Assumptions: Multi-collinearity Test

The multi collinearity issue was checked between the independent variables and the dependent variable of customer satisfaction as shown in Table 6 and found the VIF value of less than 0.5 and the tolerance value which is higher than 0.2 indicate there is no severe multicollinearity problem among the variables (Table 7).

**Table 7: Multi-collinearity test**

	Collinearity Statistics	
	Tolerance	VIF
Efficiency		
System Availability	0.338	2.963
Fulfilment	0.614	1.628
Privacy	0.363	2.756
Compensation	0.410	2.440
Responsiveness	0.955	1.047
	0.428	2.336

a. Dependent Variable: Customer satisfaction

Source: Survey data, 2019

#### 4.4. Correlation Analysis

According to Table 8, efficiency is positively correlated with customer satisfaction in virtual banking ( $r=0.508$ ) at the level of 0.01. Relationship between System availability and customer satisfaction in virtual banking is a weak positive as Pearson correlation value is less than 0.5 ( $r=0.377$ ) at the 5% significance level. Fulfilment has a significant relationship with customer satisfaction in virtual banking at the significant level of 0.01. The Pearson correlation value 0.537 is higher than 0.5 depicting that a significant moderate positive linear relationship between fulfilment and customer satisfaction in virtual banking. The correlation between privacy and customer satisfaction reported as 0.579, ( $r>0.5$ ) and the significance value  $p<0.05$  are expressing a positive significant linear correlation between privacy and customer satisfaction in virtual banking. The correlation analysis for responsiveness and customer satisfaction in virtual banking portrays a weak positive relationship where the Pearson correlation is 0.493 which is less than 0.5 and significance value is below 0.05. The correlation between compensation and customer satisfaction on virtual banking is lower than 0.5 ( $r=0.068$ ) which is illustrating a weak positive relationship whereas the significance level is 0.179 which is higher than 0.05 ( $0.179=P>0.05$ ) represents that it cannot be generalized. The overall predictability of the correlation between virtual banking service quality and the level of customer satisfaction is depicting that 0.6, which is a moderate positive significant linear relationship at 5% significant level in Trincomalee district.

**Table 8: Correlation Analysis between Virtual Banking and Customer Satisfaction**

Independent Variables	Customer satisfaction (N=390)	
	Pearson Correlation	Sig. (2-tailed)
Efficiency	0.508**	0.000
System Availability	0.377**	0.000
Fulfilment	0.537**	0.000
Privacy	0.579**	0.000
Responsiveness	0.493**	0.000
Compensation	0.068	0.179
Overall Virtual Banking Service Quality	0.600**	0.000

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

Source: Survey data, 2019

#### **4.5. Regression Analysis**

As per the Table 9, simple regression is shown from Model 1 to Model 6. Except compensation, all other dimensions positively influence customer satisfaction. According to the result of multiple regression model 7 in Table 9, the 'F' value of 41.708 conveys that data used in the model is best fit to explore the influence of virtual banking service quality on customer satisfaction as the significance value is 0.000.

The value of R square is 0.395 explaining that based on the selected sample of the survey, 39.5% variation of dependent variables of customer satisfaction in virtual banking can be explained by the independent variable of virtual banking service quality. Adjusted R square 0.386 conveys the independent variables of digital banking service qualities that explain 38.6% of the dependent variable of customer satisfaction in virtual banking of Commercial Banks in Trincomalee district. It proves that more than the virtual banking service qualities tested in this research, some other dimensions are also influencing customer satisfaction in respect of virtual banking in Trincomalee district. It also illustrates how far the virtual banking service quality dimensions of efficiency, system availability, fulfilment, privacy, responsiveness and compensation are having influence on the level of customer satisfaction.

The significant value is below 0.05 for privacy, responsiveness and fulfilment indicate a significant positive impact on customer satisfaction on virtual banking. Out of these three variables privacy highly influences on customer satisfaction of virtual banking services. Next, Responsiveness is also having a



high impact on customer satisfaction. Other three virtual banking service quality dimensions namely efficiency, system availability and compensation are having the significant value above 0.05 reveals that these variables do not have a significant impact on customer satisfaction.

**Table 9: Regression Analysis**

Independent Variables	Dependent Variable - Customer Satisfaction						
	Separate Regression						Multiple Regression
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
B	2.534 0.000 [0.112]	3.064 0.000 [0.097]	2.581 0.000 [0.101]	2.597 0.000 [0.089]	2.702 0.000 [0.102]	3.663 0.000 [0.121]	2.045 0.000 [0.143]
Efficiency	0.355* 0.000 [0.031]						0.055 0.251 [0.048]
System Availability		0.227* 0.000 [0.028]					0.017 0.586 [0.031]
Fulfilment			0.350* 0.000 [0.028]				0.087* 0.047 [0.043]
Privacy				0.334* 0.000 [0.024]			0.202* 0.000 [0.036]
Responsiveness					0.312* 0.000 [0.028]		0.093* 0.016 [0.039]
Compensation						0.042 0.179 [0.031]	0.045 0.075 [0.025]
F	135.248	64.215	156.833	196.017	124.445	1.810	41.708
Sig.	(0.000)	(0.000)	(0.00)	(0.000)	(0.000)	(0.179)	(0.000)
R	0.508	0.377	0.537	0.579	0.496	0.068	0.629
R Square	0.258	0.142	0.288	0.336	0.243	0.005	0.395
Adjusted R Square	0.257	0.140	6	0.334	0.241	0.02	0.386

P- values are shown in parentheses and standard errors are reported in square brackets

Source: Survey data, 2019

In respect of the above results, the regression equation could be written as follows.

$$CS = 2.045 + 0.055E + 0.017SA + 0.087F + 0.202P + 0.045C + 0.093R + e$$

Where,

CS	-	Customer Satisfaction on virtual Banking
E	-	Efficiency
SA	-	System Availability
F	-	Fulfilment
P	-	Privacy
C	-	Compensation
R	-	Responsiveness
e	-	Error term

The equation indicates that the constant static 2.045 units show that the model can predict when all the independent variables were zero. When Fulfilment increases by one unit, customer satisfaction will be increased by 0.087 units as average. When Privacy increases by one unit, customer satisfaction will be raised by 0.202 units as average. Similarly, other dimensions could be explained.

#### 4.6. Hypothesis Test

**H1:** There is a significant positive relationship between efficiency and customer satisfaction in virtual banking.

The multiple regression analysis portrays the significance value as 0.251 ( $0.251 > 0.05$ , ( $p < 0.05$ ) indicating there is no positive significance relationship between efficiency and customer satisfaction on virtual banking. However, Pearson's correlation analysis coefficient is 0.508 which is significant at the level of 5% ( $p = 0.000$ ) illustrates a positive significant relationship between efficiency and customer satisfaction. Therefore, accepts the hypothesis H1 as per the correlation result.

**H2:** There is a significant positive relationship between system availability and customer satisfaction in virtual banking.

The multiple regression analysis portrays the significance value as 0.586 ( $0.586 > 0.05$ , ( $p < 0.05$ ) indicating there is no positive significance impact of system availability on customer satisfaction pertaining to virtual banking. However, Pearson's correlation analysis, the coefficient is 0.377 which is significant at the level of 5% ( $p = 0.000$ ) illustrates a positive significant relationship between system availability and customer satisfaction. Thus, as per the correlation result hypothesis H2 has been accepted.

**H3:** There is a significant positive relationship between fulfilment and customer satisfaction in virtual banking.

As per Pearson's correlation analysis the coefficient is 0.537 which is significant at the level of 5% ( $p=0.000$ ) illustrates a positive significant relationship between fulfilment and customer satisfaction. According to multiple regression analysis the significance value is 0.047 which is less than 0.05 is also indicating a significance impact of service quality dimension of fulfilment on the two variables. Therefore, accepts the hypothesis H3.

**H4:** There is a significant positive relationship between privacy and customer satisfaction in virtual banking.

As per Pearson's correlation analysis the coefficient is 0.579 which is significant at the level of 5% ( $p=0.000$ ) illustrates a positive significant relationship between privacy and customer satisfaction. Based on the results of multiple regression analysis the significance value is 0.000 which is less than 0.05 also indicating a significance relationship between the two variables. Therefore, accepts the hypothesis H4.

**H5:** There is a significant positive relationship between responsiveness and customer satisfaction in virtual banking.

According to Pearson's correlation analysis the coefficient is 0.493 which is significant at the level of 5% ( $p=0.000$ ) illustrates a positive significant relationship between responsiveness and customer satisfaction. Based on the results of multiple regression analysis the significance value is 0.016 which is less than 0.05 also indicating a significance relationship between the two variables. Therefore, accepts the hypothesis H5.

**H6:** There is a significant positive relationship between compensation and customer satisfaction in virtual banking

As per the Pearson's correlation analysis the coefficient is 0.068 which is not significant ( $p=0.179>0.05$ ) illustrates there is no relationship between compensation and customer satisfaction. The multiple regression analysis also portrays the significance value as 0.075 ( $0.075>0.05$ , ( $p<0.05$ ) indicating there is no positive significance impact on compensation and customer satisfaction on virtual banking. Therefore, hypothesis H6 has been rejected.

## **5. DISCUSSION**

Statistical analysis proved that virtual banking service quality has influenced customer satisfaction in Trincomalee district. The previous studies (Sharma & Malviya, 2014; Toor et al., 2016; Kaura et al., 2015) also have proved the same. In addition, it has been noticed that each and every service quality dimension identified in this research has a positive significant relationship

with customer satisfaction except compensation. Out of the six service quality dimensions privacy, fulfilment and responsiveness are highly significant with customer satisfaction. Efficiency and system availability have proved less significant relationship. However, compensation has not produced a significant relationship with customer satisfaction of commercial banks in Trincomalee district. Compared to the other dimensions, privacy is statistically more significant and has a greatest positive relationship with virtual banking customer satisfaction. Responsiveness has a significant positive relationship with customer satisfaction. Previous studies (Sakhaei et al., 2014; Zeithaml et al., 2002; Nupur, 2010; Toor et al., 2016) also pointed out that responsiveness has an influence on customer satisfaction. Statistical results of fulfilment also have a major influence on customer satisfaction on virtual banking. The bank's ability to deliver right services consistency on right time with data accuracy to fulfil the customer's expectation is known as fulfilment. Findings in previous researches (Toor et al., 2016; Nupur, 2010; Akinci et al., 2010) are consistent with the present study.

Efficiency, system availability and compensation have not proved significant influence on customer satisfaction in Trincomalee district in the multiple regression. However, previous studies summarized that there was a significant linear relationship between the two variables (Herington & Weaven, 2009; Zeithaml et al., 2002). Ling et al. (2015) and Zeithaml et al. (2002) found that system availability has a significant effect on customer satisfaction in virtual banking whereas the current study reveals that system availability has less significance with customer satisfaction in virtual banking in Trincomalee district.

Further, Prior researches (Parasuraman et al., 2005; Tharanikaran et al., 2017) illustrated that compensation is also having a positive impact on customer satisfaction. In contrast, the current study conducted in Trincomalee concluded that there is no significant relationship between compensation and virtual banking customer satisfaction.

## **6. CONCLUSIONS**

The study found that ATM, Internet banking and Mobile banking are highly accepted by the customers in Trincomalee district and most of them are utilizing the routine transactions rather than performing all types of virtual transactions. Conclusion for each objective is subsequently presented.

First objective is to identify the level of virtual banking service quality of commercial banks in Trincomalee district. The state of virtual banking service quality measured through the e- service quality dimension of efficiency, system availability, fulfilment. Privacy, responsiveness and compensation and

several indicators were identified under each dimension to analyse the level of service quality. The highest mean value arrived for compensation and continuously privacy, efficiency, responsiveness, fulfilment are in line with higher mean. However, the mean value extracted for system availability is in a moderate level. Results indicate that overall virtual banking service quality is higher in relation to customer's perception.

Second objective is to identify the level of customer satisfaction of virtual banking of commercial banks in Trincomalee district. In order to identify the customer satisfaction level selected sample were asked questions based on the customer satisfaction dimension of content, ease of use, accuracy, timeliness and safety. The mean and standard deviation calculated for each dimension through descriptive analysis illustrates that all five variables are having a high mean value and explains that the customers of commercial banks in Trincomalee district are satisfied with the usage of virtual banking. Ease of use has a highest mean and influencing higher on customer satisfaction with the rest of the four dimensions.

Third objective is to examine how virtual banking service quality influence the customer satisfaction of commercial banks in Trincomalee district. It is concluded that there is a significant relationship between virtual banking service qualities and customer satisfaction of commercial banks in Trincomalee district. Privacy, fulfilment and responsiveness are influenced on customer satisfaction whereas efficiency, system availability and compensation are not significantly influenced on customer satisfaction and compensation is not reflected in a valuable relationship with customer satisfaction in Trincomalee. Moreover, it can be concluded that customers of Trincomalee perceive the virtual banking service quality mostly by privacy, fulfilment and responsiveness. Privacy is the most significant factor perceived by customers to concentrate more on customer satisfaction in virtual banking. Therefore, the study is conveying that better service quality improvements enhance better customer satisfaction.

## **7. POLICY IMPLICATION**

Findings help the banks to identify the real perception of virtual banking by customers and identify the factors by which banks can improve virtual banking service quality which has a huge influence on the customer satisfaction as well as reduces the operational cost and consequently increase the profitability of banks. In addition, it is useful to find out the reasons in customers' perspective why the entire market is still reluctant to move towards electronic channels. Findings of the study provide better solutions to the management of banks how more customers could be attracted while it

provides valuable information to policy makers to design virtual financial systems.

## **8. DIRECTION TO FUTURE RESEARCH**

The study was conducted to identify the customer satisfaction based on virtual banking service quality through customer's perception only in Trincomalee. Therefore, future research is needed to extend the Eastern province as well as the whole country to identify the actual trend of virtual banking service quality and customer satisfaction for better understanding. Secondly, another study could be conducted on the impact of virtual banking on financial performance of banks. Thirdly, qualitative study also could be undertaken to gain more insight of customers pertaining to virtual banking.

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