

# A Critical Innovative Service Quality Measurement in Achieving Customer Satisfaction: A Lesson from Vietnamese Retail Banking Industry

**Nhu-Y Ngoc Hoang**

School of International Business and Marketing  
University of Economics Ho Chi Minh City  
Ho Chi Minh City, Vietnam  
[yhnn@ueh.edu.vn](mailto:yhnn@ueh.edu.vn)

**Ngan Tuyet Truong**

School of Business and Management  
RMIT University  
Ho Chi Minh City, Vietnam  
[ngan.truongthituyet@rmit.edu.vn](mailto:ngan.truongthituyet@rmit.edu.vn)

**Vikas Kumar<sup>1,2</sup>**

<sup>1</sup>Faculty of Accounting  
Ton Duc Thang University  
Ho Chi Minh University, Vietnam  
<sup>2</sup>Bristol Business School  
University of the West of England  
Bristol, UK

[Vikas.kumar@tdtu.edu.vn](mailto:Vikas.kumar@tdtu.edu.vn), [vikas.Kumar@uwe.ac.uk](mailto:vikas.Kumar@uwe.ac.uk)

## Abstract

Today, fulfilling customer needs is no longer a dilemma for service providers within the context of growing many inventions and achievements related to innovative technology. Increasing digitalization has allowed businesses to meet every individual requirement by helping them easily own the customer's information and to deliver service with faster time and more accuracy. In consequence, both customer satisfaction and service quality will be increasingly determined by innovative digital technology.

This paper aims to modify a Service Quality model for the present context, where both humans and technology are making an effort to fulfil customer needs in order to further enhance the overall service quality and customer satisfaction. For this purpose, this research will combine the frameworks of Parasuraman et al. (1988) (SERVQUAL) and Marfo-Yiadom & Ansong (2012) (Innovative Product Quality), as an Innovative Service Quality measurement.

The results of a survey were collected from 222 retail banking customers in Vietnam, being processed by the SPSS program through Cronbach's alpha test, correlation and regression analysis.

As the result, the study confirmed the positive relationship between Service Quality from humans and innovative technology, in which Responsiveness from the staff and Security and Flexibility from innovative technology is influential for Customer Satisfaction.

## Keywords

Innovative Service Quality, Customer Satisfaction, SERVQUAL, Innovative Banking Product Quality, Retail Banking Industry.

## 1. Introduction

Achieving Customer Satisfaction has theoretically been considered as an effective and inexpensive method for attracting customers (Yeung et al., 2002; and Al-Hawari and Ward, 2006; Kumar et al. 2014). Many authors have also discovered the positive relationship between customer satisfaction and financial performance (Anderson et al., 1994; Fornell et al., 1996; Wiele et al., 2002; Yeung et al., 2002; Al-Hawari and Ward, 2006). More importantly, improving Customer Satisfaction helps organizations to enhance and maintain the relationship with customers as well as achieving long-term competitive advantages and organisational success (Jamal and Naser, 2002; Molina et al., 2007; Mandal and Bhattacharya, 2013; Murugiah & Akgam, 2015; Peppers & Rogers, 2005). Therefore, Customer Satisfaction is the primary objective that any organisation should concern about (Bitner and Hubbert, 1994; Jones and Sasser, 1995; Jamal and Naser, 2002).

Many scholars have attempted to investigate the determinants of customer satisfaction in order to suggest organisations with the right orientation and a more efficient method to increase their customer satisfaction (e.g. Churchill and Surprenant, 1982; Oliver, 1989,1993; Oliver and Swan, 1989; Kumar et al. 2014). In terms of retail banking, most authors found out that service quality is one of the main influential factors to the customer satisfaction result, in which the higher service quality provided, the more satisfied customers (e.g. Levesque and McDougall, 1996; Jamal & Naser, 2002; Kumar et al. 2008; Arbore and Busacca, 2009; Estiri et al., 2011; Awan et al., 2011; Rehman, 2012; Kaura, 2013; Abdullah et al., 2014; Dinh & Pickler, 2012; Wang et al., 2014)

With the same aim for a higher customer satisfaction result, some authors have tested the influence of innovation on customer satisfaction. As a result, they asserted that offering innovative products/services is not only the key strategy for customer satisfaction as it responds to customer needs, but also differentiates an organisation from the rest within the competitive market (Porter and Linde, 1995; Khan et al., 2014). In fact, there has been a technological innovation revolution taking place within the field of retail banking, whose evidence is the emergence and development of innovative banking products. These products are designed to deliver technologies: ATM, banking card, Internet banking, mobile banking etc. (Anderloni et al., 2009; Batiz-Lazo et al., 2011; Balaceanu, 2011; Marfo-Yiadom & Ansong, 2012). Some authors also considered these deliveries of technologies (via innovative banking products) as the determinant of customer satisfaction (Meuter et al., 2000; Sur, 2008).

Despite there are some studies researched in the determinants of Customer Satisfaction through Service Quality in Vietnam, for instance, the study of Dinh & Pickler (2012) as remarkable one; however, many scholars have noticed there is a lack of consistency in the results on this research topic due to the impact of the changing environment (or different in circumstances, time, culture, etc.) (e.g. Al-Eisa and Alhemoud, 2009; Sangeetha and Mahalingam, 2011). On the other hand, the importance of the quality of innovative banking products is fading within the studies relevant to retail banking, instead, focusing on the quality of service-based innovative technologies (such as online banking service, self-service technology, ATM service, etc.) as the influential factor for the customer satisfaction result (See in Vazifehdoost et al., 2013; Sindwani and Goel, 2015; Yoon, 2010; Narteh, 2015). While in fact, these products themselves are the basis for the services; additionally, the quality of Innovative Banking Product might influence the decision of product/ service adoption by customers, also the quality of relative services.

Therefore, this research will investigate the determinants of Customer Satisfaction through Service Quality and Innovative Banking Products in the retail banking context. Besides, this research will conduct on retail banking in Vietnam in order to help retail banks in Vietnam attract more customers through achieving customer satisfaction as well as being successful in the process of expanding the market share process.

### 1.1 Objectives

The main purpose of this research is to investigate the determinants of customer satisfaction based on the two main sources including Service Quality and Innovative Banking Product Quality in Vietnam retail banking sector. This objective is expected to be achieved by addressing the following research questions:

- How does the quality of Innovative Banking Products influence the Customer Satisfaction result?
- What is the relationship between Innovative Banking Product Quality and Service Quality?
- What dimensions that affect the most to customers' judgments on the quality of Innovative Banking Product?
- What dimensions affect customers' judgments on Overall Satisfaction?

Furthermore, this study not only aims to contribute to the scientific research but also to provide Vietnam retail banks with appropriate adjustments in order to achieve better customer satisfaction as well as key successes within the current competitive market.

## 2. Literature Review

### 2.1 Innovative Product and its implication in the banking industry

Many authors emphasized the importance of new technologies in banking, to be specific, innovative banking products such as ATM, Internet Banking, Credit Card, Mobile banking play an important implication within replacing humans to deliver financial services in banks (Marfo-Yiadom & Ansong, 2012; Domeher *et al.*, 2014). According to Balaceanu (2011), innovative technological products in the banking industry also play the main role in the automatic procedure of information processing and decision-making. More importantly, most authors implied that technological innovation products not only enhance the efficiency and capability of a bank but also contribute to the achievement of competitive advantages (Reis *et al.*, 2013; Batiz-Lazo *et al.*, 2001; Dzagbenuku, 2013; Domeher *et al.*, 2014; Marfo-Yiadom & Ansong, 2012)

According to Damanpour (1996), Innovation within an organization is understood as accepting and implementing new ideas or behaviours that aim to deal with an unstable environment. While Utterback and Abernathy (1975, p. 642) defined an innovative product as "a new technology or combination of technologies introduced commercially to meet a user or a market need". Many authors pointed out the significant role of innovation within an organization: Hana (2013) claimed that firms with the ability to produce and develop new innovative products/services tend to gain more competitive advantages than others, which seems to be a chance for profit maximisation as well as shortening the path to the success for any organization (e.g. Geroski *et al.*, 1993). Moreover, Baker (2002) considered innovation as an answer to the questions that many organizations have been concerning mostly, such as how to: reduce costs and increase efficiency at the same time? Enhance competitiveness and product life cycle? Become sustainable? Meet customer expectations about service quality?

Regarding the banking area, most authors witnessed changes in this area relevant to an increase in the competitive environment, the development of technologies, globalisation and the changing customer needs; which are known as the circumstances of the advent and development of Innovative in the banking field (e.g. Johnne and Pavlidis, 1995; Roberts and Amit, 2003; Khiaonarong and Liebenau, 2009). In addition, Ankrah (2012) stated that in the context of the worldwide market, customer needs and the standards for a leading bank tend to be expected at a higher level in which the development of innovative banking products possesses an essential role that contributes to shorter waiting time, higher quality, and better performance with lower costs.

### 2.2 The characteristics of Innovative Banking Product

According to Rogers (2003, p. 175), he defined five attributes/characteristics of a new product, consisting of Compatibility, Complexity, Trialability, Relative Advantage and Observability (see the description in [Table 1](#)), these characteristics are drawn from the perception of customer about an innovative product. Many authors pointed out the significant implication of innovative product attributes, as Ostlund (1974) stated that it is the basis for assessing an innovation that relates to a prediction for the success of an innovative product. Whereas most scholars in Diffusion of Innovation Theory agreed that these attributes relate to the popularity of innovation and the rate of adoption, it is explained that the diffusion of an innovative product depends on both the characteristics of a new product and the customer perception of each characteristic of that product (Rogers, 2003). Hence, measuring innovation attributes helps organizations to understand the reasons leading to the different rates within both adoptions and spreading of a product/service innovation (Al-Zoubi, 2013). In addition, Moon *et al.* (2015) stated that these characteristics are the key for the success of product innovation, due it helps customers realized the outstanding value of new products compared to others; more importantly, there must be a connection between these attributes and customers' needs (Dougherty, 1996).

Table 1. The Characteristics/Attributes of Innovation

Characteristics	Description
Relative advantage	The degree to which an innovation is perceived as better than the idea it supersedes
Compatibility	The degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of the potential adopter
Complexity	The degree to which an innovation is perceived as difficult to understand and use
Trialability	The degree to which an innovation may be experimented with on a limited basis
Observability	The degree to which the results of an innovation are visible to others

Source: Adapted from Rogers, 2013

Many authors attempted to develop an appropriate framework for a specific context, based on the paradigm of Rogers; for instance, several authors found some irrelevant attributes in their research environments such as Trialability and Observability (Sia *et al.*, 2004), Trialability (Hashem and Tann, 2007), and Observability (Tanakinjal *et al.*, 2010); or Tanakinjal *et al.* (2010) also added three new attributes (Trustworthiness, Perceived risk, Permissibility) into their model.

Likewise, a number of scholars within the banking field developed many different frameworks for measuring the customer perception on innovative products in this area; notably, Marfo-Yiadom & Ansong (2012) who introduced a general paradigm to measure the perception of innovative banking product, consisting of Convenience, Reliability, Security, Flexibility, Time Saving and Ease of use. The authors also stated that these attributes have the most significant contribution within an Innovative Banking Product and determine to the consumer adoption of Innovative Banking Product; drawn from the previous studies such as Singhal and Padmanabhan (2008), Abor (2004), Williamson (2006); besides, this framework has also received a positive result when tested in Ghana banking industry (Marfo-Yiadom & Ansong, 2012). Therefore, the framework of Marfo-Yiadom & Ansong (2012) will be applied in this study, however, with only four characteristics (including Convenience, Reliability, Security, Flexibility) included in the research model. The reasoning behind this decision is as follows: Gupta and Shama (2014) stated that the Convenience feature of a product aims to deal with the issues relevant to time and effort, in order words, this feature helps customers saving their time and be effort-free in using a product (Brown, 1990); whereas David (1989) implied Ease of use means using without mental efforts. Thus, time-saving and ease of use are considered the values that Convenience provides customers in this research.

### ***Convenience***

Baten and Kamil (2010) indicated that the convenience of Internet banking is expressed through unlimited space and time, which also means that innovative banking products allow the customer to access/contact banking units and services regardless of time and location want without the dependence of provider. Taking Credit Cards (an innovative banking product) as an example, they have been accepted by shopping malls and many stores worldwide as they provide users with high convenience and no more concern about carrying cash (Meidan and Davos, 1994). Most scholars stated that this attribute is considered a significant feature of innovative banking products (e.g. internet banking, credit card, etc.) which determines the adoption of this innovative banking product (e.g. Mattila *et al.*, 2001; Sadiq Sohail and Shanmugham, 2003; Kaynak *et al.*, 1995; Khare *et al.*, 2011). Besides that, Singhal and Padhmanabhan (2008) mentioned that Convenience may lead to positive customer judgment and satisfaction and thus, is an essential feature for banking products.

### ***Reliability***

The Reliability of an innovative banking product is demonstrated through the accuracy of the information, which may require frequent information updates on Internet banking (Munusamy *et al.*, 2012). Jun and Cai (2001) also confirmed that it is one of the most important attributes within Internet Banking. On the other hand, many authors figured out that lacking reliability is the main reason that leads to customer hesitation when involved in Internet banking (Ratnasingham, 1998; Munusamy *et al.*, 2012). As Rogers (2003) explained that newness and uncertainty (determined by risk, reliability and trust) usually take place at the same time, which is known as a phenomenon generated from the innovation adoption process; the result of the innovation adoption process will negatively correlate with the uncertainty degree (Rogers, 2003). In addition, reliability is also reflected through the information cycle process, Jun and Cai (2001) mentioned the accuracy and free of errors during processing data on Internet Banking as the reliability

of Innovative banking products which, however, might not lead to satisfaction, but definitely like the main causes of dissatisfaction in the case of errors and inaccuracy. Reliability has also been considered of significant influence the product quality judgment (Asfour & Haddad, 2014).

### ***Security***

Security is evaluated as the most important feature of an innovative banking product (e.g. Singhal and Padhmanabhan, 2008; Jun and Cai, 2001). While Williamson (2006) and Munusamy *et al.* (2012) emphasized the rising number of Internet crimes is a serious issue for banks and also the main reason that the potential clients refuse to use financial products, thus, enhancing Security is crucial for the survival of Internet Banking in this circumstance. Likewise, Jun and Cai (2001) also asserted that any trouble relevant to Security that occurred might damage the success of Internet Banking, they also suggest bankers pay more attention to the Security of Internet Banking by ensuring privacy and safety in transactions for customers. Security can be shown through the authentication within Innovative Banking Product such as username and password, digital signature, PIN, or even the fingerprint identification (for ATM) (Williamson, 2006; Shamdasani and Matte, 2014; Singhal and Padhmanabhan, 2008).

### ***Flexibility***

According to Liao and Barnes (2015, p. 1260), the innovation flexibility of a product facilitates a set of responsive ways of “acting, reacting, and adapting in a complex business environment”, thus, it is logical to assume that an Innovative Banking Product with high flexibility will also have high adaptability and responsiveness to the complicated environment, as well as a variety of customer, needs as the same time. To be more specific, Flexibility is expressed clearly through Internet Banking: According to Singhal and Padhmanabhan (2008), Internet Banking satisfies the demands for 24/24 banking account management by customers, especially, Internet Banking is integrated with multi-functions in order to satisfy various purposes of usage at the same time such as transferring money, payments and checking account.

## **2.3 Innovative Product Quality**

According to Zeithaml (1988), the quality of a product is indicated as “superiority or excellence”, in which there are many different perspectives to perceive as well as to evaluate product quality such as extrinsic and intrinsic cues. Extrinsic cues (or the external quality) are perceived through brand, prices, advertising degree, the origin of product and warranty (Olson and Jacoby 1972; Teas and Agarwal, 2000). On the other hand, Intrinsic cues (or internal quality) relates to the physical condition of a product or are understood as the components of a product (Olson and Jacoby 1972), and these indicators are believed to reflect product quality more accurately compared to Extrinsic indicators (Olson and Jacoby 1972; Szybillo and Jacoby, 1974; Zeithaml, 1988).

In terms of internal quality, it is divided into two categories: Objective Quality and Subjective Quality. Objective quality relates to the characteristics/features of a product, while Subjective Quality means the appearance of the product (image or design) (Lancaster, 1966; Curkovic *et al.*, 2000; Molina-Castillo *et al.*, 2011). This research, however, only focuses on the objective quality as subjective quality (e.g. design, image) has been stated uninvolved in banking products (including banking innovative products) (Wang *et al.*, 2003).

## **2.4 Measuring Innovative Product Quality with Product-based Approach**

Among the methods to measure product quality, the Product-based approach is considered the most appropriate measurement for objective quality, through which inequality in product quality can be seen as the reflection of the difference in the quantity of some attributes as well as an ingredient that those products possess (Garvin, 1984).

In terms of Innovative products, it is found that measuring innovative products in general and Innovative banking products, in particular, are rarely paid attention to within Innovation studies and Banking studies, hence, this study will carry out measuring the quality of Innovative Banking Product through Product-based approach by Garvin (1984), as well as filling the gap for these research areas. This measurement is based on the general framework for Innovative banking Product suggested by Marfo-Yiadom & Ansong (2012), consisting of four attributes (Convenience, Reliability, Security and Flexibility); It was suggested that the better value customers perceived from these attributes, the higher quality of Innovative Banking Product will be reflected; and vice versa.

## **2.5 Service Quality and Customer Satisfaction**

Many researchers identified a causal relationship between Service Quality and Customer satisfaction, which in turn led to debates on determining which one is the antecedent of the other. A few studies agreed that customer satisfaction is the antecedent of service quality: Bitner (1990) stated that satisfaction judgment is able to reflect the corresponding

level of service quality. Likewise, Bolton and Drew (1991b) found out that customer satisfaction is the intermediate within the influence of the disconfirmation process on service quality.

From the other side of the debates, many scholars stated that service quality is the antecedent of customer satisfaction, stating that the higher-level service quality is reached, the more satisfied customers become (e.g. Cronin and Taylor, 1992; Anderson and Sullivan, 1993; Bauman *et al.*, 2007), furthermore, Cronin and Taylor (1992) also witnessed a weak confirmation within the opposing side (which states that customer satisfaction is the antecedent of service quality) being tested at four industries (banking, dry cleaning, fast food and pest control). In fact, this assertion has been widely accepted and expanded on an empirical scale, especially in the banking field (e.g. Levesque and McDougall, 1996; Jamal and Naser, 2002; Estiri *et al.*, 2011; Dinh and Pickler, 2012; Abdullah *et al.*, 2014). Hence, this study is going to apply the model from Cronin and Taylor (1992), and Anderson and Sullivan (1993) in order to analyse the causal relationship between service quality and customer satisfaction.

## 2.6 SERVQUAL dimensions and Customer Satisfaction

Most authors emphasized the inconsistency within the identification of the determinants of customer satisfaction when implementing SERVQUAL in different circumstances (e.g. Al-Eisa and Alhemoud, 2009; Sangeetha and Mahalingam, 2011). Notably, Rehman (2012), who conducted the Islamic SERVQUAL (or CARTER) at Islamic banking in three countries (Pakistan, UAE and UK), found that Assurance, Reliability, Tangible and Empathy have close interrelation with customer satisfaction in Pakistan; however, the authors could not find the link between Tangible and customer satisfaction in the UK, but Assurance, Reliability, and Empathy; while only Assurance and Tangible are found to be affecting customer satisfaction result in UAE (Rehman, 2012).

The findings of Yavas *et al.* (1997) and Baumann *et al.* (2007) can partly give an explanation for Rehman's (2012) study about the presence of Tangible in the relationship with customer satisfaction in some cases. As Yavas *et al.* (1997) explained that Tangible creates the initial customer impression for Turkish banking, and they also witnessed customers at a bank being provided with comfortable air conditioning and fresh air are more satisfied than customers at a bank filled with smoke and high temperature. Some other researchers also asserted that Tangible is the significant dimension influencing customer satisfaction results (e.g., Rehman, 2012; Wang *et al.*, 2014). On the other hand, Baumann *et al.* (2007) confirmed that Tangible has no effect on customer satisfaction result, they argued that offering the same value in tangibility at every Australian bank lead to uniformity that makes this dimension become unimportant. Likewise, many scholars found a similar result with Baumann *et al.* (2007) such as Fatima and Razzaque (2013), Jamal and Naser (2002).

In the context of Islamic banking in Iran, Estiri *et al.*, (2011) found out Empathy as the main dimension affecting customer satisfaction, followed by Responsiveness, Assurance, Reliability and Tangible. Likewise, Dinh and Pickler (2012) also asserted that Reliability and Empathy create great influence towards customer satisfaction judgment in Vietnamese retail banking. In contrast, Lau *et al.* (2013) implied Empathy as the least effective dimension towards customer satisfaction result, while Assurance, Responsibility, Reliability, Tangibility affects the most in the banking study at Hong Kong. Therefore, the first hypothesis in this research is:

*H1: The high quality of Service is going to positively affect Customer Satisfaction.*

## 2.7 Innovative Banking Product Quality and Service Quality, and Customer Satisfaction

Drawing from the Product-based Approach by Garvin (1984), a product (in this case innovative banking product) with high quality is considered as the one whose quantity of some attributes or ingredients is higher than that of the others. In addition, the higher level of convenience perceived, the more issues relevant to time and efforts are addressed (Gupta and Shama, 2014). Liao and Barnes (2015) also claimed that innovative products with high flexibility are able to respond to customer need in different situations as well as minimising customer waiting time. Furthermore, observing a higher level of reliability and security while using innovative banking products (relevant to accuracy, error-free and safety) will encourage customer confidence to adopt a new product (e.g. Munusamy *et al.*, 2012; Jun and Cai, 2001).

In term of service quality, many authors emphasized that Innovative Banking Products has an important role in supporting and improving traditional service in banks (e.g. Oluwatolani *et al.*, 2011; Ankrah, 2012; Zhu *et al.*, 2002). Oluwatolani *et al.* (2011) stated that the development of information technology (including ATM, internet banking, etc.) is the key method/strategy for banking organizations to respond to their customers demand quickly, efficiently and accurately. While Parasuraman *et al.* (1988) considered timing, accuracy and efficiency as important factors that reflect the reliability and assurance of services as well as affecting the Service Quality judgment. Akinyele and Olorunleke (2010) also discovered the positive relationship between Innovative Banking Products and Service

Quality. Furthermore, Zhu *et al.* (2002) pointed out that the better experience customers receive from innovative banking products (through IT-based service), the service of the more positive judgment quality received. Regarding customer satisfaction, Tom and Lucey (1997) stated that waiting time is among the issues that organizations should be concerned about, as long waiting times negatively affect customer satisfaction results. In this case, the features within Innovative banking product quality might contribute to deal with this issue through Convenience and Flexibility attributes (See Garvin, 1984; Gupta and Shama, 2014; Liao and Barnes, 2015). Besides that, many authors approved Innovative Banking Product as a source of satisfaction or dissatisfaction (Meuter *et al.*, 2000; Sur, 2008); Meuter *et al.* (2000) implied that the difference in customer perception depends on the attributes of innovative banking product leads to different customer satisfaction result. In terms of the attributes of Innovative Banking Product, Poon (2008) and Sindwani and Goel (2015) also agreed that the Convenience of an innovative banking product positively affects customer satisfaction. On the other hand, Sindwani and Goel (2015) could not found a positive relationship between Reliability and Security with Customer Satisfaction. While Poon (2008) asserted there is a relationship between Security and Customer Satisfaction, in which low security is the main reason for customer dissatisfaction. Therefore, the second and third hypotheses are:

*H2: the high quality of Innovative Banking products is going to positively affect Customer Satisfaction.*

*H3: There is a positive relationship between the quality of Innovative Banking Product and Service Quality*

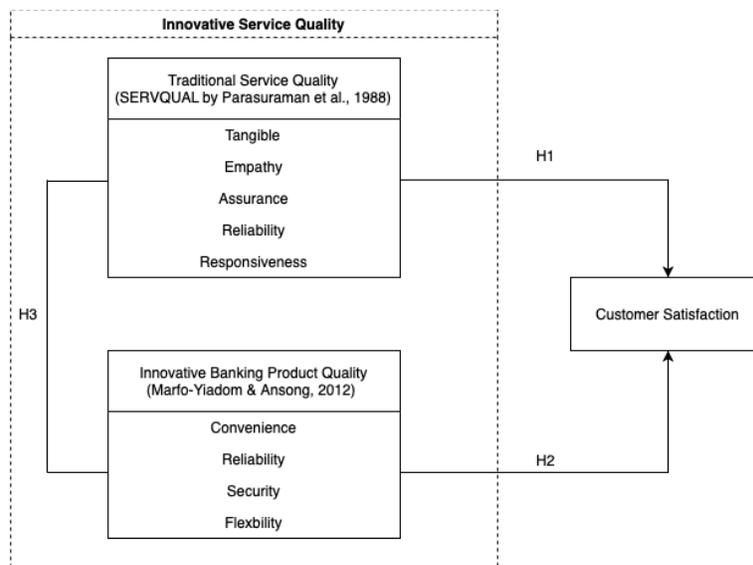


Figure 1: Research Model

### 3. Method

Figure 1 presents the research model and hypotheses. In this research, the survey sample included customers who are using innovative products and services in Vietnamese retail banks. Probability sampling was followed, as it is considered to be more objective when samples are selected on a random basis (Wilson, 2010). Many authors also emphasized the importance of establishing an accurate sample size, so that this size is valid to represent a population, and that it reflects partly the reliability of research (e.g. Hallebone and Priest, 2009; Wilson, 2010). Most scholars also found that the larger a sample size is, the higher level of accuracy the sample reflects the population, not to mention that fewer errors can occur (e.g. Chesney and Obrecht, 2011; Delice, 2010; Saunders *et al.*, 2012). Therefore, it is believed that a survey with a sample of more than 200 retail-banking customers is appropriate for this research; the respondents were selected randomly from the population.

### 4. Data Collection

In this study, the primary data was collected through the Self-administered Questionnaire Technique "where the respondent completed the questionnaire on his/her own" (O'Gorman and MacIntosh, 2014, p. 159). This technique is mentioned by Brace (2013) as convenient and inexpensive. Nonetheless, respondents interpreting questions in a different way than the original purpose from the researcher may lead to inaccurate data, this drawback is however not much of a threat if the researcher has a good command of writing for the questionnaire (Brace, 2013). Likewise, Saunders *et al.* (2012) stressed the important role of designing a questionnaire towards enhancing the quality of

(primary) data, in which researchers have to pay more attention to design, layout and also be clear on the purpose of the questionnaire.

The objective of the questionnaire within this study was to exploit the data related to the three main variables including customer satisfaction, service quality and innovative banking product, supported by the Qualtrics program (an online survey software). Furthermore, in order to ensure the objectivity and accurateness of answers, the questionnaire will also be designed with multiple choices option and Likert-scale questions, and also presented in bilingual format (English and Vietnamese) to support respondents with limited English command. The statements inserted into the Likert-scale questions will be expressed as positive affirmations, which will not only help respondents to determine their answers, but also express their respect for banking businesses.

## 5. Results and Discussion

### 5.1 Numerical Results

The survey questionnaire was sent to around 300 banking customers and resulted in 248 responses. After careful evaluation 26 responses were found to be incomplete, this resulted in 222 valid responses. As shown in the chart, the majority of the users of innovative banking products/ banking services aged from 20 to 30 (74.32% - 165 out of 222 total), followed by the age group from 30 to 40 (19.37%) and over 40 years old (4.95%), the "under 20" group accounted for the lowest rank with 1.35%. The number demonstrates that the office worker group is the main user of Vietnam retail banks (53.60%), followed by the student group (10.36%). In contrast, the worker and homemaker groups occupy the lowest proportion in this survey, about 0.9% for both of them.

It is indicated that these dimensions (Tangible, Reliability, Responsibility, Assurance and Empathy) have considerably high correlations with Service Quality (over .8\*\*). The interactive relationship between Service Quality and Customer Satisfaction is accepted with a correlation coefficient (.652\*\*). Additionally, all dimensions of Service Quality correlate positively with Customer Satisfaction, in which, Assurance achieved the highest correlation coefficient (about .613\*\*) whereas the Tangible has the lowest correlation coefficient at .512\*\*

Regarding the strong correlation between the quality of Innovative banking products and their dimensions (Convenience, Reliability, Security and Flexibility), the correlation coefficients above are at .8\*\* for all of them. While the positive relationship between the Innovative Banking Product Quality and Customer Satisfaction is at a moderate level (.606\*\*). Moreover, it is convinced that all four dimensions of Innovative Banking Products, including Convenience, Reliability, Security and Flexibility are in good correlation with Customer Satisfaction, respectively at .408\*\*, .463\*\*, .551\*\* and .596\*\*. Thus, it can be concluded that these variables are eligible to undergo regression testing (see the description in Table 2 and Table 3).

There is a positive interrelation between Service Quality and the quality of Innovative banking products at a moderate degree (about .606\*\*). Further interactions have also been detected, for instance:

- Firstly, between Service Quality and the dimensions of Innovative banking product, in which the Flexibility dimension reaches the highest correlation coefficient (.681\*\*), followed by Security (.672\*\*), Reliability (.634\*\*) and Convenience dimension (.472\*\*).
- Secondly, between Innovative Banking Product Quality and Service Quality's dimensions, in which the highest correlation coefficient belongs to Assurance (about .667\*\*), followed by Reliability (.663\*\*), Responsibility (.645\*\*) and Tangible (.623\*\*), and Empathy dimension as the lowest (.597\*\*) (See Table 15)
- Thirdly, the evidence that all dimensions (including both the Service Quality's dimensions and Innovative banking product's dimensions) are not mutually exclusive and in fact, possess the mutual positive relationship. To be more specific:
  - Several pairs have the strongest correlation coefficient such as Assurance and Tangible (.720\*\*), Assurance and Reliability (within Service Quality) (.755\*\*), Responsibility and Assurance (.737\*\*), Responsibility and Empathy (.731\*\*).
  - In contrast, a low correlation coefficient also exists within a few pairs such as Convenience and Tangible (.373\*\*), and Convenience and Empathy (.394\*\*).
  - While the medium level of the correlation coefficient is recorded in the remaining pairs, ranging from .412\*\* to .691\*\*.

According to the results presented above, the positive correlation between Service Quality and Customer Satisfaction, and between Innovative Banking Product Quality and Customer Satisfaction are confirmed through the positive coefficients from the results of correlation testing, which are .652\*\* and .606\*\*. These results form the basis for the conduct of the Regression Analysis for **H1** and **H2**.

On the other hand, **H3** is accepted with the correlation coefficients .606\*\*, hence there is a positive interrelation between the quality of innovative banking products and service quality. Besides that, the positive relationship between the dimensions within both Service Quality and Innovative Banking Products has been confirmed.

### Insert mutual positive relationship between dimensions

To sum up, based on the analysis above, all three hypotheses are supported. In the first hypothesis (H1), The high quality of Service is going to positively affect Customer Satisfaction (with the standardized regression coefficient = 0.449), it also means that when the Service Quality is enhanced, it will significantly facilitate the result of Customer Satisfaction. Regarding the second hypothesis (H2) the high quality of Innovative Banking Products is going to positively affect Customer Satisfaction (with the standardized regression coefficient = 0.274). It can be interpreted that improved quality of Innovative Banking Product that will lead to an increase in the degree Customer Satisfaction. On the other hand, it can be seen that Service Quality can contribute to predicting the Customer Satisfaction result higher more effectively than the quality of Innovative Banking Products (0.449 > 0.274). For the last hypothesis (H3), there is a positive relationship between the quality of Innovative Banking Products and Service Quality, in other words, the improvements in the performance of either Innovative Banking Products or Service will witness a better performance of the rest and vice versa.

Moreover, there are many further relationships also discovered in this research:

- Firstly, the mutual correlation between dimensions (within both Innovative Banking Product and Service Quality)
- Secondly, the Responsiveness dimension is the only one in SERVQUAL that affects positively to the Customer Satisfaction result, whereas the remaining dimensions in SERVQUAL could not be found to be in the linear relationship with Customer Satisfaction
- Thirdly, there are two dimensions in Innovative Banking Product (includes Security and Flexibility) which influence significantly to Customer Satisfaction, in which the Customer Satisfaction result is determined mainly by the Flexibility dimension rather than the Security dimension
- The Convenience dimension is found to be the main determinant within the quality of Innovative Banking Products, followed by Reliability, Security and Flexibility. On the other hand, the Empathy dimension is considered the main determinant within Service Quality, followed by Assurance, Responsiveness, Tangible and Reliability.
- Lastly, the majority of banking Customers satisfy when using Innovative Banking Products and Service at retail Banks in Vietnam, of which 79% for Satisfied, 14% for Very Satisfied, whereas only 5% for Neutral, and 2% for both Dissatisfied and Very Dissatisfied.

Table 2. Pearson correlation coefficients between the dimensions of Innovative Banking Product Quality, and Innovative Banking Product Quality, Service Quality, and Customer Satisfaction

	Innovative Banking Product Quality	Service Quality	Customer Satisfaction
Convenience	.818**	.472**	.408**
Reliability	.844**	.634**	.463**
Security	.803**	.672**	.551**
Flexibility	.834**	.681**	.596**
**. Correlation is significant at the 0.01 level (2-tailed). Sig. (2-tailed) = .000			

Table 3. Pearson correlation coefficients between Innovative Banking Product Quality, Service Quality, and Customer Satisfaction

	Service Quality	Customer Satisfaction
Innovative Banking Product Quality	.606**	.606**
**. Correlation is significant at the 0.01 level (2-tailed). Sig. (2-tailed) = .000		

## 5.2 Validation

First of all, the sample size of this research only reached 222 respondents, hence might not be accurate enough to represent the population of Vietnamese retail banking as a whole. This drawback is due to the limit of time and budget, especially, geographical distance. To be more specific, the primary data is collected via an online survey, which may be convenient and inexpensive, but may also miss out on some potential respondents who rarely have access to the Internet. Future studies could implement this research model, however, with a larger sample size, provided affordable time and budget.

Secondly, this research investigated the relationship between variables based on customer perception without any specific measurement of customer expectation. The reason is measuring both customer perception and expectation could prolong the questionnaire completion time (since more questions will be added); which may make it harder to convince respondents to participate in this survey or cause respondents to be impatient and rush in the answering process, which could lead to information inaccuracy. Further research could refer to this research model to measure customer expectation, as well as utilise this paper's findings to define the gap between customer perception and expectation; that will help Vietnamese retail banks to have adjustments more specific.

Finally, as the aim of this research is to investigate the determinants of customer satisfaction, it did not go into a detailed focus on the relationship between Service Quality and Innovative Banking Product Quality. However, from this point, future researches could carry on to explore whether there is a causal relationship between these two variables. Besides that, the measurement framework of Innovative Banking Product Quality is developed based on the research of Marfo-Yiadom & Ansong (2012), which was made in the context of Ghana banking industry; and thus, this framework might not be convincing enough to be considered a general model for either world banking industry as a whole or Vietnamese banking industry in particular. Thus, it is strongly suggested for future research to implement a re-validation for both this paper and the research of Marfo-Yiadom & Ansong (2012) to come up with a more suitable framework.

## 6. Conclusion

This paper has attempted to investigate the determinants of customer satisfaction in the Vietnamese retail banking industry; that aims to suggest Vietnamese banks with appropriate adjustments and changes within their operations to enhance the efficiency within the process improves customer satisfaction. The investigation procedure has been clarified by answering the research questions with critical analyses and discussions.

First of all, this research found out that the high quality of both Innovative Banking products and related services bring about positive effects to Customer Satisfaction and therefore, are considered in this research as the two main influential factors to Customer Satisfaction results. In addition, Service Quality has a higher capability for the prediction of customer satisfaction result rather than the quality of Innovative Banking Product. As a result, this study suggested Vietnamese retail banks focus on both Service Quality and Innovative Banking Product Quality in order to achieve a higher level of customer satisfaction. In that, Innovative banking products are considered to be of high quality when customers perceive the significance within the attributes (Convenience, Security, Flexibility and Reliability) of the products themselves, the better quality an innovative banking product offers, the more satisfied customers will become.

There also exists between the quality of Innovative Banking product and Service Quality a positive interrelation, which resulted from many positive interrelations between their dimensions. This result indicates that the work of improving service quality or Innovative Banking product Quality are not mutually exclusive but in fact creative interactive effects from both sides. Therefore, Vietnamese retail banks should be aware that improving the quality of Innovative banking products (e.g. ATM, internet banking, etc.) is an essential objective, which will encourage customers to trust and adopt these products, this, in turn, will contribute to reduce the pressure as well as avoid overload for traditional banking services, and also to the enhancement of banks' capacity and efficiency in serving customers.

In terms of Service Quality, Empathy and Assurance are considered the main influential dimensions to the service quality judgment, followed by Responsiveness, Tangible; and Reliability respectively. This result implies that Vietnamese retail banking customers require from banking staffs: a greater amount of attention and understanding about their needs; capability to create favourable conditions for customer aid (e.g., suggesting multiple services packages that may be suitable for customer demand, personal preference and purposes); willingness to listen and respond to customer feedback. Moreover, customers have recently been paying more attention to how professional banking staff appearance is, as well as how they build up customer confidence and awareness of security when involved in any banking services. However, customers would also overlook some minor mistakes in the transaction process as long as it does not create any serious harm to their interests.

Convenience and Reliability are determined as the main predictors for the evaluation of Innovative Banking Product quality, followed by Security and Flexibility. In other words, most customers are concerned about the Convenience and Reliability attributes when using Innovative Banking Products. In terms of Convenience and Reliability, Vietnamese retail banks should implement self-evaluation and reconsideration on whether their Innovative Banking Products are being offered with ease of use and quick operation, or can be accessed with low restriction in time and location. In addition, information updates and system maintenance should be carried out frequently to detect and fix errors promptly.

This research not only pointed out the two main factors (service quality and Innovative Banking Product) influencing customer satisfaction but also found out three dimensions that affect directly customer satisfaction, which are Responsiveness (in SERVQUAL), Security and Flexibility (in Innovative Banking Product). Thus, it is important to notice that the weaknesses within the ability to respond to customer enquiries and feedbacks might be the cause of customer dissatisfaction; besides that, innovative banking products whose security level is low and interruption usually occurs during the process of responding to customer requirements, are also considered as a threat towards customer satisfaction.

## References

- Abdullah, M.A., Manaf, N.H.A, Yusuf, M.O., Ahsan, K., and Azam, S.M.F., Determinants of Customer Satisfaction on Retail Banks in New Zealand: An Empirical Analysis Using Structural Equation Modeling, *Global Economy and Finance Journal*, vol. 7, no. 1, pp. 63-82, 2014.
- Abor, J., Technological innovations and banking in Ghana: An evaluation of customers' perceptions, *American Academy of Financial Management*, vol. 1, pp. 1-16, 2004.
- Akinyele, S.T., and Olorunleke, K., Technology and Service Quality in the Banking Industry: An Empirical Study of Various Factors in Electronic Banking Services, *International Business Management*, vol. 4, no. 4, pp. 209-221, 2010.
- Al-Eisa, A.S., and Alhemoud, A.M., Using a multiple-attribute approach for measuring customer satisfaction with retail banking services in Kuwait, *International Journal of Bank Marketing*, vol. 27, no. 4, pp. 294-314, 2009.
- Al-Hawari, M., and Ward, T., The effect of automated service quality on Australian banks' financial performance and the mediating role of customer satisfaction, *Marketing Intelligence & Planning*, vol. 24, no. 2, pp. 127-147, 2006.
- Al-Zoubi, M.I., Predicting E-Business Adoption through Integrating the Constructs of the Rogers's Diffusion of Innovation Theory Combined with Technology-Organization-Environment Model, *International Journal of Advanced Computer Research*, vol. 3, no. 13, pp. 63-73, 2013.
- Anderloni, L., Llewellyn, D.T., and Schmidt, R.H., *Financial innovation in retail and corporate banking*, Cheltenham: Edward Elgar, 2009
- Anderson, E.W., and Sullivan, M.W., The antecedents and consequences of Customer Satisfaction for firms, *Marketing Science*, vol. 12, no. 2, pp. 125-143, 1993.
- Anderson, E.W., Fornell, C., and Lehmann, D.R., Customer Satisfaction, Market Share, and Profitability: Findings From Sweden, *Journal of Marketing*, vol. 58, no. 3, pp. 53-66, 1994.
- Ankrah, E., Technology and Service Quality in the Banking Industry in Ghana, *Information and Knowledge Management*, vol. 2, no. 8, pp. 52-60, 2012.
- Arbore, A., and Busacca, B., Customer satisfaction and dissatisfaction in retail banking: Exploring the asymmetric impact of attribute performances, *Journal of Retailing and Customer Services*, vol. 16, no. 4, pp. 271-280, 2009.
- Asfour, H.K., and Haddad, S.I., The impact of Mobile Banking on Enhancing Customers' E-Satisfaction" An Empirical Study on Commercial Banks in Jordan, *International Business Research*, vol. 7, no. 10, pp. 145-169, 2014.
- Awan, H.M., Bukhari, K.S., and Iqbal, A., Service quality and customer satisfaction in the banking sector: A comparative study of conventional and Islamic banks in Pakistan, *Journal of Islamic Marketing*, vol. 2, no. 3, pp. 203-224, 2011.
- Baker, K.A., Organizational communication in Management Benchmark Study/U.S. Office of Science/Department of Energy, Available: <http://www.au.af.mil/au/awc/awcgate/doe/benchmark/ch14.pdf> , Accessed on September 25, 2015.
- Balaceanu, V.A., Marketing technological innovations in banking products and services, *Challenges of the Knowledge Society*, vol. 1, pp. 1224-1230, 2011.
- Balaceanu, V.A., Promotional Strategies Direct Marketing and Technological Innovations in Banking, *Journal of Knowledge Management, Economics and Information Technology*, vol. 1, no. 7, pp. 478-491, 2011.
- Baten, M.A., and Kamil, A.A., E-Banking of Economical Prospects in Bangladesh, *Journal of Internet Banking and*

- Commerce*, vol. 15, no. 2, pp. 1-10, 2010.
- Batiz-Lazo, B., Maixé-Altés, J.C., and Thomes, P., *Technological innovation in retail finance: international historical perspectives*, London: Routledge, 2011.
- Baumann, C., Burton, S., Elliott, G., and Kehr, H.M., Prediction of attitude and behavioral intentions in retail banking, *International Journal of Bank Marketing*, vol. 25, no. 2, pp. 102-116, 2007.
- Bitner, M.J., Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses, *Journal of Marketing*, vol. 54, no. 2, pp. 69-82, 1990.
- Bitner, M.J., and Hubbert, A.R., Encounter satisfaction versus overall satisfaction versus quality, In: Rust, R.T., and Oliver, R.L., *Service Quality: New Directions in Theory and Practice*, London: SAGE Publications, Inc., pp. 72-95, 1994.
- Bolton, R.N., and Drew, J.H., A Multistage Model of Customers' Assessment of Service Quality and Value, *Journal of Consumer Research*, vol. 17, no. 4, pp. 375-384, 1991b.
- Brace, I., *Questionnaire design: how to plan, structure and write survey material for effective market research*, 3th Edition, London: Kogan Page, 2013.
- Brown, L.G., Convenience in Services Marketing, *The Journal of Services Marketing*, vol 4, no. 1, pp. 53-59, 1990.
- Chesney, D.L., and Obrecht, N.A., Statistical judgments are influenced by the implied likelihood that samples represent the same population, *Memory & Cognition*, vol. 40, no. 3, pp. 420-433, 2012.
- Churchill, G.A., and Surprenant, C., An investigation into the Determinants of Customer Satisfaction, *Journal of Marketing Research*, vol. 19, no. November, pp. 491-504, 1982.
- Cronin, J.J., and Taylor, S.A., Measuring Service Quality: A Reexamination and Extension, *Journal of Marketing*, vol. 56, no. 3, pp. 55-68, 1992.
- Curkovic, S., Vickery, S.K., and Droge, C., An empirical analysis of the competitive dimensions of quality performance in the automotive supply industry, *International Journal of Operations & Production Management*, vol. 20, no. 3, pp. 386-403, 2000.
- Damanpour, F., Organizational Complexity and Innovation: Developing and Testing Multiple Contingency Models, *Management Science*, vol. 42, no. 5, pp. 693-716, 1996.
- Davis, F.D., Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, *MIS Quarterly*, vol. 13, no. 3, pp. 319-340, 1989.
- Delice, A., The Sampling Issues in Quantitative Research, *KURAM VE UYGULAMADA EGITIM BILIMLERI*, vol. 10, no. 4, pp. 2001-2018, 2010.
- Dinh, V., and Pickler, L., Examining Service Quality and Customer Satisfaction in the Retail Banking Sector in Vietnam, *Journal of Relationship Marketing*, vol. 11, no. 4, pp. 199-214, 2012.
- Domeher, D., Frimpong, J.M., and Appiah, T., Adoption of financial innovation in the Ghanaian banking industry, *African Review of Economics and Finance*, vol. 6, no. 2, pp. 88-114, 2014.
- Dougherty, D., Organizing for innovation, In Clegg, S.R., Hardy, C. and Nord, W.R. (Eds.), *Handbook of Organization Studies*, London: Sage Publications, 1996.
- Dzoghbenuku, R.K., Banking Innovation in Ghana: Insight of Students' Adoption and Diffusion, *Journal of Internet Banking and Commerce*, vol. 18, no. 3, pp. 1-20, 2013.
- Estiri, M.; Hosseini, F., Yazdani, H., and Nejad, H.J., Determinants of customer satisfaction in Islamic banking: evidence from Iran, *International Journal of Islamic and Middle Finance and Management*, vol. 4, no. 4, pp. 295-307, 2011.
- Fatima, J.K., and Razzaque, M.A., Service quality and satisfaction in the banking sector, *International Journal of Quality & Reliability Management*, vol. 31, no. 4, pp. 367-379, 2013.
- Fornell, C., Johnson, M.D., Anderson, E.W., Cha, J., and Bryant, B.E., The American Customer Satisfaction Index: Nature, purpose, and Findings, *Journal of Marketing*, vol. 60, no. 4, pp. 7-18, 1996.
- Garvin, D.A., What Does "Product Quality" Really Mean?, *Sloan Management Review (pre-1986)*, vol. 26, no. 1, pp. 25-43, 1984.
- Geroski, P., Machin, S., and Reenen, J.V., The profitability of innovating firms, *The RAND Journal of Economics*, vol. 24, no. 2, pp. 198-211, 1993.
- Gupta, S., and Sharma, D., Dimensions of retail service convenience in emerging market setting - a qualitative investigation, *Journal of Service Research*, vol. 14, no. 1, pp. 99-122, 2014.
- Hallebone, E., and Priest, J., *Business and management research: paradigms & practices*, Basingstoke: Palgrave Macmillan, 2009.
- Hana, U., Competitive Advantage Achievement through Innovation and Knowledge, *Journal of Competitiveness*, vol. 5, no. 1, pp. 82-96, 2013.
- Hashem, G., and Tann, J., The Adoption of ISO 9000 Standards within the Egyptian Context: A Diffusion of

- Innovation Approach, *Total Quality Management*, vol. 18, no. 6, pp. 631-652, 2007.
- Jamal, A., and Naser, K., Customer satisfaction and retail banking: an assessment of some of the key antecedents of customer satisfaction in retail banking, *International Journal of Bank Marketing*, vol. 20, no. 4, pp. 146-160, 2002.
- Johne, A., and Pavlidis, P., Product Innovation in Banking: How Marketing Works, *Journal of Marketing Management*, vol. 11, no. 8, pp. 797-805, 1995.
- Jones, T.O., and Sasser, W.E., Why Satisfied Customers Defect, *Harvard Business Review*, vol. 73, no. 6, pp. 88-99, 1995.
- Jun, M., and Cai, S., The key determinants of Internet banking service quality: a content analysis, *International Journal of Bank Marketing*, vol. 19, no. 7, pp. 276-291, 2001.
- Kaura, V., Antecedents of customer satisfaction: a study of Indian public and private sector banks, *International Journal of Bank Marketing*, vol. 31, no. 3, pp. 167-186, 2013.
- Kaynak, E., Kucukemiroglu, O., and Ozmen, A., Correlates of credit card acceptance and usage in an advanced developing Middle Eastern country, *Journal of Service Marketing*, vol. 9, no. 4, pp. 52-63, 1995.
- Khan, N., Salam, S., and Sherpao, A., Impact of Innovation on Customer Satisfaction and Brand Loyalty: A Case Study of Professionals, *International Journal of Management Sciences*, vol. 3, no. 9, pp. 663-672, 2014.
- Khare, A., Khare, A., and Singh, S., Factors affecting credit card use in India, *Asia Pacific Journal of Marketing and Logistics*, vol. 24, no. 2, pp. 236-256, 2011.
- Khiaonarong, T. & Liebenau, J., *Banking on innovation: modernization of payment systems*, Heidelberg: Physica, 2009.
- Kumar, V., Smart, P.A., Maddern, H. and Maull, R.S., Alternative perspectives on service quality and customer satisfaction: the role of BPM, *International Journal of Service Industry Management*, vol. 19, no. 2, pp. 176-187, 2008.
- Kumar, V., Kumari, A., Ruan, X., Garza-Reyes, J. A., & Akkarangoon, S., Investigating key antecedents of customer satisfaction in B2B information service firms, *Proceeding of the Conference on e-Business, e-Services and e-Society*, pp. 327-337, 2014.
- Lancaster, K.J., A new approach to consumer theory, *Journal of Political Economy*, vol. 74, no. 2, pp. 132-157, 1966.
- Lau, M.M., Cheung, R., Lam, A.Y.C., and Chu, Y.T., Measuring Service Quality in the Banking Industry: A Hong Kong Based Study, *Contemporary Management Research*, vol. 9, no. 3, pp. 263-282, 2013.
- Levesque, T., and McDougall, G.H.G., Determinants of customer satisfaction in retail banking, *International Journal of Bank Marketing*, vol. 14, no. 7, pp. 12-20, 1996.
- Liao, Y., and Barnes, J., Knowledge acquisition and product innovation flexibility in SMEs, *Business Process Management Journal*, vol. 21, no. 6, pp. 1257-1278, 2015.
- Mandal, P.C., and Bhattacharya, S., Customer Satisfaction in Indian Retail Banking: A Grounded Theory Approach, *The Qualitative Report*, vol. 18, no. 56, pp. 1-21, 2013.
- Marfo-Yiadom, E., and Ansong, A., Customers' Perception of Innovative Banking Products in Cape Coast Metropolis, Ghana, *International Journal of Business and Management*, vol. 7, no. 3, pp. 162-172, 2012.
- Mattila, M., Karjaluoto, H., and Pento, T., Internet Banking Adoption Factors in Finland, *Journal of Internet Banking and Commerce*, vol. 6, no. 1, 2001.
- Meidan, A., and Davos, D., Credit and Charge Cards Selection Criteria in Greece, *International Journal of Bank Marketing*, vol. 12, no. 2, pp. 36-44, 1994.
- Meuter, M.L., Ostrom, A.L., Roundtree, R.I., and Bitner, M.J., Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters, *Journal of Marketing*, vol. 64, no. 3, pp. 50-64, 2000.
- Molina-Castillo, F., Munuera-Alemán, J., and Calantone, R.J., Product Quality and New Product Performance: The Role of Network Externalities and Switching Costs, *Journal of Product Innovation Management*, vol. 28, no. 6, pp. 915-929, 2011.
- Molina, A., Martin-Consuegra, D., and Esteban, Á., Relational benefits and customer satisfaction in retail banking, *International Journal of Bank Marketing*, vol. 25, no. 4, pp. 253-271, 2007.
- Moon, H., Park, J., and Kim, S., The importance of an Innovative Product Design on Customer Behavior: Development and Validation of a Scale, *Journal of Product Innovation Management*, vol. 32, no. 2, pp. 224-232, 2015.
- Munusamy, J., Annamalah, S., and Chelliah, S., Perceived barriers of innovative banking among Malaysian retail banking customers, *Journal of Internet Banking and Commerce*, vol. 17, no. 1, pp. 1-15, 2012.
- Murugiah, L., and Akgam, H.A., Study of Customer Satisfaction in the Banking Sector in Libya, *Journal of Economics, Business and Management*, vol. 3, no. 7, pp. 674-677, 2015.
- Narteh, B., Perceived service quality and satisfaction of self-service technology: The case of automated teller machines, *International Journal of Quality & Reliability Management*, vol. 32, no. 4, pp. 361-380, 2015.

- O'Gorman, K., & MacIntosh, R., *Research methods for business & management: a guide to writing your dissertation*, Oxford: Goodfellow Publishers, 2014.
- Oliver, R.L., Processing of The Satisfaction Response in Consumption: A Suggested Framework and Research Propositions, *Journal of Consumer Satisfaction/Dissatisfaction and Complaining Behavior*, vol. 2, no. 1, pp. 1-16, 1989
- Oliver, R.L., Cognitive, Affective, and Attribute Bases of the Satisfaction Response, *Journal of Consumer Research*, vol. 20, no. 3, pp. 418-430, 1993.
- Oliver, R.L., and Swan, J.E., Customer Perceptions of Interpersonal Equity and Satisfaction in Transactions: A Field Survey Approach, *Journal of Marketing*, vol. 53, no. 2, pp. 21-35, 1989.
- Olson, J. C., and Jacoby, J., Cue utilization in the quality perception process, *Advances in Consumer Research*, vol. 3, pp. 167-179, 1972.
- Oluwatolani, O., Joshua, A., and Philip, A., The Impact of Information Technology in Nigeria's Banking Industry, *Journal of Computer Science and Engineering*, vol. 7, no. 2, pp. 63-67, 2011.
- Ostlund, L.E., Perceived Innovation Attributes as Predictors of Innovativeness, *Journal of Consumer Research*, vol. 1, no. 2, pp. 23-29, 1974.
- Parasuraman, A., Zeithaml, V.A., and Berry L.L., SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality, *Journal of Retailing*, vol. 64, no. 1, pp. 13-40, 1988.
- Peppers, D., & Rogers, M., Customers don't grow on trees, *Fast Company*, pp. 25-26, 2005.
- Poon, W., Users' adoption of e-banking services: the Malaysian perspective, *Journal of Business & Industrial Marketing*, vol. 23, no. 1, pp. 59-69, 2008.
- Porter, M.E., and Linde, C.V.D., Green and Competitive: ending the stalemate, *Harvard Business Review*, vol. 73, no. 5, pp. 120-134, 1995.
- Ratnasingham, P., The importance of trust in electronic commerce, *Internet Research: Electronic Networking Applications and Policy*, vol. 8, no. 4, pp. 313-321, 1998.
- Rehman, A.A., Customer satisfaction and service quality in Islamic banking: A comparative study in Pakistan, United Arab Emirates and United Kingdom, *Qualitative Research in Financial Markets*, vol. 4, no. 2/3, pp. 165-175, 2012.
- Reis, J.R.G., Ferreira, F.A.F., and Barata, J.M.M., Technological innovation in banking services: an exploratory analysis to perceptions of the front office employee, *Problems and Perspectives in Management*, vol 11, no. 1, pp. 34-49, 2013.
- Roberts, P.W., and Amit, R., The Dynamics of Innovative Activity and Competitive Advantage: The Case of Australian Retail Banking, 1981 to 1995, *Organization Science*, vol. 14, no. 2, pp. 107-122, 2003.
- Rogers, E.M., *Diffusion of Innovation*, 5<sup>th</sup> Edition, New York: Free Press, 2003.
- Sadiq Sohail, M., & Shanmugham, B., E-banking and customer preferences in Malaysia: An empirical investigation, *Information Sciences*, vol. 150, no. 3, pp. 207-217, 2003.
- Sangeetha, J., and Mahalingam, S., Service quality models in banking: a review, *International Journal of Islamic and Middle Eastern Finance and Management*, vol. 4, no. 1, pp. 83-103, 2011.
- Saunders, M., Lewis, P., & Thornhill, A., *Research methods for business students*, 6th Edition, Harlow: Financial Times Prentice Hall, 2012.
- Shamdasani, J., and Matte, P, ATM Client Authentication System Using Biometric Identifier & OTP, *International Journal of Engineering Trends and Technology (IJETT)*, vol. 11, no. 5, pp. 255-258, 2014.
- Sia, C., Teo, H., Tan, B.C.Y., and Wei, K., Effects of Environmental Uncertainty on Organizational Intention to Adopt Distributed Work Arrangements, *IEEE Transactions on Engineering Management*, vol. 51, no. 3, pp. 253-267, 2004.
- Sindwani, R., and Goel, M., The impact of Technology Based Self Service Banking Dimensions On Customer Satisfaction, *International Journal of Business Information Systems Strategies*, vol. 4, no. 1/2, pp. 1-13, 2015.
- Singhal, D., and Padhmanabhan, V., A Study on Customer Perception Towards Internet Banking: Identifying Major Contributing Factors, *The Journal of Nepalese Business Studies*, vol. 5, no. 1, pp. 101-111, 2008.
- Sur, S., Technology-Based Remote Service Encounters: Understanding Customer Satisfaction and Sustainability, *Journal of Foodservice Business Research*, vol. 11, no. 3, pp. 315-332, 2008.
- Szybillo, G.J., & Jacoby, J., Intrinsic versus extrinsic cues as determinants of perceived product quality, *Journal of Applied Psychology*, vol. 59, no. 1, pp. 74-78, 1974.
- Tanakinjal, G.H., Deans, K.R., and Gray, B.J., Third Screen Communication and the Adoption of Mobile Marketing: A Malaysia Perspective, *International Journal of Marketing Studies*, vol. 2, no. 1, pp. 36-46, 2010.
- Teas, R.K., & Agarwal, S., The effects of extrinsic product cues on consumers' perceptions of quality, sacrifice, and value, *Journal of the Academy of Marketing Science*, vol. 28, no. 2, pp. 278-290, 2000.

- Tom, G., and Lucey, S., A Field Study Investigating the Effect of Waiting Time on Customer Satisfaction, *The Journal of Psychology*, vol. 131, no. 6, pp. 655-660, 1997.
- Utterback, J.M., and Abernathy, W.J., A Dynamic Model of Process and Product Innovation, *OMEGA*, vol. 3, no. 6, pp. 639-656, 1975.
- Vazifehdoost, H., Akbarpour, Z., Rostami, J.M., and Hamdi, K., Key Determinants of Service Quality and Self-Service Technologies in Iranian Banking, *International Journal of Marketing Studies*, vol. 5, no. 6, pp. 133-150, 2013.
- Wang, C.N., Nguyen, N.T., & Tran, T.T., An Empirical Study of Customer Satisfaction towards Bank Payment Card Service Quality in Ho Chi Minh Banking Branches, *International Journal of Economics and Finance*, vol. 6, no. 50, pp. 170-181, 2014.
- Wiele, T., Boselie, P., and Hesselink, M., Empirical evidence for the relationship between customer satisfaction and business performance, *Managing Service Quality*, vol. 12, no. 3, pp. 184-193, 2002.
- Williamson, G.D., Enhanced Authentication In Online Banking, *Journal of Economic Crime Management*, vol. 4, no. 2, pp. 1-42, 2006.
- Wilson, J., *Essentials of business research: a guide to doing your research project*, London: SAGE, 2010.
- Yavas, U., Bilgin, Z., and Shemwell, D.J., Service quality in the banking sector in an emerging economy” a consumer survey, *International Journal of Bank Marketing*, vol. 15, no. 6, pp. 217-223, 1997.
- Yeung, M.C.H., Ging, L.C., and Ennew, C.T., Customer satisfaction and profitability: A reappraisal of the nature of the relationship, *Journal of Targeting, Measurement and Analysis for Marketing*, vol. 11, no. 1, pp. 24-33, 2002.
- Yoon, C., Antecedents of customer satisfaction with online banking in China: The effects of experience, *Computers in Human Behavior*, vol. 26, no. 6, pp. 1296-1304, 2010.
- Zeithaml, V.A., Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence, *Journal of Marketing*, vol. 52, no. 3, pp. 2-22, 1988.
- Zhu, F.X., Wymer Jr, W., and Chen, I., IT-based services and service quality in consumer banking, *International Journal of Service Industry Management*, vol. 13, no. 1, pp. 69-90, 2002.

## Biographies

**Nhu-Y Ngoc Hoang** is a Ph.D. Student at National Cheng Kung University, Taiwan; and also a Lecturer at International Business and Marketing School, University of Economics Ho Chi Minh City, Vietnam. She teaches a variety of subjects including Multinational Financial Management, Business and Enterprise, and International Logistics. She achieved both a Bachelor of Arts (Honours) degree in Business Studies with Accounting and Finance, and a Master's of Science degree in International Management at the University of the West of England, UK. She is interested in the topics of E-Commerce, Customer Behavior, Operations & Service Management, and Generation and Age Studies.

**Ngân Tuyết Trương** is a Ph.D. Candidate, and a Research Assistant at the School of Business and Management, RMIT University, Vietnam. She takes research on Service Innovation, Service Quality, Operation and Supply Chain Management. Her research focuses on Customer Satisfaction and Customer Behaviours in Tourism and Hospitality industry.

**Vikas Kumar** is a Professor of Operations and Supply Chain Management and Director of Research at Bristol Business School, University of the West of England, UK. He is also a Visiting Professor at Faculty of Accounting, Ton Duc Thang University, Ho Chi Minh City, Vietnam. He holds a PhD degree in Management Studies from University of Exeter, UK. He has published more than 250 peer-reviewed articles in leading International journals and International conferences including the Journal of Business Research, International Journal of Production Research, Supply Chain Management: an International Journal, Expert System with Applications, International Journal of Production Economics, and Production Planning & Control. He serves on the editorial board of a number of international journals and has successfully secured funding in the excess of £1 million from various research agencies such as EPSRC, Innovate UK, British Academy, Newton Fund and British Council. His current research interests include Operational Excellence, Sustainability, Circular Economy, Food Supply Chains, and Industry 4.0.