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

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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 fulfill 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
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 Sassier, 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; Narkeh, 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; Dzogbenuku, 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. Johne 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

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Description</th>
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<tr>
<td>Relative advantage</td>
<td>The degree to which an innovation is perceived as better than the idea it supersedes</td>
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<tr>
<td>Compatibility</td>
<td>The degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of the potential adopter</td>
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<tr>
<td>Complexity</td>
<td>The degree to which an innovation is perceived as difficult to understand and use</td>
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<tr>
<td>Trialability</td>
<td>The degree to which an innovation may be experimented with on a limited basis</td>
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<tr>
<td>Observability</td>
<td>The degree to which the results of an innovation are visible to others</td>
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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 Trialiability and Observability (Sia et al., 2004), Trialiability (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:

\[ H1: \text{The high quality of Service is going to positively affect Customer Satisfaction.} \]

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

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 Maclntosh, 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, \textbf{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.

\textbf{Insert mutual positive relationship between dimensions}

To sum up, based on the analysis above, all three hypotheses are supported. In the first hypothesis (\textit{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 (\textit{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 (\textit{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.

\begin{table}
\caption{Pearson correlation coefficients between the dimensions of Innovative Banking Product Quality, and Innovative Banking Product Quality, Service Quality, and Customer Satisfaction}
\begin{center}
\begin{tabular}{|l|c|c|c|}
\hline
 & Innovative Banking Product Quality & Service Quality & Customer Satisfaction \\
\hline
Convenience & \( .818^{**} \) & \( .472^{**} \) & \( .408^{**} \) \\
Reliability & \( .844^{**} \) & \( .634^{**} \) & \( .463^{**} \) \\
Security & \( .803^{**} \) & \( .672^{**} \) & \( .551^{**} \) \\
Flexibility & \( .834^{**} \) & \( .681^{**} \) & \( .596^{**} \) \\
\hline
\end{tabular}
\end{center}
\end{table}

**. Correlation is significant at the 0.01 level (2-tailed).
Sig. (2-tailed) = .000

\begin{table}
\caption{Pearson correlation coefficients between Innovative Banking Product Quality, Service Quality, and Customer Satisfaction}
\begin{center}
\begin{tabular}{|l|c|c|}
\hline
 & Service Quality & Customer Satisfaction \\
\hline
Innovative Banking Product Quality & \( .606^{**} \) & \( .606^{**} \) \\
\hline
\end{tabular}
\end{center}
\end{table}

**. 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 convincible 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.

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