



## **Diffusion of Innovation Theory Utilization Online Financial Transaction: Literature Review**

**Litafira Syahadiyanti<sup>1\*</sup>, Apol Pribadi Subriadi<sup>2</sup>**

<sup>1</sup>Department of Information Systems, Faculty of Information Technology and Communication, <sup>2</sup>Institut Teknologi Sepuluh Nopember (ITS), Jl. Arief Rahman Hakim, Surabaya, 60111 Indonesia. \*Email: [litafirasyahadiyanti@gmail.com](mailto:litafirasyahadiyanti@gmail.com)

### **ABSTRACT**

Payment system is a system related to the transfer of the amount of money from one part to another part. The use of online financial transactions is the implementation of technology in the payment system to be faster, precise and accurate. In fact, online transaction very rarely used by the society. This review was required to analyze existing studies on the adoption of online financial transactions. Based on the literature review conducted, there were several studies that state that not all variables included in the diffusion of innovation theory in accord with the conditions. Only a few variables were suitable for the adoption of online financial transactions at this time. There were three conceptual models that can be considered from the results of a literature review. This literature review is provided new research opportunities to prove the conceptual model of online financial transactions adoption reviewed in this paper.

**Keywords:** Adoption, Online Financial Transaction, Diffusion of Innovation Theory

**JEL Classifications:** G4,O3,P2

### **1. INTRODUCTION**

Technology and information systems are growing rapidly in line with the times. Information technology is now internet-based so that all can be accessed anytime and anywhere. Given the current technological improvements, entrepreneurs or business people are utilizing to expand their business and improve their performance. Research APJII (Association of Indonesian Internet Service Providers) states the number of internet usage is increasing. The number of Internet users is 140 million by 2015 (APJII, 2016).

Technological advances have multiplier effects. Advances in technology in the field of communications and mobile phones are very influential in the development of payment systems (Hidayati, 2014). The technology of this payment system is moving towards an increasingly efficient direction. The efficiency of the payment system can be measured by the level of accuracy and speed. The need of payment systems is higher, where the efficiency of the payment system is a major factor of economic activity undertaken by the community and entrepreneurs.

The number of population in Indonesia amounts to 29% of people who use the internet for online transactions. In other words, of the entire population of Indonesia, only 39% of urban society and 11.1% of rural communities perform online transactions (MARS, 2016). This shows that with all the benefits gained in using online financial transactions does not necessarily encourage people in Indonesia to use it. Technology encourages the banking world in utilizing the internet. Banking transactions provide convenience and convenience for customers to conduct financial transactions online (Widyarini, 2005).

Based on Innovation Diffusion Theory which explains that the characteristics of innovation are the nature of the diffusion of innovation, where the characteristics of innovation are one that determines the successful use of technology. (Rogers, 1983) suggests there are 5 characteristics of innovation, namely: Relative advantage, compatibility, complexity, trialability and observability. In the research (Kapoor et al., 2013) states that only three variables of Innovation Diffusion Theory. Relative Advantage, Compatibility, and Complexity that affect the acceptance of online financial transactions. In the research (Lin, 2011) and (Mian

and Rizwan, 2013) use only two of the five existing innovation characteristics: Relative Advantages and Compatibility. And both variables are proven to have a positive effect on the use of online financial transactions. While in the study (Gounaris and Koritos, 2008), states that innovation diffusion theory is less accurate to predict the acceptance of online financial transactions by consumers. And only three variables are considered accurate in predicting acceptance of online financial transactions, namely: Relative advantage, compatibility, and trialability. This is also reinforced by research using only three variables of innovation diffusion theory: Relative advantage, compatibility and trialability of the third these variables have a positive impact on the acceptance of online financial transactions.

This study provides three conceptual models of online financial transactions adoption that can be considered from the results of a literature review that has been done. Conducting a literature review of the development of online financial transactions adoption research can provide new research opportunities to prove the conceptual model of online financial transactions adoption reviewed in this paper.

## 2. LITERATURE REVIEW

The study of the theory discusses the basic theories and concepts related to research in order to obtain theoretical construction foundation as a guide and benchmark of research. The theoretical studies of this study include online financial transactions and diffusion of innovation theory.

### 2.1. Online Financial Transaction

Digital technology has changed people's behavior in almost every aspect of life, such as e-commerce, digital social interactions, electronic books, electronic newspapers, public transportation, tourism support services, and financial technology (Kusumaningrum, 2015). Utilization of digital information technology has helped many people in running the economy becomes more effective and efficient in the financial sector (Widyarini, 2005). The development of electronic payment products namely e-money (e-money) has been introduced to several countries including Indonesia. The difference of electronic money (e-money) with other electronic payment instruments such as (credit card, ATM card, debit card, etc) is from the usage side. Electronic money (e-money) does not require authorization and is not tied directly to the customer's account at the bank. According to (Kumari and Khanna, 2017) the cashless payment method is more transparent because each transaction can be traced easily as it leaves the transaction proof. Here is an example of cashless transactions:

1. ATM: ATM is an electronic device that serves bank customers to take money and check their savings accounts without needing to be served by a human teller.
2. Mobile Money: Mobile Money is a product that allows users to transfer funds, make payments or view balances on their phones.
3. E-Transfer: E-transfer refers to electronic transfers that can be made over the internet on PCs, laptops and other devices. Bank customers who have subscribed to internet banking can perform basic banking transactions through the web.

4. E-Wallet: E-Wallet is a virtual wallet that can store credit cards, debit cards and other information. E-Wallet customers and merchants both need a smart phone with an active internet connection. The most popular example of E-Wallet is PayPal. E-Wallet is the simplest cashless payment method.
5. Credit Card: A credit card is a plastic card issued by a bank or credit card company, which entitles the person who meets certain requirements and is named on the card to use it as a means of payment on credit for the acquisition of goods or services; and or to withdraw cash within the credit limit as determined by the credit card issuer.

The world is moving toward a cashless economy, the country needs the important things discussed below:

1. Power: Power must be increased drastically to accommodate the smoothness of financial activities
2. Infrastructure: The financial infrastructure of a country is very important to realize a society without cash.
3. Availability of real data: Identification of appropriate and accurate account holders must be guaranteed by all financial institutions. Collaboration between government and private agencies responsible for the collection of individual data.
4. Investment: Technology is not cheap and is always changing very quickly. Investments in billions of dollars committed in infrastructure, training, marketing, security, network maintenance and so on will be done annually for the coming years and there should be collaboration or efforts by all those involved.
5. Security: The security of the proposed payment system should be upgraded to protect users from malware, hackers, fraudsters, viruses, and identity theft. As it relates to legislation, there is a need to apply new transactions and cultural methods that are constantly changing, the government must ensure the formulation of appropriate legislation.
6. Online, real-time, every time: This alternative payment method requires different media to be used online real-time and anytime (Okoye and Ezejiofor, 2013).
7. Awareness and literacy among society: The important factor in successful implementation of cashless transactions is the level of awareness and capability of the society (Kumari and Khanna, 2017).

The simplicity of doing financial transactions may be the greatest motivator for Go-Digital. Cashless payments have several benefits, which are never available through traditional payment method, some of which are; privacy, integrity, compatibility, efficiency, acceptability, convenience, mobility, low financial risk, anonymity (Kumari and Khanna, 2017). There are many benefits of cashless discussed as below:

1. The simplicity of Doing Financial Transactions: There is ease in doing financial transactions, which may be the biggest motivator for Go-Digital. In non-cash payments, there is no need to bring a lump of cash or even queue up in long queues at the bank. This will be very useful in case of an emergency. Users can pay easily during business hours.
2. Reduce the risk: This policy will help combat corruption/ money laundering and reduce the risk of carrying cash and reducing costs.

3. Reduce tax avoidance: Non-cash transactions benefit from tax avoidance reductions.
4. Transparency: It is not only the easiest way to transact but also bring much more transparency into the financial system, which helps reduce revenue from corruption or money laundering.
5. Cleanliness: It will also help in improving hygiene and can eliminate the spread of bacteria through paper money and coins.

Survey data (Daily Social Id, 2017) states that the people of Indonesia as much as 41.96% of respondents still choose cash as the most priority payment method. Credit cards and virtual money are two of the least prioritized payment methods. Compared to other payment methods, 39.11% of respondents put virtual money at a lower priority than other payment methods. It can be concluded that most respondents still do not consider virtual money as their primary payment method. A number of people who use the internet but are not interested in using online financial transactions. Although various benefits are offered through online financial transactions, this system is less popular and less used by people who have the facility to access online financial transactions (Kusumaningrum, 2015).

## 2.2. Diffusion of Innovation Theory

Innovation diffusion theory explains that the characteristics of innovation are the nature of the diffusion of innovation, where the characteristics of innovation are one that determines the successful use of technology. All products do not have the same possibilities for consumer acceptance, some products can become popular in just one night while others require a very long time to receive or even never be widely accepted by consumers. Innovation Characteristics determine the speed of innovation adoption process at farmers level as technology users. In the speed of the process of adoption of innovation is determined by several factors such as communication channels, characteristic features of social systems, promotional activities and the role of communicators. According to (Rogers, 1962) and (Schiffman and Kanuk, 2010), there are five characteristics of these innovations that can be used as indicators in measuring perceptions, among others:

1. Relative advantages: Relative advantages is the degree to which an idea is considered a better than the ideas that exist before, and is economically profitable.
2. Compatibility: Compatibility is the extent to which the past of an innovation is considered consistent with existing values, past experiences, and needs of the adopter. Therefore innovations that are not compatible with prominent social system features will not be adopted as quickly as compatible ideas.
3. Complexity: Complexity is a level where an innovation is considered relatively difficult to understand and use. Difficulty to understand and use will be an obstacle to the process of speed adoption of innovation.
4. Trialability: Trialability is a level where an innovation on a small scale. New ideas that can be tried on a small scale are usually adopted more quickly than innovations that can not be tried first.
5. Observability: Observability is a level of results an innovation can be easily seen as an economic technical advantage, thus

accelerating the adoption process. Other prospective adopters no longer have to undergo a trial phase, can continue to the adoption stage.

## 3. RESEARCH METHOD

The methodology used in the journal search on this research refers to the literature review method developed by (Kitchenham, et al., 2009).

### 3.1. Research Objective

The purpose of this study is to find out how the development of research use of online financial transactions. The end result of this study is a conceptual model of the use of online financial transactions. The conceptual model can be implemented in the next research to test the validity of the conceptual model that has been designed.

### 3.2. Literature Search

After determining the purpose of this study, the next step is to determine the criteria of previous literature searches that will be reviewed. Table 1 shows the database used for the literature search.

This data source includes almost any paper available, manual search by viewing paper no longer needs to be done. The search and reviews were performed on literature data sources based on keywords that have been adapted to the topic of issues raised in this study. This research uses keyword or keyword in the form of "Adoption Online Payment" and "Adoption Online Banking".

### 3.3. Inclusion and Exclusion Criteria

The process of selecting relevant studies involves systematic analysis for each literature by ensuring that the literature meets the criteria of inclusion and exclusion. The inclusion criteria established in this study are the literature that uses English or Indonesian, in which there is a relevant discussion that discusses the use of online financial transactions. Exclusion criteria include limited literature which only deals with online financial adoption and transactions.

### 3.4. Literature Quality Assessment

Assessment of the quality of the literature is done through the identification of the journal that has been found by answering six (6) question points, while the question points are:

6. Where did the thinking flow from the journal article (a) where the research started (reasoning) - (b) the basic theories of what, and (c) what previous research would be fried by the researcher or (c) is there anything to be developed.

**Table 1: Result of literature search**

Resource	URL
IEEE	ieeexplore.ieee.org
Science direct	sciencedirect.com
Springer	springer.com
ACM	acm.org
Emerald	emeraldinsight.com
Google scholar	scholar.google.co.id

7. What are the constructs or variables used in the study, and to answer what research problem?
8. How do researchers construct hypotheses and what are the basic theories and previous studies used?
9. What are the findings, whether the theory is supported or indisputable and how does it relate to previous research?
10. What are the limitations of the study? is there a gap/opportunity to follow up?
11. What are (a) theoretical recommendations and (b) practical recommendations for the development of science and its applications for practical purposes and for subsequent research?.

### 3.4. Data Extraction and Synthesis

Data extraction is done by selecting or filtering relevant and appropriate literature on topics regarding the adoption of online financial transactions. The data or literature is obtained from the literature search results. The results of this data extraction stage produce the literature that will be discussed and used as the basis for this study.

## 4. RESULTS AND DISCUSSION

The model to be developed in this research will be described as a conceptual framework - a thorough explanation of the theory that became the basic reference of the study in which the theory is combined with the results of existing research so that ideas can be obtained further.

### 4.1. Theme 1: Suitability of Innovation Characteristic Utilization Online Financial Transaction Influenced by National Culture

Focus on this conceptual model to explore the relative advantages, compatibility, and trialability of online financial transactions and their reasons for continuing to use online financial transactions while culturally influenced. Some research on the use of online financial transactions as a form of calculation of the relative advantages, compatibility, and trialability is done by (Kapoor et al., 2013). The main model of the study uses Innovation Diffusion Theory where innovation characteristics are influenced by relative advantages, compatibility, and trialability in using online financial transactions. The intention of using online financial transactions is shaped by behavior controls in accordance with Theory of Planned Behavior (TPB) by (Ajzen, 1991) supported by (Tan and Teo, 2000) (Giantari et al., 2013) (Khatimah and Halim, 2016) as well as trust is a dominant factor in behavioral intentions in electronic services (Giantari et al., 2013).

Perceptive behavior control consists of Self-Confidence, facility conditions (Giantari et al., 2013) and government support (Tan and Teo, 2000). From the intention in using online financial transactions, there is evidence of the real behavior of using financial transactions online. The use behavior of online financial transactions is measured by the frequency and number of transactions performed (Baptista and Oliveira, 2015) (Kapoor et al., 2013). Culture can affect the execution of intention to the behavior of using the online financial transactions. The national culture is reflected by individualism/collectivism, uncertainty

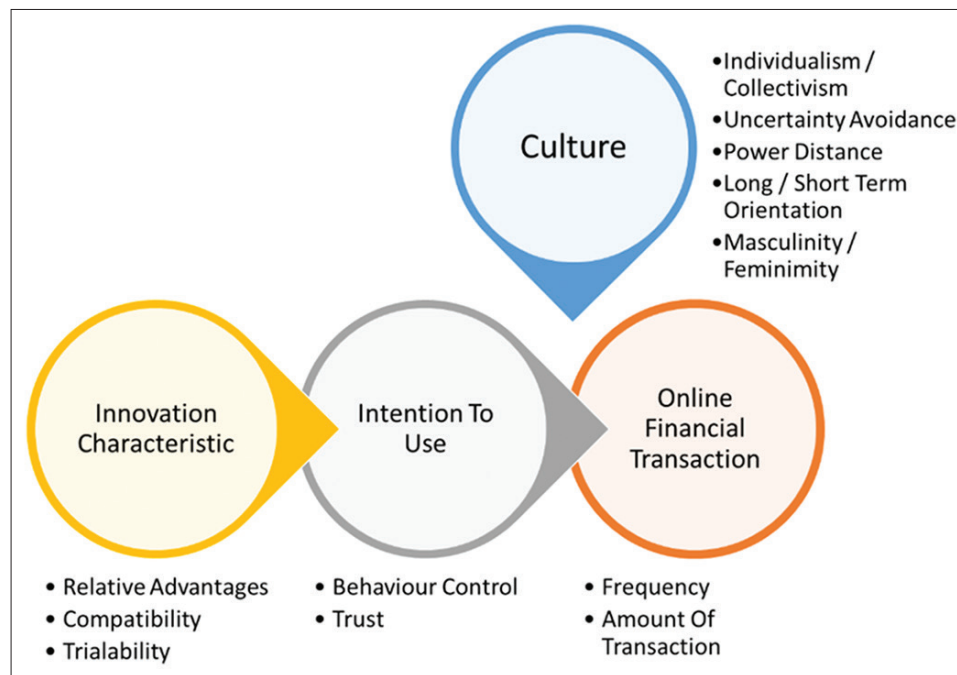
avoidance, long/short term, masculine/feminine attitudes and power distance by online financial transaction users as has been investigated by (Baptista and Oliveira, 2015).

The social domains or categories studied are found through this stage with information that is still limited in the early stages (Figure 1). In the conceptual model, there are four domains that are used:

12. Innovation characteristics: This domain is used to determine the benefits, suitability, and trialability that may be obtained from the use of online financial transactions. Things that need to be explored are the types of benefits, suitability, and trialability that may be obtained from the use of online financial transactions.
13. Intention to use: This domain is used to determine the effect of perceived behavior control and trust on user intentions in using online financial transactions.
14. Culture: This domain is used to know the culture that exists in developing countries in the user financial transactions online. What can be extracted from this domain is individualism/collectivism and a tendency to avoid the uncertainty that is felt.
15. Online financial transaction: This domain is used to measure the realization of the use of online financial transactions. This is reflected by the frequency and number of transactions performed.

In the research (Kapoor et al., 2013) states that only three variables of innovation characteristics, namely: Relative advantage, compatibility, and complexity that affect the acceptance of financial transactions through the internet. In the research conducted (Al-Jabri and Sohail, 2012) states that the acceptance of online financial transactions with innovation characteristics of the five variables, only two variables that affect the acceptance of financial transactions through the Internet, namely: Relative advantage and compatibility. While the other three variables that exist in innovation characteristics have a negative impact. While in research (Gounaris and Koritos, 2008), states that the characteristics of innovation are less accurate to predict the acceptance of online financial transactions by consumers. And only three variables are considered accurate in predicting acceptance of online financial transactions, namely: Relative advantage, compatibility, and trialability. This is also reinforced by the research (Ajam and Nor, 2013), which uses only three variables of innovation characteristics, namely: Relative advantage, compatibility, and trialability which all three variables have a positive effect on the acceptance of online financial transactions.

People in developing countries intend to use online financial transactions based on relative advantages in shortening transaction time and also can control users' finances (Ajam and Nor, 2013), (Al-Jabri and Sohail, 2012), (Kapoor et al., 2013). The conformity with the needs of the community in terms of financial transactions may affect the public's intention to use online financial transactions (Ajam and Nor, 2013). People's lifestyles in the modern era that demand high mobility can also encourage acceptance of online financial transactions (Al-Jabri and Sohail, 2012) (Kapoor et al., 2013). If customers are allowed to experiment with new

**Figure 1:** Conceptual model Theme 1

technology, it will reduce the fear unknown to users and can encourage technology acceptance. Trialability appears to be an opportunity where service or innovation can be applied to potential customers or experimenting with experiments. Importantly, the opportunities in which these latent adopters can have prior experience with new ideas, innovations or products will reduce their fear and uncertainty (Al-Jabri and Sohail, 2012).

In previous studies, national cultural factors (Baptista and Oliveira, 2015) that affect the degree of use of online financial transactions are still not considered as factors affecting the use of online financial transactions. This is supported by some research limitations that have been described that research on the use of online financial transactions in developing countries also needs to study cultural factors (Al-Jabri and Sohail, 2012) (Ajam and Nor, 2013) (Kapoor et al., 2013). Given this background, there is a research gap to examine more in depth the three variables of Innovation Characteristics that are considered to be relevant based on previous research with the current conditions of online financial transactions that are also influenced by the national culture in developing countries.

#### 4.2. Theme 2: Innovation Attribute, Knowledge-Based Trust and Quality of E-Services Utilization Online Financial Transaction

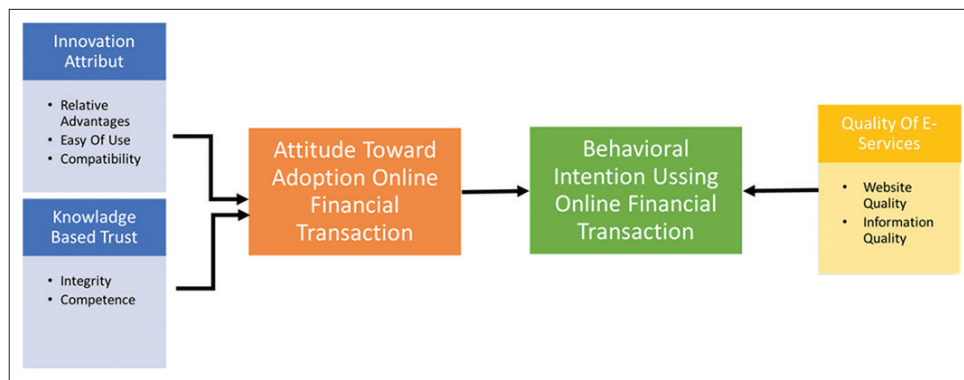
Focus on this conceptual model to explore the effects of Innovation Attributes, Trust, and Quality Of E-Services that are perceived by the use of online financial transactions. Some research on the use of online financial transactions driven by Innovation Attributes and Trusts is done by (Lin, 2011) (Mian and Rizwan, 2013) (Rezaei et al., 2015) (Krishanan et al., 2016). The main model of the study using innovation attributes is influenced by relative advantages, easy of use and compatibility of the use of online financial transactions. The attitude in using online financial transactions is formed by behavioral controls in accordance with

the Technology Acceptance Model (TAM) (Davis, 1989) supported by (Tan and Teo, 2000).

Trust is a factor supporting the attitude of adoption of electronic services (Lin, 2011). Trust is reflected in Integrity and Competence. From the attitude in using online financial transactions, emerging behavior of the use of online financial transactions. The behavioral intention of online financial transactions is influenced by the quality of E-Services online financial transactions (Kuruuzum and Koksall, 2010) (Lin, 2011). Quality of E-Services can influence the behavior of the use of online financial transactions. Quality of E-Services is reflected by the information quality and quality of website as has been investigated by (Shima and Mohamadali, 2017).

The social domains or categories studied are found through this stage with information that is still limited in the early stages (Figure 2). In the conceptual model, there are four domains that are used:

1. Innovation attribute: This domain is used to determine the effect of innovation attributes on user attitudes. Relative advantages, easy of use and compatibility that may be obtained from the use of online financial transactions.
2. Knowledge-based trust: This domain is used to determine the effect of trust on the provider of online financial transactions on user attitudes. Integrity and competence from online financial transaction service providers.
3. Attitude toward adoption online financial transaction: This domain is used to determine the effect of user attitudes in using online financial transactions.
4. Quality of e-services: This domain is used to know the quality of e-services on the user financial transactions online. What can be extracted from this domain is the quality and information quality website.
5. Behavioral intention: This domain is used to determine the intentions of users in the use of online financial transactions.

**Figure 2:** Conceptual model Theme 2

In the research (Lin, 2011) (Mian and Rizwan, 2013) (Mazhar et al., 2014) states that innovation attributes affects the attitude of using online financial transactions. Relative advantages, easy of use and compatibility are indicators of innovation attribute. Integrity and competence are indicators of the trust. The results of the study (Lin, 2011) suggest that perceived relative advantages, easy of use, compatibility, competence, and integrity significantly influence attitudes, which in turn leads to behavioral intentions to adopt mobile banking. Trust in M-banking & banking services (Mazhar et al., 2014).

In previous studies, quality of e-services (Shima and Mohamadali, 2017) affecting the intention of using online financial transactions has not been studied in depth. This is supported by some of the research limitations that have been described. Research on the use of online financial transactions also needs a review of quality of e-services (Lin, 2011) (Mian and Rizwan, 2013). Given this background, there is a research gap to examine more deeply the influence of innovation attributes and trust based on previous research with the intent of using online financial transactions that are also influenced by quality of e-services.

#### 4.3. Theme 3: Innovation Characteristic and Demographic Factor Utilization Online Financial Transaction

Focus on this conceptual model to explore the perceived innovation characteristics of using online financial transactions as well as their reasons for using online financial transactions even though they are influenced by demographic factors. Some research on the use of online financial transactions as a form of calculation of relative advantages, compatibility, and trialability is done by (Ramavhona and Mokwena, 2016). The main model of the study uses innovation diffusion theory where innovation characteristics are influenced by relative advantages, compatibility, and trialability in using online financial transactions. The intention of using online financial transactions is shaped by self efficacy and behavior controls in accordance with Theory of Planned Behavior (TPB) by (Ajzen, 1991) supported by (Tan and Teo, 2000; Khatimah and Halim, 2016; Nuzulita and Subriadi, 2017).

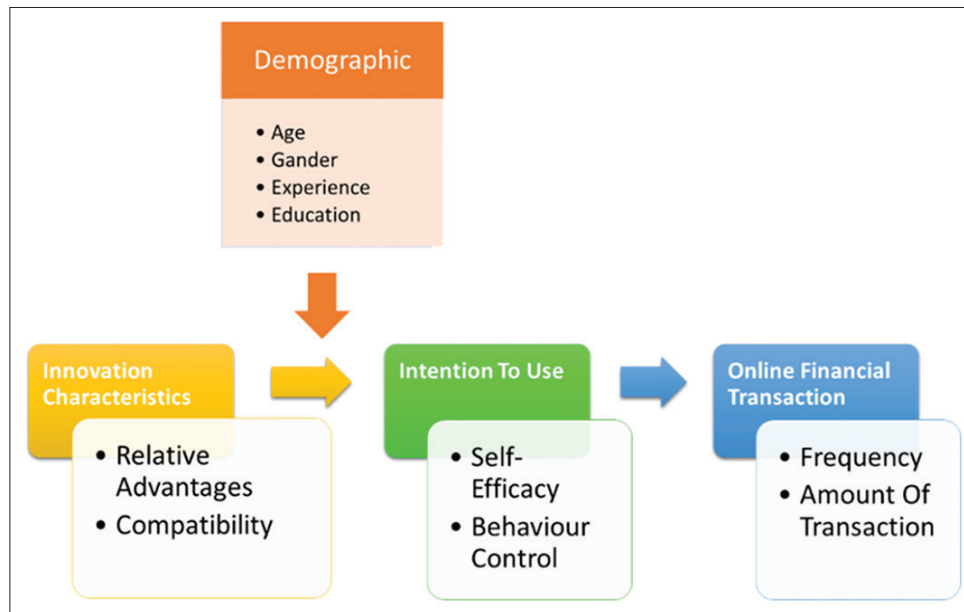
Perceptive behavior control consists of facility conditions (Giantari et al., 2013) and government support (Tan and Teo, 2000). Demographic factors can influence the execution of innovation

characteristics with the intent of using online financial transactions. Demographic factors are reflected by age, gender, experience, and education (Marumbwa, 2014). From the intention in using online financial transactions, there is evidence of the real behavior of using financial transactions online. The usability behavior of online financial transactions is measured by the frequency and number of transactions performed (Baptista and Oliveira, 2015) (Kapoor et al., 2013).

The social domains or categories studied are found through this stage with information that is still limited in the early stages (Figure 3). In the conceptual model, there are four domains that are used:

1. Innovation characteristics: This domain is used to determine the relative advantages, compatibility, and trialability that may be obtained from the use of online financial transactions. Things that need to be explored are the types of relative advantages, compatibility, and trialability that may be obtained from the use of online financial transactions.
2. Intention To Use: This domain is used to determine the effect of perceptual behavior control on user intentions in using online financial transactions.
3. Demographic: This domain is used to determine demographic factors that the user of online financial transactions. What can be extracted from this domain are age, gender, experience, and education.
4. Online financial transaction: This domain is used to measure the realization of the use of online financial transactions. This is reflected by the frequency and number of transactions performed.

In the study (Njuguna et al., 2012) states that only three variables of innovation characteristics, namely: Relative advantage, compatibility, and trialability that affect the acceptance of online financial transactions. In the research conducted (Ramavhona and Mokwena, 2016) states that compatibility and trialability turned out to have a significant influence on the application of Internet banking in rural South Africa. In the research conducted (Al-Jabri and Sohail, 2012) states that the acceptance of online financial transactions with Innovation Characteristics of the five variables, only two variables that affect the adoption of online financial transactions, namely: Relative advantage and compatibility. While the other three variables that exist in Innovation Characteristics have a negative impact.

**Figure 3:** Conceptual model Theme 3

In previous studies, the Demographic factor (Marumbwa, 2014) that affects the level of use of online financial transactions is still not a matter of consideration as a factor affecting the use of online financial transactions. This is supported by some research limitations that have been described that research on the use of online financial transactions needs a Demographic study (Njuguna et al., 2012) (Ramavhona and Mokwena, 2016). Given this background, there is a research gap for more in-depth review of three variables of innovation characteristics with the current conditions of online financial transactions that are also affected by the user's demographic factor.

## 5. CONCLUSION

The purpose of this study is to become a catalyst for the research agenda for the wider and richer use of online financial transactions. Researchers believe that this is a very critical research area for information systems because it refers to the essence of technology acceptance that will continue to grow. The theme described here is the use of online financial transactions that become an interesting phenomenon at the moment. A review of the literature has shown that there is still plenty of research opportunities for the future on the topic of adoption of online financial transactions.

There are at least three areas of adoption of online financial transactions related to diffusion of innovation theory that need to be criticized and reviewed further: "Suitability Of Innovation Characteristic Utilization Online Financial Transaction Influenced By National Culture", "Innovation Attributes, Knowledge-Based Trust and Quality Of E-Services Utilization Online Financial Transaction" and "Innovation Characteristic and Demographic Factor Utilization Online Financial Transaction". The results of this study may encourage future research opportunities to assess factors that may affect the use of online financial transactions that are in line with current conditions.

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