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## **THE IMPORTANT OF INFORMATION VALENCE ON SELF SERVICE BANKING TECHNOLOGY ADOPTION:A CONCEPTUAL FRAMEWORK**

### **Abstract:**

Although Self Service Banking Technologies (SSBTs), is known as core services provided by the banks, however in some developing countries, it is still at the early stage of adoption. For the banks in these developing countries, encouraging their customer to use the SSBTs is a great challenge. Thus, there is a critical need to understand the factors that influence customers decision towards SSBTs. The information about the service is the first stage of the adoption process that will lead awareness, interest, evaluation, trial and adoption of innovation (Roger 1962). This study aims to explore the factors that would influence SSBTs adoption at early stage with emphasis on the role of information valence. Both positive information and negative information are concerned in this study. A new conceptual model of information valence including positive framing and negative framing as predictor of SSBTs adoption is proposed. The findings of the study base on information valence model will contribute to understanding of the role of information factors on SSBTs adoption and extend the body of information valence literature. Also, understanding the information valence factor would be useful for bank managers in formulating strategies and more effectively reach the consumer to encourage increased in adoption rate of SSBTs. Limitation and suggestions for future research also are highlighted.

### **Keywords:**

Self service technology, Banking, Adoption, Information, Valence

## **1 Introduction**

Due to the increasing labor costs and advances in service offerings are encouraging service firms to consider replacing labor with technology-based self-service options as to serve the consumers (Dabholkar, 1996). One of the sectors that rapidly adopted this re-engineering process and venture into innovative offering is retail banking sectors. Several changes which are happening in banking environments such as globalization and deregulation have made the banking sector become highly competitive. The aggressiveness in increasing service competition among the banks is the main issue for those banks to find several solutions and options to improve their services. One of the great solutions adopted by many banks are introducing self service banking technologies (SSBTs) to their customers. SSBTs are the technologies that allow consumers to use a service in their own time and independent of direct service employee involvement (Meuter, Ostrom, Roundtree, & Bitner, 2000). Amongst the SSBTs that are begun to be use widely in local and international bank are automatic teller machines (ATMs), cash deposits machine (CDM), Internet banking and mobile banking services as to benefit both the banks (Laukkanen, Sinkkonen & Laukkanen, 2008; Walker, Craig-Lees, Hecker, & Francis, 2002) and the customers (Gerrard & Cunningham, 2003; Laukkanen et al., 2008; Walker & Johnson, 2006).

Although bank want their customers to use SSBTs that would result in considerable savings of operating costs for banks in the long run (Poon, 2008), however not all consumers have adopted SSBTs. Some consumers tend to avoid or do not adopt SSBTs. If the adoption process is slow, the bank has to keep its labor force intact as well as pay for the high cost of technology. That mean the savings or benefits cannot be realized unless customers embrace and use the introduced SSBTs. It is vital to make all customers turn to become SSBTs user when a bank has introduced SSBTs. Therefore, studying customers' adoption of SSBTs and examining the factors that influence to the bank customers' adoption of SSBTs at early stage of adoption is vital to contribute to the body of knowledge in this area.

The information of the innovation is the first stage of the adoption process (Roger, 1995) that create awareness and interest until make decision to adopt or not adopt innovation. Information of SSBTs may be major factor impacting intention to adopt SSBTs. Thus, studying about information valence both positive and negative information is important to predict SSBTs adoption behavior. The main purpose of this paper is to examine the influence of information valence on adoption of SSBTs.

## **2 Literature review**

### **2.1 Self-Service Banking Technologies (SSBTs)**

Self-Service Banking Technologies (SSBTs) refer to performing banking transactions by using the technology as medium. Banks' customers can perform transactions without visiting banking branch. There are many types of SSBTs channels that bank offer for their customers as show in Table1.

**Table1: Type of Self-Service Banking Technologies**

Type of service	Description
Kiosk machine	These machines provide banking services to the customers such as automatic teller machines (ATMs), Cash deposit machine (CDM)
Telephone banking	Customers access their banking services via telephone (Own personal ID and password required)
Internet banking	Customers access their banking services via Internet
Mobile phone banking (SMS, WAP, 3rd generation)	Customers access their banking services via text message (SMS), Internet connection (WAP), or high speed 3 rd generation mobile connection(also required Internet connection)

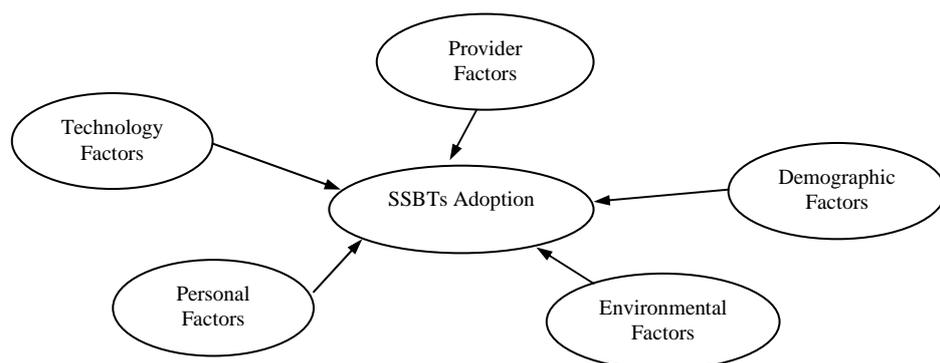
Source: Adapted from Karjaluoto (2002)

Self-Service Banking Technologies (SSBTs) have advantages for banks. In term of provide functional benefits for customers and enhance mass customization (Walker et al., 2002). Also, banks can save cost by reduce their branch networks and downsize the number of their service staff (Alam,Musa & Hassan, 2009) lead to increase productivity and efficiency in the long term. However, SSBTs not only provide benefits to the banks but also provide functional benefits to customers such as convenient in which time and place flexibility, no queuing in banks' branches is advantageous, time saving as compared to the conventional counter-based banking services, enhance standardization in service offering and assure faster response (Gerrard & Cunningham, 2003; Laukkanen et al., 2008; Walker & Johnson, 2006). The SSBTs provide advantages for service providers and customers alike.

## 2.2 Factors influence to SSBTs adoption study

A review of the factors that influence technology adoptions can be grouped into five categories namely personal factors, technology factors, provider or organization factors, environmental factors and demographic factors as shown in Figure 1. The following section reviews the relevant literature on the factors that influence SSBTs adoptions.

**Figure 1: Factors influence to SSBTs adoption**



### 1) Personal factors

First group is personal factors. Personal factors refer to the factors which associated with person or customer. What a person think, believe and feel will influence their behavior (Bandura, 1986). Personal based factors or customer-centric factors are important to predict SSBTs adoption behavior at early stage. Several studies have revealed that personal factors influence on adoption of SSBTs including personal ability (Guriting & Ndubisi, 2006; Ramayah, Jantan, Mohd Noor, Razak, & Koay, 2003), personal needs (Lin, Yeh, & Chen,

2009; Ndubisi & Sinti, 2006), personal innovativeness (Gerrard et al., 2006; Lassar et al., 2005; Parasuraman, 2000; Yiu et al., 2007), personal experience (Giovanis, Binioris & Polychronopoulos, 2012; Laforet & Li, 2005) and personal culture (Jaruwachirathanakul & Dieter, 2005) are important to SSBTs adoption. For example, Giovanis, Binioris and Polychronopoulos (2012) found that a person who believes in using Internet banking can enhance his performance or fulfill their banking needs influence positively on the customers' intentions to adopt Internet banking services. Laforet and Li (2005) showed that prior technology experience and past experience with computer had a significant effect on online banking adoption. Lee et al. (2011) revealed that personal innovativeness significantly influences the intention to use mobile financial services. Personal ability to use a computer was found to have a positively correlated with intention to use internet banking (Amini, Ahmadinejad, & Azizi, 2011). Meanwhile, personal culture refers to the collective programming of the mind that distinguishes the members of one group or category of people from another (Hofstede, 2001). People are deeply influenced by the cultural values and norms they hold. Suh and Kwon (2002) revealed that consumers from different cultures had different attitudes and perception, tastes and preferences. Park and Jun (2003) reported there were significant differences in internet usage and the perceived risks of internet buying behaviors between Korea and America. Thus, personal culture has a relationship with the adoption of SSBTs. Summaries the studies investigated the influence of personal factors in the banking service adoption are shown in Table 2.

**Table 2: Summaries the studies investigated the influence of personal factors in the banking service adoption**

<b>Personal factors</b>	<b>Sources</b>
Personal need	(Gerrard, Cunningham & Devlin, 2006; Giovanis et al., 2012; Suki, 2010; Yiu, Grant & Edgar, 2007)
Personal ability	(Kuisma, Laukkanen & Hiltunen, 2007; Laukkanen et al., 2008; Mirza, Beheshti, Wallstrom, & Mirza, 2009; Püschel, Mazzon & Hernandez, 2010; Rotchanakitumnuai & Speece, 2003)
Personal innovativeness	Gerrard & Cunningham, 2003; Gerrard et al., 2006; Lassar, Manolis & Lassar, 2005; Yiu et al., 2007)
Personal experience	(Giovanis et al., 2012; Laforet & Li, 2005; Lassar, Manolis & Lassar, 2005)
Personal culture	(Jaruwachirathanakul & Dieter, 2005; Laforet & Li, 2005)

## 2) Technology factors

A second group is technology factors. Technology factors refer to factors which associated with self service banking technology. Several studies explored technology factors influence on adoption of self service banking technology. Among the most widely accepted approaches are the technology acceptance model (TAM) by Davis (1989) and the innovation diffusion theory (IDT) by Roger (1995). For example, Giovanis et al. (2012) found that perceived compatibility, perceived usefulness and perceived ease of use have a significant direct influence on customers' intention to bank online. Al-Jabri and Sohail (2012) reported that relative advantage, compatibility and observability have a significant effect on mobile banking adoption. Other technology factors besides perceived usefulness and perceived ease of use from TAM and relative advantage, compatibility, complexity, trialability and observability from IDT, in which perceive value and perceive risk were also considered in order to explain adoption of self service banking technology. For example, Kim, Chan and Gupta (2007) found that consumers' perception of the value of mobile Internet is a principal determinant of adoption intention. Meanwhile, Al-Jabri and Sohail (2012) and Giovanis et al. (2012) showed

that perceived risk have a significant effect on SSBTs adoption. The technology factors studied in banking services are shown in Table 3.

**Table 3: Summaries the studies investigated the influence of technology factors in the banking service adoption**

Technology factors	Sources
Relative advantage	(Al-Jabri & Sohail, 2012; Püschel et al., 2010; Riquelme & Rios, 2010; Yiu et al., 2007)
Compatibility	(Durkina, Jennings, Mulholland, & Worthington, 2008; Gerrard & Cunningham, 2003; Koenig-Lewis, Palmer & Moll, 2010; Püschel et al., 2010; Yiu et al., 2007)
Complexity	(Al-Jabri & Sohail, 2012; Suki, 2010)
Trialability	(Al-Jabri & Sohail, 2012; Püschel et al., 2010; Suki, 2010)
Observability	(Al-Jabri & Sohail, 2012)
Perceived usefulness	(Giovanis et al., 2012; Juwaheer, Pudaruth & Ramdin, 2012; Lee, 2009; Suh & Han, 2002; Yiu et al., 2007)
Perceived ease of use	(Giovanis et al., 2012; Juwaheer et al., 2012; Püschel et al., 2010; Suh & Han, 2002; Yiu et al., 2007)
Perceive value/benefit	(Gerrard & Cunningham, 2003; Hiltunen, Laukkanen & Hiltunen, 2005; Laukkanen et al., 2008; Lee, Kwon & Schumann, 2005; Lee, 2009; Yiu et al., 2007)
Perceive risk	(Gerrard et al., 2006; Hiltunen et al., 2005; Laukkanen et al., 2008; Lee, 2009; Mirza et al., 2009; Yiu et al., 2007)

### 3) Providers factors

Third group is provider factors that are factors which associated with organization or banks factors. Provider factors were also considered to affect adoption of banking services as it reflect the bank's image and bank's service. Bank's image refers to bank's reputation, bank's management, bank's ability and bank's size. In line with this, customer convinces in the banking management services and banking operations management are critical to the successful adoption of the e-banks (Poon, 2008). Customer choose banks which they believe have more experience in using (Hamid, Amin, Lada, & Ahmad, 2007), bank's reputation (Mukherjee & Nath, 2003) and ability of bank to solve problem (Poon, 2008). Size of bank is also considered to be important to customer to reduce their perception of risk (Lee et al., 2005). The providers' factor studied in banking studies are is shown in Table 4.

**Table 4: Summaries the studies investigated the influence of provider factors in the banking service adoption**

Provider factors	Sources
Bank image	(Hamid et al., 2007; Lee et al., 2005; Mukherjee & Nath, 2003; Poon, 2008)
Bank service	(Gerrard et al., 2006; Yiu et al., 2007)

### 4) Environmental factors

Forth group is the environmental factors such as legal support, lack of resource, information and word of mouth are identified to influence adoptions of banking services including SSBTs. Many customers are concerned about legal support for usage of SSBTs (Rotchanakitumnuai & Speece, 2003). Customers believe that ability of government to protect bank customers in cases of financial loss via Internet banking are important (Hamid et al., 2007). In term of resource, lack of resource remains a critical barrier in cases to continuing growth of online

banking. such as the shortages of IT infrastructure (Hamid et al., 2007), hardware or PC home (Hernandez & Mazzon, 2007) and inaccessibility, no connection or slow internet connection (Gerrard et al., 2006). Some of the respondents mention about price concern or cost of purchase in order to become an internet banking user as they would need to buy a PC and paying ongoing internet connection fees (Gerrard et al., 2006; Hiltunen et al., 2005). Poon (2008) found internet accessibility at home or office to be having significant relationships with the usage of e-banking. Information of online banking on the web site was the main factors influencing online-banking acceptance (Pikkarainen, Pikkarainen, Karjaluoto, & Pahnla, 2004). Ashtiani and Iranmanesh (2012) revealed that positive word of mouth has effect on electronic banking adoption. The environmental factor studied in banking services are shown in Table 5.

**Table 5: Summaries the studies investigated the influence of environmental factors in the banking service adoption**

Environmental factors	Sources
Legal support	(Hamid et al., 2007; Rotchanakitumnuai & Speece, 2003)
Lack of resource	(Gerrard et al., 2006; Hamid et al., 2007; Hernandez & Mazzon, 2007; Rotchanakitumnuai & Speece, 2003)
Information about service	(Yiu et al., 2007)
Word of mouth /Electronic word-of-mouth	(Ashtiani & Iranmanesh, 2012; Shirsavar, Gilaninia & Almani, 2012)

### 5) Demographic factors

The last group is demographic factor. The demographic factor was studied to examine the factors affecting the adoption of electronic banking, which are gender, age, marital status, occupation, education level and income levels. Several studies directly explore the influence of demographic factors on technology adoption (Branca, 2008; Lassar, Manolis, & Lassar, 2005; Nasri, 2011; Poon, 2008; Srivastava, 2007; Wan, Luk, & Chow, 2005). Other studies examine demographic factors as the moderating effect in the adoption of SSBTs (Jaruwachirathanakul & Dieter, 2005; Ramayah & Jaafar, 2008; Riquelme & Rios, 2010) while some studies examined demographic factor as control variable. For instance, Roger (1995) reported that innovators and early adopters usually are younger, well educated and possessing higher income. Contrastingly, late adopters are older, less educated and possessing lower income. Branca (2008) found that age and gender significant influence on Internet banking usage. The younger customer and men are more likely to adopt SSBTs. Also, Simon & Usunier (2007) revealed that age has a negative influence on the preference for service technology. The demographic factors studied in the banking services are show in Table 6.

**Table 6: Summaries the studies investigated the influence of demographic factors in the banking service adoption**

Demographic factors	Sources
Gender	(Branca, 2008; Gerrard et al., 2006; Giovanis et al., 2012; Juwaheer et al., 2012; Laforet & Li, 2005; Meuter, Ostrom, Bitner, & Roundtree, 2003; Srivastava, 2007)
Age group	(Branca, 2008; Giovanis et al., 2012; Karjaluoto, 2002; Lassar et al., 2005; Meuter et al., 2003; Poon, 2008)
Education level	(Branca, 2008; Gerrard et al., 2006; Juwaheer et al., 2012; Karjaluoto, 2002; Lassar et al., 2005; Meuter et al., 2003; Poon, 2008; Srivastava, 2007)
Income level	(Gerrard et al., 2006; Juwaheer et al., 2012; Karjaluoto, 2002; Lassar et al., 2005;

	Meuter et al., 2003; Poon, 2008; Srivastava, 2007)
Occupation	(Branca, 2008)

Referring to the studies on banking services, many studies have been done in factors as predictor SSTBs base on five categories namely personal factors, technology factors, provider or organization factors, environmental factors and demographic factors as mentioned above. However, lacks of study were investigating in term of valence factor. Valence factor viewed into two side of character which concerns to study. Both positive framing and negative framing were focused. The following section reviews the important of valence factor in SSTBs Adoption. Then, the proposition research and a conceptual framework are proposed, followed by significant of the study, limitation together with suggestion for future research, and conclusion.

### 3 Valence factor on SSTB adoption

Valence in general refers to positive and negative character of that depends on one's concerns (Colombetti, 2005). However, the definition of valence will depend on the focus of each study. For example, Reardon, Miller, Foubert, Vida and Rybina (2006) studied antismoking messages valence. Valence in their study refers to whether the message stresses the gains of performing the promoted behavior (positive framing) or the losses of not doing so (negative framing). For instant, a message antismoking in positive framing was "Stopping smoking reduces the risk of serious disease" and negative framing was "Smoking causes heart disease and strokes". In the same way with the study of Banks et al. (1995), a message advocating mammography, positive framing as "Mammography helps you detect breast cancer at an early stage" and negative framing as "Women not using mammography may fail to detect breast cancer at an early stage. In contrast with Hao, Ye, Li and Cheng (2010) studied, the effect of electronic word-of-mouth valence on consumer decision making to buy goods e.g. face lotion and USB flash drive. Valence in their study refers to positive framing and negative framing of performing the promoted behavior. For instant, positive framing or the gains of using face lotion as "I have used many brands. Though some brands are more expensive, this brand fits me". Other side is negative framing or the gains of using face lotion as "Choose this brand for the first time. It feels ordinary, and not that good as the advertisement said. Don't like it! Sisters and brothers. Be careful not to choose this brand!" For USB Flash Drive, positive framing is "This flash drive feels good and is quite portable. Its outlook is simple and clean. The light on it is green and looks beautiful in the dark" Negative framing as "There is no lanyard on it, so not convenient to carry. The cap of it is quite small, and also not very tight. So easy to lose it".

In context of SSBTs, Although SSBTs give benefit for customers such as time and place convenience, no need to waiting the queues at bank branch. However, there is also having a risks or loss of SSBTs. For example, the money may lose when transactions via online banking from technological error. System is hacked and personal identity information is exposed. Since the banks' service are offer for banks' customer via new SSBTs, customer difficulties in making the correct decision on the service. For this reason, the valence factors which are both positive and negative have become an important influence on consumers' decision to adopt the new service. Thus, this study conducts to understand the influence of valence role on SSBTs adoption.

## 4 The Important of information Valence

According to Rogers (1995) described the five stages of the adoption process were awareness, interest, evaluation, trial, and actual adoption as the detail below:

- 1) Awareness: In first stage the individual awareness of the innovation but lacks information about the innovation.
- 2) Interest: The individual is interested in the innovation and actively seeks information detail about the innovation.
- 3) Evaluation: Decision whether or not to try innovation based on present and future situation. The individual takes the concept of the change and weighs the advantages/disadvantages of using the innovation and decides whether to adopt or reject the innovation
- 4) Trial: Making use of the innovation. (If use does not continue, this is called “reneging” on adoption.) In this stage the individual employs the innovation to a varying degree depending on the situation. During this stage the individual determines the usefulness of the innovation and may search for further information about it.
- 5) Adoption: Continued full use of the innovation. In this stage the individual finalises his/her decision to continue using the innovation. This stage is both intrapersonal and interpersonal, confirmation the group has made the right decision.

Information is important on each stage of adoption process, since the first stage of adoption process that create awareness and interest until make decision to adopt or not adopt innovation. Based on reviewing literatures, It is widely accepted that information is a cause of adopt technology. However, most study view only one side of information either information positive or negative information. The information can be positive information and negative information or valence of information. Lack of studies systematically analyze the different characteristic of information together or how both positive information and negative information influence to adoption technology. This study intends to address that gap by focusing information valence which are positive information and negative information on SSBTs adoption.

### 4.1 Positive information and SSBTs adoption

In the existing literature on information, positive information is found to lead to a positive adoption. According to Yoon, Guffey and Kijewski (1993) revealed information about the service offering in two insurance programs has a direct impact on the buyer’s intention to purchase a business service. Pikkarainen et al. (2004) reported information on online banking on the web site was the main factors influencing online-banking acceptance. Similarly, Amin (2008) found that the amount of information about mobile phone credit cards has the greater ability to predict and explain the intention of bank customer to adopt the system. Kim, Chan and Gupta (2007) found that consumers’ perception of the value of mobile internet is a principal determinant of adoption intention. furthermore, Laukkanen and Kiviniemi (2010) found the information and guidance offered by a bank has the most significant influence on decreasing barriers in a mobile banking context.

An innovation will not be adopted if nobody is aware of its existence and gains some understanding of how it functions. Laforet and Li (2005) found that customers do not awareness and not understanding of the concept and its benefit, not knowing what services are offered (Gerrard et al., 2006), not knowing how to become an internet banking customer and

lack of knowledge to channel usage (Hiltunen et al., 2005) among the barrier factor to SSBTs adoption. Also, Kuisma, Laukkanen and Hiltunen (2007) revealed that banks' customer did not feel having received enough information consumer as a reason for resistance to internet banking. Moreover awareness is also shows a significant difference between users and non-users of online and mobile banking in terms of their level of awareness of these services (Laforet & Li, 2005). While Roger (1995) argue information of the innovation is the beginning stage of the adoption process. Thus, positive information of using SSBTs may be factor impacting SSBTs adoption. The Proposition is developed.

Proposition 1: Positive information has a positive relationship with SSBTs adoption

#### 4.2 Negative information and SSBTs adoption

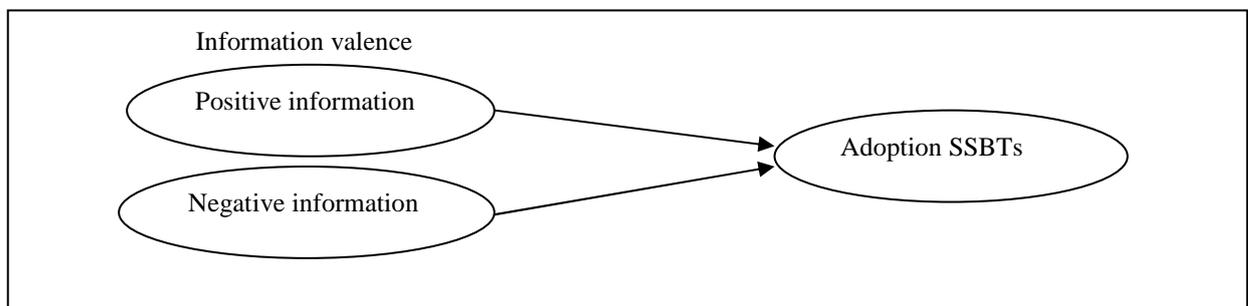
Prior studies have shown that negative information affected perception and behaviour. For example, Heiman and Lowengart (2008) showed that information about health hazards reduced the perception of the health attribute of the affected chicken. Laczniak, DeCarlo and Ramaswami, (2001) found that when receivers attribute the negativity of the word-of-mouth communication message to the brand, brand evaluations decrease. Every day there are millions of accidents caused by virus, hackers, spam, spyware, zombie networks and many other threats to information security. Information concerning risk is a great concern to computer and internet users, who are suffering from a variety of threats to information security. These information can influence to IT users' perception and behavior (Huang, Rau & Salvendy, 2010). Therefore, negative information of using SSBTs is expected to influence on SSBTs adoption and proposition is developed.

Proposition 2: Negative information has a negative relationship with SSBTs adoption

### 5 A conceptual framework and proposition

Based to prior literatures, the following propositions are put forward. The proposed conceptual framework in Figure 2, framed a study to investigate the influence of positive information and negative information on SSBTs adoption in the context of retail banking.

**Figure 2: The model of information valence as predictor SSBTs adoption**



## **Underlying theory**

In this paper employ Uncertainty Reduction Theory (URT) by Berger and Calabrese (1975) which underlying theory that links the independent variables and the dependent variables. Uncertainty Reduction Theory or communication theory by Berger and Calabrese (1975) posits that interpersonal relationships develop as individuals reduce uncertainty about each other. It focuses on the initial phase of interaction between strangers or strange tools by suggesting that when uncertainly take place, the primary motivation is to reduce uncertainty. Since people find such a state of uncertainty uncomfortable, they try to increase predictability of the behaviors of themselves and others. An individual receives information about the uncertain situation, information simply builds up, and eventually it will replace uncertainty. The more information shared, the more uncertainty is reduced.

In the context of making decision to adopt SSBTs, consumers may certainly engage with uncertainty reduction about the service. They will seek information both positive and negative of using service from many sources as a means to reduce uncertainty. The quality of information received about the positive and negative of using the service can influence the decision making process. Thus, the Uncertainty Reduction Theory will be used in this study to build the ground of the study as to investigate the influence of information valence either positive information or negative information in influencing behavior intention.

## **6 Significant of the study**

This paper proposes the model to tests the influence of information valence on SSBTs adoption. The findings of the study base on information valence model will contribute to understanding of the role of information valence (positive information and negative information) on SSBTs adoption. The study expects to extend the body of information valence literature. Also, understanding information valence would be useful for bank managers improving the type and quality of information being communicated to the potential customer in order to increase rate of SSBTs adoption.

## **7 Limitation and suggestion for future research**

This paper proposes the conceptual framework of information valence on SSBTs adoption. Hence, recommendations for future research should be examine the role of information valence on SSBTs adoption base on this framework. In order to provide empirical evidence support the relationships between information valence and adoption in context of SSBTs. These factors also can be used to study technology adoption in other sectors.

## **8 Conclusion**

Customers' adoption SSBTs is important for banks to maintain competition, to increase productivity and efficiency. The literature on consumer adoption of SSBTs, lack of studies both positive information and negative information as predictor SSBTs adoption. Thus, this paper proposes a conceptual framework of information valence base on uncertainty reduction theory. The understanding the role of information valence would be facilitate bank managers

can design effective strategies such as campaign, advertisement, message for promote using SSTB. In order to encourage customer using SSBT and increase an adoption rate. Also, the finding of this framework expects to contribute to the body of knowledge of technology adoption. This study suggest future research to use the proposed framework for empirical test in order to provide evidence support the important of information valence on technology adoption in banks and other sectors.

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