

# Enablers of the Adoption of Mobile Banking: From Economic-Psychological-Social Perspectives

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## ABSTRACT

With the proliferation of smart devices, mobile banking has become increasingly important. Customers can manage their banking needs without desktop computers or a face-to-face meeting with bank tellers. However, contrary to expectation of wide-spread use of mobile banking, several factors restrict its adoption. The purpose of this study is to explore what factors affect positively or negatively the adoption of mobile banking from economic (operational competence, convenience, mental accounting), psychological (hope, self-efficacy, optimism, resiliency) and social perspectives (normative social pressure, embarrassment avoidance). This paper suggests that three enablers would consequently affect a customer's perceived utilitarian and hedonic value in mobile banking, followed by trust and intention to use. In testing the hypothesized research model, survey and analysis of a structural equation model using Amos are conducted. The findings emphasize that banks need to focus on perceived utilitarian and hedonic values when considering economic, psychological and social enablers most salient to customers in order to promote greater adoption of mobile banking services.

*Keywords:* Mobile Banking, Economic-psychological-social Enabler, Utilitarian Value, Hedonic Value, Trust

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## I . Introduction

FinTech is the short form of the phrase financial technology, denoting companies or representatives of companies that combine financial services with modern, innovative technologies (Kawai, 2016). According to a survey by the Korea Internet & Security Agency (2018), mobile banking (e.g., P2P lending, payment, and billing) of all FinTech services

has the highest rate of use (38.2%) compared to other services. Shareef, Baabdullah, Dutta, Kumar and Dwivedi (2018) defines mobile banking as “a specific type, as well as an extension of certain functional features, of Internet banking where consumers can seek different kinds of financial services from banks through the use of a mobile device under the wireless application protocol (WAP)” (p. 54). The spread of mobile phones and tablets has increased

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the demand for mobile banking services. Compared to traditional offline banking, mobile banking provides anytime, anywhere accessibility and flexibility. With greater acceptability over time, mobile banking is expected to replace offline banking. However, the current use of mobile devices to conduct banking transactions is less widespread than anticipated (Shaikh and Karajaluoto, 2015). Many mobile banking adopters use it only to check account balances or pay a small sum of money (Malaquias et al., 2018). Korea Consumer Agency (2017) reported that most Koreans use mobile banking because of simple inquiry services, accounting for 91.7% of the whole 4,947 million number of mobile banking usages. Due to this limited usage pattern of mobile banking services, researchers suggested that there exists a need to understand which elements of mobile banking add value from a customer's perspective (Veríssimo, 2016).

Previous research considered mobile banking as innovative information technology (IT) and explored enablers affecting mobile banking adoption based on innovative IT adoption models, such as the technology acceptance model (TAM) (Davis, 1977), theory of reasoned action (TRA) (Fishbein and Ajzen, 1977) or theory of planned behaviour (TPB) (Ajzen, 1985). The list of enablers of mobile banking adoption in the literature include perceived ease of use (PEU), perceived usefulness (PU), social influence, such as subjective norm, self-efficacy, perceived behavioral control like internal and external constraints and compatibility (Baptista and Oliveira, 2015; Choudrie et al., 2018; Konana and Balasubramanian, 2005; Malaquias et al., 2018; Mehrad and Mohammadi, 2017; Shareef et al., 2018; Veríssimo, 2016). Furthermore, numerous studies have examined the enabler led by IT product characteristics (Rao and Lynch, 1993). While research into the enablers and implications

of IT adoption under various conditions has steadily progressed, it has been argued that IT artifacts are either absent, black-boxed, abstracted from social life or reduced to surrogate measures. Konana and Balasubramanian (2005) suggest a multidisciplinary approach, paying particular attention to economic, social and individual psychological aspects of mobile banking adoption. The IT adoption models discussed above have empirically verified the effect of enablers: self-efficacy, PEU and PU from a psychological perspective (Veríssimo, 2016); subjective norm and external behavioral constraints from a social perspective (Malaquias et al., 2018); and convenience from an economic value perspective generated through IT characteristics (Konana and Balasubramanian, 2005).

Although strong arguments have been addressed, it seems to be a lack of consideration of the unique IT characteristics of mobile banking, as well as a limit to understanding enablers in the multidisciplinary viewpoint because the enablers affecting mobile banking adoption are randomly selected. This study is based on previous literature and attempts to classify enablers of mobile banking adoption into economic, psychological and social factors. In addition, the current study suggests the mediators of utilitarian / hedonic value and trust in the relationship between enablers of mobile banking and intention to use. Kim et al. (2014) divide mobile applications (apps) into utilitarian and hedonic apps. Generally, products with utilitarian benefits are mainly instrumental and functional while those with hedonic benefits are related to experiences, fun, pleasure and excitement. Mobile banking has been classified as a typical utilitarian app because it is used with rationality rather than emotional reason (Kim et al., 2014). However, it is increasingly argued that various mobile banking services of the do-it-yourself type can give not only utilitarian but also hedonic gains to

customers. For example, Konana and Balasubramanian (2005) propose that online trading on mobile banking can yield hedonic value. Online traders making their own decisions in buying and selling stocks can have fun in the trading process and even feel legitimate gambling experiences. They can also achieve utilitarian gains through increased control in online trading. Accordingly, as mobile banking allows customers to search for and choose financial products to meet their preferences for interest rates or payment installment methods, they can enjoy hedonic gains in the process.

This study uses these insights to suggest a research model hypothesizing the interrelationships between enablers of mobile banking adoption, utilitarian and hedonic value, trust and intention to use. This paper answers the following questions based on this objective: 1) do three enablers (economic, psychological, social aspects) positively affect utilitarian and hedonic value; 2) do utilitarian and hedonic values positively affect trust; and 3) does trust positively affect intention to use of mobile banking.

## II. Conceptual Background

### 2.1. Utilitarian and Hedonic Value

Shopping values are derived from customer experience in what is received in benefits and what is given up to acquire those benefits, such as prices or sacrifices (Dlodlo, 2014). If the differences are trivial, customer preference will create future business opportunities from customer loyalty. Shopping values are one of the most powerful ways in the retail channel to understand customer behavior (Zeithmal et al., 2002). Marketing research classifies shopping values into utilitarian and hedonic values. Utilitarian values are

based on rational judgement and have the task-related meaning that a product is purchased efficiently for functional shopping goals (Babin et al., 1990). Hedonic values, on the other hand, are obtained when a customer experiences enjoyment and pleasure through shopping (Zeithmal et al., 2002).

Despite the importance of customer experience of business performance, little attention has been given to customer experience in technological development. This results from customer interaction with technology services (Rose et al., 2012). Several previous works have sought to understand customer experiences in IT-related services (Anckar and D’Incau, 2002; Hu et al., 2013; Jamshidi et al., 2018; Kim et al., 2014). Anckar and D’Incau (2002) identify mobile value based on distinctive utilitarian features of mobile technology as ubiquity, time-criticality, spontaneity, accessibility, convenience, localization and personalization. On one hand, Venkatesh, Thong and Chu (2012) proposed a direct link between hedonic motivation and customer’s intention to use of innovative IT. Especially, hedonic value plays more powerful role in a case of hedonic systems with high degree creativity and uniqueness such as mobile banking (Alawan et al., 2017). Alawan, Dwivedi and Williams (2016) also argued that the role of hedonic motivation is important in forming customer’s decision to adopt telebanking. Thus, different researchers have expressed mobile value in terms of the experience by customers of the motivations for consumption (Park, 2006), i.e., utilitarian and hedonic value (Hur et al., 2012; Jamshidi et al., 2018; Kim et al., 2014; Park, 2006).

Utilitarian value is composed of the motivation of a goal-oriented service use, such as price, ease of use and service offering comparison. Hedonic value comprises motivation, such as experiential, fun, enjoyable and visually appealing (Jamshidi et al., 2018;

Kim et al., 2014). Some research has assumed that mobile services belong to the utilitarian app category (Kim et al., 2014; Kleijinen et al., 2007), while others have argued that mobile banking customers may consider hedonic value, as well as utilitarian value (Jamshidi et al., 2018; Konana and Balasubramanian, 2005). Jamshidi et al. (2018) notes that feelings, such as fantasy, happiness or enjoyment, can be reasons why people use mobile banking. As the unique features of mobile banking have shifted from static to more interactive components, the importance of hedonic value has increased. Therefore, this study explores utilitarian and hedonic value of mobile banking.

## 2.2. Enablers of Mobile Banking

The development of mobile technologies and devices has led to change in the financial sector. Mobile banking enables people to conduct banking transactions with mobile apps. However, contrary to expectations, the adoption rate of mobile banking is still low, leading researchers to try to identify the

enablers of mobile banking adoption. As Dineshwar and Steven (2013) propose, the mobile banking usage to access financial information and conduct transactions is not as widespread as expected. This situation evoked a need to explore what the enablers of mobile banking acceptance and continues usage. Numerous enablers based on innovative IT adoption models such as TAM and Unified Theory for the Acceptance and Use of Technology (UTAUT) have been suggested and empirically investigated (see <Table 1>).

Despite rigorously examining the concept of enablers in the literature, there are evident limitations in reflecting unique characteristics of mobile banking and identifying causal interrelationships. Reflecting on the unique properties of mobile banking, consideration is required of the new functions of mobile banking. Mobile banking provides similar financial services to offline banking but mobile banking can also be used as a convenient communication tool rather than solely a financial lending or depositing service for customers in their teens and twenties. After spending money in social media sites, the ex-

<Table 1> Previous Research on Enablers of Mobile Banking Adoption

Authors	Enablers of mobile banking adoption
Malaquias et al. (2018)	task activities, trust in mobile banking, ease of use, social influence, perceived innovativeness
Shareef et al. (2018)	attitude to use, ability to use, assurance to use, adherence to use
Choudire et al. (2018)	trust, service quality, compatibility, UTAUT (performance expectancy, effort expectancy, facilitating condition, social influence)
Mehrad and Mohammadi (2017)	word-of-mouth, social norms, trust, PU, PEU
Veríssimo (2016)	perceived risk, PEU, PU, compatibility, age, income
Baptista and Oliveira (2015)	UTAUT variables (performance expectancy, effort expectancy, facilitating condition, hedonic motivations, price value, habit)
Jeong and Yoon (2013)	PEU, PU, perceived credibility, perceived self-efficacy, perceived financial cost
Al-Jabri and Sohail (2012)	relative advantage, complexity, compatibility, observability, trialability, perceived risk
Püschel et al. (2010)	relative advantage, compatibility, image, result demonstrability, trialability, visibility, PEU, self-efficacy, resource facilitating condition, technology facilitating condition, subjective norm

penditure can then be divided evenly and transferred easily using individual identification from social network services without any inconvenient transfer process. If a customer does not use mobile banking, they may be embarrassed or feel out of date among their peers. Thus, there are an increasing number of reasons to use mobile banking. In order to identify which enablers most affect the adoption of mobile banking as an innovative IT, it is necessary to expand previous IT adoption models by identifying new trending characteristics of mobile banking.

Previous research has tended to identify various enablers as having the same impact on IT adoption. Social influence and hedonic motivation equally affect intention to use mobile banking (Baptista and Oliveira, 2015). However, there may exist a causal relationship between social influence and hedonic motivation. If a referent who has some power by virtue of specific status recommends online trading to others, once the others start trading, the referent may achieve a greater enjoyment from the online trading. People may feel they belong to a particular group through using mobile banking. From this perspective, the interrelationships among enablers can be identified. The scio-economic-psychological model of technology adoption of Konana and Balasubramanian (2005) is especially useful in this regard.

Konana and Balasubramanian (2005) posit the enablers of mobile banking adoption are divided into economic, psychological and social factors based on the difference between utilitarian and hedonic values. Konana and Balasubramanian's model was constructed based on detailed interview with both users and banking managers. They found that users' satisfaction and dissatisfaction were driven by three main determinants of utilitarian value, hedonic value, and trust. Focusing on these three key determi-

nants, they suggested influential enablers affecting determinants. However, as they pointed out in limitations, their conceptual model was not empirically tested. Therefore, this study adopt Konana and Balasubramanian's triad model from the social, economic, and psychological perspectives and apply it to explain the behavior of mobile banking users.

### 2.3. Trust in Mobile Banking

Trust is generally considered as trusting the other party (Gefen, 2000). Morgan and Hunt (1994) conceptualize that "trust exists when one party has confidence in an exchange partner's reliability and integrity" (p. 23). The definition of trust implies that trust is a result of a trustor's confidence that a trustee is consistent, competent, honest, fair, responsible, helpful, and benevolent (Morgan and Hunt, 1994). In addition, a trustor's willingness is another crucial factor to conceptualize trust. If a trustor believes a trustee without being willingness to rely on, trust cannot but to be limited (Mooreman et al., 1993). Thus, trust needs to be understood as a construct incorporating reliability, integrity, and willingness to rely.

Trust has been widely studied in management area. For example, in marketing, effective service marketing is based on a customer's trust because customers, in many cases, purchase a product or service before experiencing it, especially in e-commerce or mobile situation (Berry and Parasuraman, 1991). Therefore, the main predictors of trust are a trustor's perception of the trustee's characteristics, which potentially implies a close correlation between the trustee's (mobile banking service provider) and the trustor's (customer) perception. Without face-to-face interaction between them, it might be difficult to expect strong trust to be developed around their relationships. Mobile

systems, such as mobile banking, may be vulnerable to a security risk of intruders or hackers, so trust must be socially and legally warranted (Al-Nasser et al., 2014; Gefen, 2000).

### III. Research Model and Hypotheses

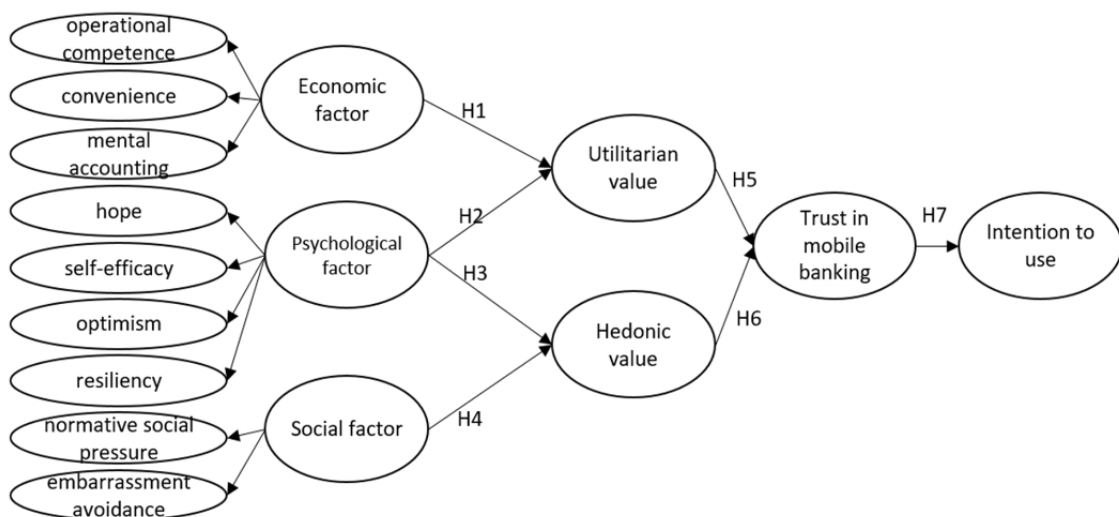
The structural equation modelling (SEM) was used to test the hypothesized research model depicted. The research model of this study is a second order factor model composed of a higher order latent variable that is indicated as causally influencing several first order latent variables with measurement indicators (Chin, 1998). A second order factor should be modelled at a higher level of abstraction and be reflected by first order factors (Moon and Kym, 2004). For example, the second order factor of the mobile banking adoption underlies the three dimensions of economic, psychological, and social factors, each with its own measured indicators, as depicted in <Figure 1>.

A customer's perceived utilitarian and hedonic

value toward mobile banking is affected by three economic (operational competence, convenience, mental accounting), psychological (hope, self-efficacy, optimism, resiliency) and social enablers (normative social pressure, embarrassment avoidance). A customer's trust toward mobile banking is also positively affected by utilitarian and hedonic IT value. Furthermore, trust in mobile banking has an effect on intention to use. Based on these hypotheses, this study suggests the research model as follows (see <Figure 1>):

#### 3.1. Economic Enabler and Utilitarian Value

Konana and Balasubramanian (2005) suggest there are three main economic enablers (operational competence, convenience, mental accounting) to influence utilitarian outcomes. Operational competence refers to responsiveness of mobile banking in fulfilling rapid and accurate transactions. Convenience imparts the customer's ability to perform banking-related tasks on an anywhere, any time basis. Mental accounting is defined as "the accounting sys-



<Figure 1> Research Model

tem implicitly invoked by consumers when they evaluate the gains and losses related to a certain sphere of activity” (Konana and Balasubramanian, 2005; p. 513). Purchase or transaction decisions can be explained on the basis of transaction utility derived from a mental combination of gains and losses (Thaler, 1985).

Utilitarian value is judged on whether a specific purpose is effectively and efficiently accomplished (Venkatesh, 2000). For utilitarian performance, mobile banking should focus on a customer’s rational problem-solving. It should guarantee customers the feeling that the provided mobile banking services are reliable and trustworthy. Important factors for convenience are access, search, transaction or time (Schröder and Zaharia, 2008). Operational competence, another core enabler of utilitarian value, involves quick processing of transactions without involvement of bank clerks and the immediate confirmation of transaction execution from the online interface, plus the quick overview of their account status (Konana and Balasubramanian, 2005). A customer’s mental accounting of gains and losses from mobile banking usage positively influences perceived utilitarian value. As investors compartmentalize their portfolio for asset proliferation (Shefrin and Statman, 1994), mobile banking customers also compare gains and losses in interest rate or commission through comparative analysis between offline and mobile banks. Once an economic-benefit is achieved from mobile banking, it may then be expected that customers will show favorable attitudes toward perceived utilitarian value. In this regard, the following hypothesis is suggested:

*H1: Economic enabler of mobile banking is positively related to utilitarian value.*

### 3.2. Psychological Enablers and Utilitarian/Hedonic values

The psychological enabler of mobile banking is regarded as positive psychological capital composed of hope, self-efficacy, optimism and resiliency. Positive psychological capital refers to an individual’s complex and positive psychological state (Luthans and Youssef, 2007). According to Youssef and Luthans, hope of positive psychological capital is defined as a positive motivational state. Self-efficacy refers to a person’s confidence in their ability to achieve a specific goal in a specific situation, while optimism is defined as one’s explanatory style of good and bad events as being only temporary (Seligman, 2002). Lastly, resilience is conceptualized as an ability to recuperate from stress, conflict, failure, change or an increase in responsibility (Luthans and Youssef, 2007).

Previous studies have suggested that positive psychological capital affects individual behavior under innovation acceptance situation. Any problem encountered while mobile banking, by customers with a high level of positive psychological capital will be actively overcome and recovered from generating greater utilitarian and hedonic value (Hartman et al., 2006; Luthans and Youssef, 2007; Slade et al., 2015). Thus, in innovative situation with uncertainty, the positive psychological capital positively affects user’s behaviors. Slade et al. (2015) argued that customers with a high self-efficacy are more likely to adopt remote mobile payment due to its utilitarian value. Hartman et al. (2006) examined the relationship between users’ positive psychological capital and their utilitarian and hedonic web consumption behavior. Customers with optimistic characteristics are more likely to positively evaluate the expected results in uncertain situation and enjoy the process

offered by the app. Based on these previous research, the current study suggested that the utilitarian and hedonic dimensions of web consumption were directly affected by a psychological enabler.

*H2: Psychological enabler of mobile banking is positively related to utilitarian value.*

*H3: Psychological enabler of mobile banking is positively related to hedonic value.*

### 3.3. Social Enablers and Utilitarian Values

Socially embedded aspects of mobile banking activity may impose pressures on mobile banking customers. Such customers will tend to retain their current status rather than accept new innovation. If customer's resistance to accepting mobile banking is strong, the innovative IT nature of mobile banking cannot be accepted. However, such innovation can be accepted with social pressure by peers. Such social pressure for the adoption of innovative IT may have a greater impact on user adoption than personal rational judgement (Konana and Balasubramanian, 2005).

Mobile banking plays a role as a communication channel to connect people (Parusheva, 2016). Kakao Bank, one of South Korea's first digital banks, attracted over 820,000 customers in just 4 days after its launch. Kakao Bank is backed by Kakao Co., the most widely used digital messenger platform in South Korea (Andreasyan, 2017). Kakao Bank tries to maximize a customer's fun and enjoyment from the time they open an account. A simple eight minute non-face-to-face account opening is available with essential personal information being input through its mobile app. The debit card offered with the account has an attractive design with a popular KakaoTalk character called "Ryan." When news of the new mo-

bile banking app made the rounds of coffee tables, water coolers and virtual communities, the need to belong to these conversations by colleagues and social peers were powerful motivators to adopt this mobile banking app.

A customer's adoption of mobile banking helps them participate freely in discussions of mobile banking within their social circle. While normative social pressures may initially force adoption on some customers, they can derive pleasure from the process of mobile banking and its attendant social context (Konana and Balasubramanian, 2005). Moreover, customers do not want to be seen as lacking in knowledge of the new IT trend of mobile banking. Embarrassment results when an individual's projected self is threatened during interactions with others (Goffman, 1956). If customers have fundamental knowledge about mobile banking, they have less to fear from embarrassment and will likely prefer to handle certain kinds of transactions themselves (Konana and Balasubramanian, 2005). The following hypothesis can thus be proposed:

*H4: Social enabler of mobile banking is positively related to hedonic value.*

### 3.4. Utilitarian/Hedonic Values and Trust

Successful mobile banking attracts customers and makes them feel that the offered services are trust worthy, reliable and dependable (Jamshidi et al., 2018). Conceptualizing trust in the social psychology literature is differentiated by many researchers into cognitive and affective trust (Matzler et al., 2006). Cognitive trust is formed by evaluating the reliability of the trustee and reflects the economic understanding of trust as a reasonable choice. Affective trust is based on emotional reactions to attractiveness



or aesthetics (Riegelsberger et al., 2005). A customer's behavior results from a combination of affective and cognitive trust.

A customer's cognitive and affective evaluation of an object is placed on a rational utilitarian dimension of instrumentality, and an affective hedonic dimension (Matzler et al., 2006). With regard to a utilitarian domain, customers may evaluate how useful and beneficial mobile banking is while they also consider how pleasant and agreeable these associated feelings are from a hedonic one. Cyr (2008) indicates that utilitarian user-interface design concepts are important drivers to IT service trust.

Bilgihan et al. (2015) argue that utilitarian values, such as functionality and navigation positively affect trust. Matzler et al. (2006) suggest that an object generating a lot of pleasure offers intangible benefits for evoking positive emotions and affective trust in a customer. Recently the concept of UX (user experience) is important in the interaction between users and IT media. The emotional design of an IT media increases the value of the utilitarian attribute of the innovative IT so that it has a positive effect on the user's reliability and purchase intention (Kujala et al., 2011). For example, the free-drawing GUI (graphic user interface) of a touch phone induces a positive response to the smart phone by causing a feeling of fun for an user. Recently, thus, the mobile banking services try to adopt various UX technologies in order to maximize user's hedonic experiences (Sung and Cho, 2012). Therefore, both aspects of utilitarian and hedonic value contribute to the overall makeup of a customer's behavior. Assuming that trust is based on an evaluation of cognitive utilitarian and affective hedonic value, this leads to the following hypothesis:

*H5: Perceived utilitarian value toward mobile banking will positively affect trust.*

*H6: Perceived hedonic value toward mobile banking will positively affect trust.*

### 3.5. Trust and Intention to Use

Trust is a key factor in the long-term relationship between trustees (providers) and trustor (customers) (Morgan and Hunt, 1994). The consequences of trust in the non-face-to-face mobile environment leads to positive reactions of customers in mobile banking. There are risky and uncertain issues of information privacy and security in mobile banking. Trust and perceived risk are interrelated notions which have often been identified as crucial barriers for the adoption of mobile services (Featherman and Pavlou, 2003; Jamshidi et al., 2018). If mobile banking is to be effective and efficient, it will need to provide enjoyment and not be risky. If it does this, customers will likely use it. Trust is likely to develop a form of positive behavior toward another party (Lau and Lee, 1999). This discussion, leads to the final hypothesis:

*H7: Customers' trust in mobile banking will positively affect intention to use.*

## IV. Research Methodology

The target respondents of this research were customers over 19 years old who have used mobile banking in the three months preceding the survey. Once a research instrument was developed with multiple-item scales for various levels of interest, a total of 300 questionnaires with a 5-point Likert scale were distributed. A total of 247 were returned and

usable, representing a response rate of 82.3%. The profile of respondents was presented in <Table 2>.

Most of the measurement items relating to mobile banking enablers (economic, psychological social factor), utilitarian and hedonic value, trust and intention to use were taken from relevant studies (see <Appendix A>). First, economic factor consists of operational competence, convenience, and mental accounting, which of them is measured with 3 items. These items were adapted Konana and Balasubramanian (2005) and modified for this study. Second, with regard to psychological factor, each construct of hope (Jeong and Chung, 2017), self-efficacy (Shareef et al., 2018), optimism (Luthans and Youssef, 2007), and resilience (Luthans and Youssef, 2007) uses three indicators. Next, social factor is composed of normative social pressure (Malaquias et al., 2018) and embarrassment avoidance with 3 items (Konana and Balasubramanian, 2005), respectively. Three items measure utilitarian and hedonic value (Baptista and Oliveira, 2015), respectively. Trust is measured with three indicators (Jamshidi et al., 2018). Finally, two items measure intention to use (Jamshidi et al., 2018).

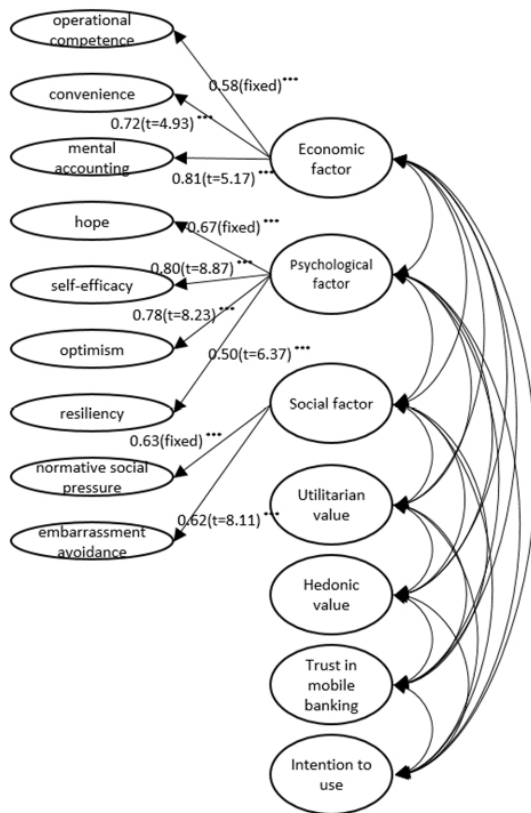
## V. Results

### 5.1. Unidimensionality Assessment

To assess unidimensionality, internal consistency and confirmatory factor analyses were performed. A reliability test was conducted to refine the measurement scale for each construct. All coefficient alphas of the seven constructs reported in <Table 3> exceeded .70 criteria for acceptance of reliability. To examine an acceptable fit of the employed measurement model, analysis of Moment Structures (AMOS) 22.0 version was used. Each construct was evaluated by examining the statistical significance of its estimated loading and the overall model fit. Specifically, first, the second-order confirmatory factor analysis model shown in <Figure 2> was estimated and validated. The estimation of the first-order confirmatory factor analysis model shows that the data define three factors of economic, psychological, and social factors. All the regression coefficients (factor loadings) are significant at the 1% level ( $p < .001$ ). All loadings exceeded .72 and each indicator t-value exceeded 12.62 ( $p < .001$ ) (See <Table 3>). The hy-

<Table 2> Profile of the Respondents ( $N = 247$ )

Variables	Frequency	Percentage	Variables	Frequency	Percentage
<b>Gender</b>			<b>Occupation</b>		
Male	181	73.3	College student	28	11.2
Female	66	26.7	Self-employed/owner	29	11.6
<b>Nationality</b>			Administrative/managerial	126	51.2
Korean	206	83.3	Professional	22	8.9
Chinese	35	14.0	Sales/service	10	3.9
Others	7	2.7	Technical	9	3.5
<b>Age (year)</b>			Others	24	9.7
Less than 30	32	13.1	<b>Annual household income(\$)</b>		
30-39	59	23.9	Less than \$25,000	35	14.0
40-49	100	40.6	\$25,001 - \$35,000	58	23.6
50 or older	55	22.4	\$35,001 - \$45,000	58	23.3
			\$45,001 - \$50,000	47	19.0
			\$50,001 or more	50	20.2



<Figure 2> Second-order Confirmatory Factor Analysis

hypothesized measurement model showed good fit to the data.

Next, the discriminant validity was verified by examining whether the square root of the AVEs for those variables are greater than the correlations between variables (Fornell and Larcker, 1981). A comparison of each correlation coefficient against its corresponding diagonal figures showed that the correlation between each construct in the model is less than the square root of the AVEs (see <Table 4>). Thus, the result of this analysis provides support for the discriminant validity of all the measurement items.

## 5.2. Hypothesis Testing

Using IBM SPSS AMOS 22.0, a structural equation model is employed to test the hypothesized model. The hypothesized model shows a good fit to the data ( $\chi^2 = 258.31$ ,  $df = 111$  ( $p < .001$ ); TLI = .93; CFI = .94; RMSEA = 0.07). In the relationships between an economic enabler and utilitarian values, the effect of economic value was significant and Hypothesis 1 was supported (H1.  $\beta = 0.34$ ,  $p < .001$ ). However, contrary to an expectation, the effect of a psychological enabler on utilitarian value was negatively significant and H2 was rejected (H2.  $\beta = -.69$ ,  $p < .001$ ). Additionally, the relationship between psychological factors and hedonic values were not significant and therefore H3 was rejected (H3.  $\beta = .20$ , ns). On the other hand, social factor has a significant effect on hedonic value (H4.  $\beta = .61$ ,  $p < .001$ ). H5 addressed the positive relationship between utilitarian value and trust in mobile banking. The effect of utilitarian value (H5.  $\beta = .67$ ,  $p < .001$ ) was significant but H6 on the relationship between hedonic value and trust was rejected (H6.  $\beta = .12$ , ns). Trust in mobile banking has a significant effect on intention to use (H7.  $\beta = .81$ ,  $p < .001$ ) (See <Table 5>).

In addition, the indirect effects for significant causal relationships were examined and tested for significance using the Bootstrap estimation procedure in AMOS (Preacher and Hayes, 2008). It displays the indirect effects and their associated 95% confidence intervals. As shown in <Table 6>, an economic factor exerted a significant indirect effect on intention to use via utilitarian value and trust ( $\beta = .18$ ,  $p < .05$ ). Additionally, the utilitarian value has a significant indirect effect on intention to use via trust ( $\beta = .54$ ,  $p < .01$ ). However, the indirect effect of social factor on intention to use showed no significant effect.

<Table 3> Unidimensionality Analysis ( $N = 247$ )

Construct	Items	standardized $\beta$ -coefficient(t)	AVE	CR	cronbach $\alpha$ (Mean)
Operational competence	com1	.73(fixed)	.53	.77	.90 (3.13)
	com2	.89(8.83)			
	com3	.52(7.42)			
convenience	conv1	.77(fixed)	.76	.91	.88 (3.51)
	conv2	.93(15.86)			
	conv3	.91(15.63)			
Mental Accounting	accounting1	.88(fixed)	.75	.90	.84 (3.70)
	accounting2	.91(19.23)			
	accounting3	.81(16.00)			
Hope	hope1	.84(fixed)	.73	.88	.92 (3.75)
	hope2	.94(17.79)			
	hope3	.77(14.05)			
Self-efficacy	efficacy1	.86(fixed)	.64	.84	.84 (4.05)
	efficacy2	.80(13.84)			
	efficacy3	.73(12.42)			
Optimism	optimism1	.77(fixed)	.63	.83	.83 (3.99)
	optimism2	.73(11.14)			
	optimism3	.85(12.84)			
Resilience	resilience1	.78(fixed)	.62	.83	.90 (3.66)
	resilience2	.93(17.38)			
	resilience3	.91(16.87)			
Normative social pressure	normative1	.89(fixed)	.76	.90	.90 (3.74)
	normative2	.87(13.05)			
	normative3	.85(12.20)			
Embarrassment avoidance	embarrass1	.90(fixed)	.63	.84	.84 (4.05)
	embarrass2	.88(19.74)			
	embarrass3	.88(18.81)			
Utilitarian value	utilitarian1	.83(fixed)	.79	.92	.86 (3.97)
	utilitarian2	.82(15.08)			
	utilitarian3	.80(14.45)			
Hedonic value	hedonic1	.86(fixed)	.77	.91	.91 (3.75)
	hedonic2	.84(16.74)			
	hedonic3	.93(19.61)			
Trust in mobile banking	trust1	.85(fixed)	.72	.89	.82 (3.99)
	trust2	.86(16.75)			
	trust3	.84(16.15)			
Intention to use	Intention1	.82(16.68)	.70	.82	.88 (4.05)
	Intention2	.85(16.31)			

Note: AVE (Average Variance Extracted), CR (Composite Reliability)

Chi-square ( $df = 635$ ) = 1218.87 ( $p < .001$ ); TLI = 0.91; CFI = 0.92; RMSEA = .06

<Table 4> Discriminant Validity Test

	CT	CV	MA	HP	SE	OP	RS	NM	EB	UT	HD	TR	IU
CT	.53												
CV	.23**	.76											
MA	.31**	.58**	.75										
HP	.34**	.33**	.40**	.73									
SE	.28**	.47**	.53**	.45**	.64								
OP	.47**	.48**	.49**	.46**	.50**	.63							
RS	.23**	.13*	.17**	.33**	.17**	.27**	.62						
NM	.44**	.34**	.45**	.59**	.51**	.57**	.38**	.76					
EB	.24**	.67**	.63**	.38**	.55**	.43**	.15*	.35**	.63				
UT	.31**	.52**	.63**	-.48**	-.65**	-.56**	-.24**	.52**	.64**	.79			
HD	.27**	.43**	.50**	.47**	.56**	.50**	.29**	.58**	.51**	.69**	.77		
TR	.37**	.35**	.47**	.41**	.51**	.58**	.22**	.54**	.45**	.60**	.49**	.72	
IU	.41**	.41**	.56**	.56**	.55**	.61**	.33**	.64**	.49**	.66**	.58**	.60**	.70

Note: CT(operational competence), CV(convenience), MA(mental accounting), HP(hope), SE(self-efficacy), OP(optimism), RS(resilience), NM(normative social influence), EB(embarrassment avoidance), UT(utilitarian value), HD(hedonic value), TR(trust), IU(intention to use)  
 Diagonals: (average variance extracted from the observed variables by the latent variables)  
 Off-diagonals: construct-level correlation = (shared variance)1/2  
 \*  $p < 0.05$ , \*\*  $p < 0.01$

<Table 5> Hypotheses Testing Result (N = 247)

Hypothesized relationship	Proposed model		
	Standardized $\beta$	t-value	Results
H1 economic $\rightarrow$ utilitarian	.34	4.22***	Supported
H2 psychological $\rightarrow$ utilitarian	-.69	-8.77***	Rejected
H3 psychological $\rightarrow$ hedonic	.20	1.64n.s.	Rejected
H4 social $\rightarrow$ hedonic	.61	4.30***	Supported
H5 utilitarian $\rightarrow$ trust	.67	8.19***	Supported
H6 hedonic $\rightarrow$ trust	.12	1.64n.s.	Rejected
H7 trust $\rightarrow$ intention to use	.81	21.40***	Supported

Note: Chi-square ( $df = 111$ ) = 258.31 ( $p < .001$ ); TLI = .93; CFI = .94; RMSEA = .07

<Table 6> Indirect Effect Testing Result

Indirect Effect	Standardized indirect $\beta$	Standard deviation	p-value
economic factor $\rightarrow$ intention to use	.18	.09	.05*
social factor $\rightarrow$ intention to use	.07	.06	.36ns
utilitarian value $\rightarrow$ intention to use	.54	.09	.01**

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$

## VI. Discussion and Implications

### 6.1. Summary of Research Findings

Traditional banking services using electronic devices have focused on satisfying customer's practical purposes such as providing transactional convenience rather than creating hedonic environment which seeks customer's pleasure and enjoyment satisfaction. However, due to the development of mobile banking technology and the expansion of banking services, the value pursued by customers in mobile banking becomes diversified beyond practicality. Therefore, in the current study, focusing on the context of mobile banking led to various hypotheses related to enablers of the mobile banking adoption from the economic, psychological and social aspect. These enablers affected customer perception of utilitarian and hedonic values and trust toward intention to use.

Test results showed that an economic enabler positively affected utilitarian value. Customers highly evaluate the economic value of mobile banking by recognizing that he/she can instantly verify the transaction results as well as use a banking app anytime and anywhere, leading to perceive relatively more utilitarian benefits rather than offline banking. As a result, it was found to have a positive effect of an economic enabler on utilitarian value. More specifically, the service provider's operational competence to offer effective mobile banking services, convenience to use anytime and anywhere and relative advantage of mobile banking in preference to traditional offline banking services had a positive effect on customer's perceived utilitarian value.

However, the effect of psychological value on both utilitarian value (H2) and hedonic value (H3) was rejected. Contrary to an expectation, the results found that a customer's perceived psychological factor on

mobile banking had a significantly negative effect on utilitarian value. Moreover, in hypothesis 3, the effect of a psychological enabler on hedonic value was not significant. According to prospect theory, optimistic people are not likely to make a reasonable decision in reckoning on gains and losses in uncertain risky situation (Kahneman, 1979). In other words, losses or gains arisen from uncertainty may be underestimated due to optimistic bias. One of the representative reasons that lead to optimistic bias is overconfidence (Salovery and Birnbaum, 1989). A person with high level of self-efficacy tends to be so overconfident in his or her problem-solving ability that optimistically underestimate potential gains or losses. Considering a psychological enabler in this study, there would be user's overconfidence caused by optimistic bias. Users may underestimate utilitarian value with regard to economic losses or benefits.

In addition, H3 on the relationship between a psychological enabler and hedonic value was also rejected. The plausible reason is that customers do not perceive mobile banking service as totally new and innovative service in terms of entertaining experiences. Recently, financial businesses including banks offer virtual reality (VR) or augmented reality (AR) technology to enhance customer's immersive experiences. For example, National Bank of Oman's AR technology allows customers to locate a nearby branch as well as deals during walking down the street (Arunachalam, 2018). Through this immersive experience, customers would feel enjoyment or entertainment. Similarly, Sung and Cho (2012) showed that customer's perception on hedonic value depends on whether an ad is 2-D or AR. Thus, innovative technology such as VR or AR significantly affects customer's hedonic value, but these technologies are still in the early state and not widely adapted in mobile banking services. At this point,

customers of mobile banking do not seem to perceive hedonic value of the current mobile banking services.

Conversely, social factor positively affected hedonic value. It would appear many people prefer to handle certain tasks through mobile banking without face-to-face contact. Customers gain a feeling of comfort and fun from using mobile banking services. The relationship between utilitarian and hedonic value and trust in mobile banking tested in H5 on the effect of hedonic value on trust was not supported. Customers cognitively have trust when mobile banking provides lower service fee or convenient access rather than offline banking service. In other words, only affective and emotional reason that services are fun or entertaining does not make customer have trust, followed by intention to use.

Moreover, this paper tested the indirect effects of economic/social factor and utilitarian value on intention to use. The findings showed that an economic factor affected intention to use directly, and it also had an indirect effect on intention to use mediated by utilitarian value and trust. Apart from utilitarian value, the paper can propose that as an individual experience with economic services of mobile banking, he/she has intentions that are internalized. Also, with the test of utilitarian value's indirect effects on intention to use strongly supported by the data, it obviously indicates that utilitarian value adequately reflects the extent of intention to use. These findings suggest that as much as utilitarian value plays an important role in shaping users' perceptions about mobile banking, utilitarian value is evenly influential when it comes to the decision-making of these users regarding their intentions to actually use mobile banking. On the other hand, the indirect effect of social factor on intention to use via hedonic value and trust was not significantly verified. Compared to an economic factor that is perceived through

his/her own experience, an social factor perceived through other's influence only indirectly affects intention to use mobile banking.

## 6.2. Theoretical and Practical Implications

This study has implications for both research and practice. With regard to theoretical advancement, the first critical issue relates to the exploration of the enablers of mobile banking adoption. Most of the traditional models of technology acceptance focus on IT-related characteristics such as ease of use and usefulness, but recent research on mobile banking has found that customer's perception of mobile banking values is driven more by economic, psychological, and social enabler. In 2005, Konana and Balasubramanian challenged researchers, claiming that three enablers are needed to explore why customers use mobile banking, but they did not empirically tested their argument. The author has answered that understanding the impact of these enablers on customer's perception can be valuable addition to researchers in their efforts to understand why customers use mobile banking services.

From the perspective of practice, our results point to the importance of balancing a utilitarian and hedonic perspective. Agarwal and Karahanna (2000) stated, "As technology developments continue to focus on richer and more appealing interfaces, the importance of experiences that are intrinsically motivating, i.e., pleasurable and enjoyable in and of themselves, might dominate as predictors of usage intentions (p. 688)." The findings only showed that the effect of a social enabler on hedonic value is significant. However, considering the potential of mobile banking technologies, administrators offering mobile banking services may take full advantage of the available technologies for enhancing customer's enjoyment.

### 6.3. Limitation and Future Research

There are a few lines of enquiry thrown up by this paper requiring further exploration and future research with regard to limitations. First, there are a variety of mobile banking types such as services driven by banks, driven by telecom operators, based on open API (application programming interface), or stock trading service. However, this study ignored the specific characteristics of each mobile banking type. As Konana and Balasubramanian (2015) noted earlier, the economic-psychological-social model can be applied, with due adjustments, to other mobile

banking contexts. The enablers discussed here would not be equally relevant within other service contexts. Future works may consider the characteristics of distinct contexts. Therefore, future studies can compare the effect of enablers among different mobile banking types. Next, although this study include utilitarian value as well as hedonic value in the model, the role of hedonic value in mobile banking was partially revealed. This is because the hedonic value that can be currently offered in a mobile banking is limited. It is expected that further research can be conducted by reflecting newly emerged UX functions such as AR or VR.

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## &lt;Appendix A&gt; Questionnaire

## [1] Economic factor

- Operational competence
  1. Mobile banking service provides current information related to transactions.
  2. Mobile banking service executes transactions accurately.
  3. Mobile banking lets me make transactions more quickly.
- Convenience
  1. Mobile banking service channel is available at any time anywhere.
  2. Mobile banking makes my transaction convenient.
  3. I find it convenient to get mobile banking to do what I want to do.
- Mental accounting
  1. I evaluate the gains and losses related to using mobile banking services.
  2. I am sensitive to the level of economic returns from mobile banking.
  3. I keep track of all income and expenses via mobile banking.

## [2] Psychological factor

- Hope
  1. I will seek ways to successively perform my transactions in mobile banking.
  2. If I should find myself in a jam, I could think of many ways to get out of it.
  3. I am energetically pursuing my goals in mobile banking transactions.
- Self-efficacy
  1. I have qualifications to use mobile banking service channel through mobile phone.
  2. I have skills in using mobile banking service channel.
  3. I am confident of using mobile banking service channel.
- Optimism
  1. I always think positively with regard to my mobile banking transactions
  2. In uncertain times, I usually expect the best.
  3. If something can go wrong for me, it will not.
- Resilience
  1. I can overcome difficulties in relation with my transactions in mobile banking
  2. I enjoy dealing with new and unusual situations.
  3. I am able to deal with various financial tasks in mobile banking.

## [3] Social factor

- Normative social pressure
  1. The people that influence my behavior that I should use mobile banking.
  2. The people that are important to me think that I ought to use mobile banking.
  3. A lot of people commonly use the mobile banking.
- Embarrassment avoidance
  1. I prefer privately handle my transaction in mobile banking without the intervention of bank teller
  2. One of the benefits of mobile banking is lack of personal contact.
  3. It would be very embarrassing to find that my debit card did not function at the counter.

## [4] Utilitarian value

1. Unreliable - reliable
2. Incorrect - correct
3. Not functional - functional

<Appendix A> Questionnaire (Cont.)

[5] Hedonic value

1. Weary - entertaining
2. Disagreeable - agreeable
3. Not delightful - delightful

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[6] Trust

1. Mobile banking seems secure.
2. Mobile banking seems dependable.
3. Mobile banking was created to help the client.

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[7] Intention to revisit

1. I intend to continue using mobile banking services in the future.
2. I plan to continue to use mobile banking services to manage my accounts.

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