Scientific Research

Factors Influencing the Use of Mobile Financial Services: Evidence from Taiwan

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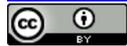
Abstract

Mobile service innovation has become a critical issue in the financial sectors. Currently, many banks in Taiwan have developed various mobile services for their customers. However, mobile services in financial sectors are different from Internet services because of the mobility. First, mobile services enable mobile extensions of existing electronic services and new services that are valuable to users on the move. Second, most people have their own, personal mobile devices in the hands, but they may not have the computers with them anytime. Although consumers' technology acceptance has been examined in the context of e-commerce, mobile financial services are gained scant attention. Thus, this study aims to explore the factors influencing the use of mobile financial services (MFS). We conducted a qualitative research in depth, and investigated a renowned bank in Taiwan which developed various MFS for customers. The findings reveal that perceived mobility and personal habit are two important antecedents influencing the use of MFS. Mobility positively affects perceived ease-of-use and perceived usefulness, which in turn influence the use of MFS. Furthermore, personal habit positively affects the use of MFS.

Keywords

1. Introduction

Mobile commerce has tremendously changed our life. The mobile technology has been widely applied in the existing services due to the fast development of the App applications and the smart phones. Nowadays, the

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market share of smart phones has overwhelmingly surpassed the traditional cell phones. According to the report of FIND [1], the penetration rate of smart phones in Taiwan will be reached at the level of 56.8% in 2015, and over 50% of people in Taiwan will possess at least one smart phone. As a result, a rapidly increasing number of organizations are making substantial investments in this new area. As for mobile financial services (MFS), the electronic trading system, a main function of MFS, has tremendously grown in the decade. Although the electronic turnover ratio in the whole market is only 7.38% in 2001, the ratio has largely increased to 38.96% in 2013. Incorporated banking and securities services into mobile phones will be an inevitable trend that enhances the banks to provide more MFS for customers. MFS does not only provide the convenience to the customers, but also can bring forth the opportunities of profitability to the banks.

In literature, the adoption of new technologies has gained considerable attention, and many scholars use technology acceptance model (TAM) to explore the determinants influencing the use of technology [2]. In fact, TAM is an information systems theory that models how users come to accept and use a technology. Currently, many studies have used the TAM concept to investigate the mobile domain [3]. In this model, perceived ease-of-use and perceived usefulness are two critical predictors influencing the adoption of new technologies. Perceived ease-of-use refers to the degree to which a person believes that using a particular system would be free from effort, while perceived usefulness refers to the degree to which a person believes that using a particular system would enhance his or her job performance [4]. Thus, TAM focuses on individual preferences rather than situation or external factors. Although TAM has been well examined in mobile data services and it shows a moderate prediction model [5], few studies use this model to predict consumer behavior in the context of MFS. Due to the mobility, MFS can allow customers to manage the accounts in the bank and use the financial services anytime and anyplace. Personal habit with the cell phone fosters the intention to use MFS. Thus, this study mainly explored the effects of perceived ease-of-use, perceived usefulness, perceived mobility and personal habit on the use of MFS. A case study research was conducted to investigate a renowned bank in Taiwan which provided a variety of MFS for customers. The contribution of the study is to advance the theory of TAM in the context of mobile commerce, and also provide the practical suggestions for the practitioners.

Theoretical background is presented in the next section. The methodology for the case study is discussed in Section 3 which is followed in Section 4 by the analysis of the data, to propose the propositions of the study. The last, Section 5, concludes the paper and reflects on some practical issues associated with MFS.

2. Theoretical Background

2.1. Technology Acceptance Model

TAM introduced by Davis [2] is widely used to examine the acceptance of new technology in the information system. It was adapted from the Theory of Reasoned Action (TRA) [6] and identified the causal relationship among perceived ease-of-use, perceived usefulness, attitudes, and behavioral intentions toward the use of the technology. TAM suggests that the use of information systems is determined by users' behavioral intention, and the intention is affected by perceived usefulness and attitudes toward the use. The attitude is itself determined by perceived usefulness and perceived ease-of-use [7]. This model has been examined in the fields of information system, marketing, and electronic commerce [8]-[11].

Moreover, many scholars attempt to extend the original TAM for the extensive research. For example, Legris, Ingham, and Collerette [12] suggested that social and human variables can enhance the prediction of the TAM model. Turel, Serenko, and Bontis [13] showed that an overall assessment of value was a key determinant of behavioral intentions to employ pay-per-use information services. Mathieson, Peacock, and Chin [14] also found that hardware, software and financial resources are important for users to use an information system. Thus, according to the characteristics of MFS, it is expected that perceived mobility and personal habit will be two critical antecedents influencing the use of the technology.

2.2. Perceived Mobility of Using MFS

MFS allows customers to use the mobile services anytime and anyplace, while the use of other electronic services is bound to a fixed location. Through MFS, customers can access banking and securities services such as account management, information inquiry, money transfer, bill payment, and stock order [15]. Compared with Internet banking services, MFS is free of temporal and spatial constraints. Customers can acquire real-time ac-

count information and make payments at anytime and anywhere. This helps traditional banks improve their service quality and reduce service costs. Thus, it is assumed that perceived mobility is the main characteristic of MFS. It will alter the previous behavioral mode of using the technology, and further dominate the behavior in the future.

2.3. Personal Habit of Using MFS

The concept of habit was first introduced in the field of psychology (e.g., [16] [17]). Currently, habit is defined as "learned sequences of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end states" [18]. Given this definition, there are two key characteristics of a habit: its automatic performance without any conscious control, and its triggering by a stimulus cue in the environment. Literature in social psychology and other applied fields have assessed the importance of habit through its interactions with intention and behavior [19] [20]. While some scholars proposed a direct impact of habit on behavior independent of intention [21], others posit that habit not only competes with intention in determining behavior, but also influence intention directly [22] [23].

However, habit influences future behavior only when behavior has been habitualized. Ye and Potter [24] indicated that the formation of habit requires a certain action to be performed repeatedly and frequently. Therefore, habit is most likely to play a role in daily routines. Behaviors performed at longer intervals, such as paying rent or celebrating anniversaries do not usually become habitual despite the repetitive nature. Thus, while using computers to conduct Internet services is a novelty for the customers who cannot use computers, the habit of using MFS may seem as mature for the customers who have the experience of using mobile phones. It is assumed that personal habit of using MFS will be the other important antecedent of the user of MFS.

3. Methodology

3.1. Why Uses Case Study in This Study

A single case study research was conducted. Case study research is well suited to investigate micro level activities. It allows the investigator to research phenomena as they unravel over time, rather than at a snapshot in time [25]. Furthermore, it also allows deep understanding of the contextual setting [26]. Although MFS has a significant growth in the banking and securities services, currently the customers are rare and not easy to be found. Thus, this study investigated a renowned bank in Taiwan (*i.e.*, Jihsun holding company, abbreviated Jihsun) as the case company to understand consumer behavior for the use of MFS. The qualitative research involved the focus group moderated by a research professional. Three managers of the company, including the director of the department of electronic commerce, the manager of banking, and the manager of securities, were investigated.

3.2. Case Background

Table 1 shows the top ten of the securities regarding the electronic turnover ratio in Taiwan. Jihsun is the seventh largest securities for the electronic trading system in Taiwan. The electronic turnover ratio of Jihsun is approximately 3.67% in 2013. Specifically, the number of Jihsun customers in the mobile trading service is 13,552 of each month in 2011, but the number of customers is increasing to 32,661 until October, 2013. Moreover, the number of Jihsun customers in the mobile service regarding banking is 891 each month in 2012, but the number of customers is increasing to 2929 until October, 2013. Obviously, we can find that although the total number of MFS customers in Taiwan is not so much, the growth rate of the customers has significantly increased in the near couple years.

3.3. The Definition of MFS

Like mobile banking, MFS is defined as "a system that allows customers of a financial institution to conduct a number of financial transactions through a mobile device such as a mobile phone or personal digital assistant (PDA)" [28]. Thus, MFS in this study may include the current underlying services of banks and securities, such as check account balance, transfer money, and invest financial products (e.g., stock, option, and fund). The advantages of MFS to the customers mainly include the financial messages to enquire, the banking account to manage, and the financial products to invest. Customers can instantly order the stocks or obtain the messages

Table 1. The top ten securities of the electronic trading system (October, 2013).

Code of securities dealers	Name	Accumulated customer accounts	The average household turnover	The securities total turnover	Electronic turnover ratio
9800	Yuanta	1,635,807	1537.48	478,884,183	15.04%
9200	KGI	809,308	1884.58	312,698,796	8.76%
9A00	SinoPac	476,374	1825.06	187,457,549	6.07%
9600	Fubon	509,511	1472.56	201,867,889	5.86%
9100	Capital	468,920	1864.12	178,780,182	5.16%
5920	MasterLink	380,272	2361.05	145,179,420	5.08%
1160	Jihsun	810,820	1368.88	131,730,312	3.67%
1470	Morgan Stanley in Taiwan	2490	1508796.35	87,882,220	3.65%
5850	Uni-President	216,806	3531.54	120,584,155	3.61%
1520	Credit Suisse	213	3030567.88	106,462,086	3.45%

Source: The summary from Taiwan Stock Exchange [27] in Taiwan.

through the mobile devices.

4. Data Analysis

4.1. MFS in the Taiwan Financial Market

MFS of the banks in Taiwan is mostly developed by a professional information company in Taiwan, named MITAKE. Specifically, this company possesses 100 percents market share of the mobile trading system on the stock market in Taiwan. Thus, most banks in Taiwan providing MFS are similar, expecting for few customized services developed by the banks themselves. For example, Jihsun is an example. It also develops other customized mobile services for customers, such as banking and financial information.

4.2. Perceived Ease-of-Use and Perceived Usefulness

Mobile services in financial sectors are different from Internet services because of the mobility. First, mobile services enable mobile extensions of existing electronic services and new services that are valuable to users on the move. Second, most people have their own, personal mobile devices in the hands, but they may not have the computers with them anytime. In general, MFS consists of a variety of Internet services regarding banking and securities services. The underlying services of MFS include the access of banking or securities accounts from the mobile devices. Customers may check account balances, and see their transaction history in the services. They may also transfer money or pay bills via the services. Besides, they may provide the Web ATM service. Its operation is equivalent to the ATM physical service. Through the mobile phones, the customers can easily use all of the functions of ATM, excepting for cash withdraws. As thus, MFS provides useful services to enhance customers' ability of managing the investment. Moreover, the interface of mobile phones is simple and easy for customers to manipulate the system. Thus, it is believed that perceived ease-of-use and perceived usefulness will be two critical factors influencing the use of MFS and perceived ease-of-use positively affect perceived usefulness. This study brings forth the first, second, and third proposition (P1, P2, and P3).

P1. Perceived ease-of-use is positively associated with the use of MFS.
P2. Perceived ease-of-use is positively associated with perceived usefulness.
P3. Perceived usefulness is positively associated with the use of MFS.

4.3. Perceived Mobility

In term of the extra services of MFS, Jihsun provides a customized service with push technology for customers, named "Jihsun Online", which directly supports related information regarding stocks, options, and funds, for

customers. It focuses on individual customers to offer specific services they desired. This service can save time for customers to search the target price at any time and is a novelty for the customers because the message directly shows in the mobile devices. According to the investment targets of each customer purchased before, the system will automatically send the latest news regarding the targets to the mobile devices. Moreover, the ex-dividend day of the targets hold by the customers will also be notified. The customers may add the investment targets they preferred into the auto system to receive messages. Thus, customers can easily find the market prices of stocks, options, or funds, as well as related information such as company performance and market ranks for the consideration of investment. In fact, the financial products may have different impacts for the mobile services. Fund information is more stable because its price is constant within a day. Relatively, stocks and options are more active and dynamic. The prices may change in few seconds while the market opens. Thus, MFS will be a more powerful service to provide the information for satisfying the mobility, especially for the stock or option investors. Therefore, perceived mobility can help customers to instantly order the stocks or obtain the information they requested. It is believed that perceived mobility is positively associated with perceived usefulness and perceived ease-of-use. This study brings forth the fourth and fifth proposition (P4 and P5).

P4. Perceived mobility is positively associated with perceived ease-of-use for MFS customers.

P5. Perceived mobility is positively associated with perceived usefulness for MFS customers.

4.4. Personal Habit

People may rely on personal usage habits for the use of MFS. The manager of Jihsun noted that some people likely use MFS to order the stocks because of personal usage habits of mobile phones. This finding shows that customers prefer using a constant tool they used before to do the investment. This usage habit may influence the use of MFS if the customers likely use the mobile phone. However, this behavior may be not consistent with that of the online customers. The manager of Jihsun described that the customers in MFS include all types of customers, but in Internet services may mainly consist of the customers who purchase the stocks with low amounts. Thus, it is believed that personal habit of using mobile phones will positively influence the use of MFS. This study brings forth the sixth proposition (P6).

P6. Personal habit is positively associated with the use of MFS customers.

Overall, this study concluded the above-mentioned propositions, and developed a proposed research model, as shown in **Figure 1**. The proposed model includes the original TAM, and further adds perceived mobility and personal habit as new antecedents into the model.

5. Conclusion and Suggestion

5.1. Theoretical and Practical Implications

From a theoretical perspective, this study incorporated two factors, perceived mobility and personal habit, into the original TAM as the proposed research model. The evidence reveals that both factors are important for customers while using MFS. Indeed, MFS is different from Internet services. Customers can use it on the move. Moreover, by mobile phones, customers can directly control the system and manage the information they preferred. Thus, this study verified the TAM model with adding perceived mobility and personal habit factors in the context of MFS.

From a practical perspective, this study found that perceived mobility, personal habit, perceived ease-of-use, and perceived usefulness are four determinants influencing the use of MFS. Perceived mobility will positively affect perceived ease-of-use and perceived usefulness, which in turn positively influence the use of MFS. Personal habit is positively associated with the use of MFS. These results imply that customers likely use MFS because of the mobility and personal habit. Moreover, this study found that some applications of MFS are outsourcing to the professional companies, such as the mobile trading system. This may result in the services provided by the banks look alike. Thus, service innovation is an inevitable issue for the banks to discriminate the competitors, especially for the mobility in MFS. The practitioners therefore shall actively invite other industry firms to cooperatively develop specific applications of MFS for customers, such as location-based services for parking, hospitals, and restaurants, etc.

Moreover, banks may also focus on customer's habit to provide incentives for alluring new customers. For example, in alliance with the telecommunications, the practitioners may give discounts of transaction fee to re-
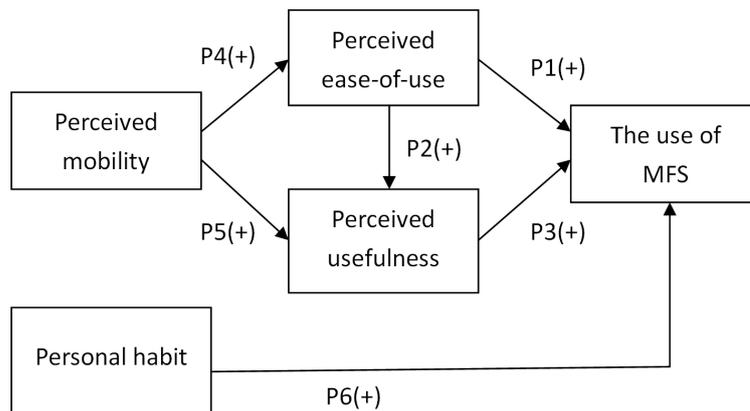
Figure 1. The proposed research model. Note: (+) means that the relationship is positive.

duce the monthly rate of smart phones. Besides, banks in Taiwan provided MFS are mostly for customers to use the financial information and order the negotiable securities such as stocks, options, and funds. However, these services cannot give the substantial profitability to the banks. Thus, the future development of MFS will concentrate to exploit the applications for customer's demands, and further in alliance with other industries to provide a variety of services for constructing a profitability model, such as providing advertisement in the mobile services.

It is worthy to pay attention that the government regulations may restrict the development of MFS in Taiwan. According to the current regulations regarding the banking and the securities in Taiwan, various mobile innovative services may be useful or convenient for the customers, but they have to follow the existing laws. Due to the concerns of money laundering, Taiwan government tend to have subjective judgments to avoid the illegality occurred in the new services. As a result, the reformation of new mobile services will be slow and difficult for the banks, which in turn deters the innovations towards MFS. Thus, in order to develop new mobile applications in the context of MFS, the government shall play a critical role of leading the related industries to invest this domain.

5.2. Conclusion

This study conducted case study research to explore the determinants influencing the use of MFS. Through case analysis, this investigation found that perceived mobility and personal habit are two critical antecedents influencing the use of MFS. The contribution of this study is twofold. First, this study found that perceived mobility and personal habit will positively influence the use of MFS. Thus, theoretically this study advances the knowledge of the TAM model in the context of MFS. Second, practically perceived mobility dominates customers to use MFS. The mobile technology allows customers to use MFS via mobile phones anytime and anywhere. Moreover, personal habit also reinforces the usage intention because everyone has used before. Thus, it is expected that MFS will be a suitable service to replace other channels, such as Internet services and over-the-counter services, for managing customer's financial assets. However, this study found that customers using MFS are relatively rare. Although the growth rate of customers using MFS is exponentially increased, the actual customers are still limited. Thus, exploring new customers to use MFS is an important issue for the practitioners.

5.3. Limitations and Suggestions

Along with the important findings, this study contained some limitations. First, this study conducted case study research to investigate a renowned bank in Taiwan. Thus, the results of this study may focus on service support and system development from the bank perspective. Subsequent studies may investigate the actual customers of using MFS to affirm the antecedents this study proposed whether substantially influence the use of MFS or not. Second, the number of the applications may influence the use of MFS. Indeed, the development of MFS in Taiwan is still in the on-going stage. Customers reject the services due to poor support of the applications. Thus, subsequent studies may explore the relationship between perceived critical mass of applications and the use of MFS.

Acknowledgements

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