Mobile Financial Technology and Consumers' Financial Capability in the United States

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Abstract

Consumers are increasingly adopting mobile financial services such as banking services, bill payments, and cash management. We investigate the adoption and use of mobile financial services as well as their relationship with consumers' financial capability. Researchers have explored the use of mobile services in the technology and business literature, but little academic attention has been paid to the applications and consequences of mobile services from consumers' viewpoint. This study uses data collected through an online national survey (N=1,497)in October 2012.The results show that perceived behavioral control, subjective norms, and perceived usefulness are important in explaining the adoption of mobile financial services. More frequent use of mobile financial services is associated with a higher level of financial capability.

Keywords: mobile financial services, financial capability, theory of planned behavior,

Rapid advances in wireless technology and innovative applications on mobile phones offer unprecedented opportunities to consumers around the world. More people have mobile phones than bank accounts (Porteous, 2006), and mobile data services utilized on a mobile phone enable consumers to enjoy a wide variety of services that are suitable to their life situations. As of 2014, more than 90% of American adults own a cell phone, with 64% of adults owning a Smartphone (Pew Research Center, 2015).Data from the Federal Reserve Board (2015) are similar, with reports indicating that 87% of American adults have a mobile phone, 71% of which are smart phones.

Consumers use mobile phones for purposes such as ubiquitous communication (e.g., email or SMS), content delivery (e.g., financial, health, or education-related information), entertainment purposes (e.g., finding restaurant/services/transportation/facilities), booking tickets for movies/concerts, obtaining discount coupons, tracking shipments, checking stock market information, playing mobile games, and so forth (Hong et al., 2008; International Telecommunication Union, 2002).Among Americans, 60% use their mobile phone to access the Internet, and 50% report using a mobile phone to download applications, or "apps" (Pew Research Center, 2015).Consumers are increasingly adopting mobile financial services, such as banking services, bill payments, cash management, stock trading, mobile transactions, and financial information exchange, for the purpose of financial management.

Mobile technologies are increasingly commonplace and give consumers a variety of services and options (Garrett, Rodermund, Anderson, Berkowitz, & Robb, 2014).Compared to e-commerce, mobile services provide unique value to consumers in that the services are time and location specific, and consumers can perform tasks instantly based on their needs (Davis, 1989; Mort & Drennan, 2005). Consumers' financial capability is of great importance because today's consumers are faced with a more dynamic, risk-involved, and rapidly changing financial market than ever, such as changes in pensions and a shift from defined benefit to defined contribution plans (Lusardi & Mitchell, 2011).

Consumers need to make a greater number of decisions related to investments and retirement in order to achieve financial stability and well-being in the long run. Because consumers are now more responsible for self-managed accounts within their portfolios, their skills and knowledge become more essential to the accumulation of wealth. It is difficult to acquire those abilities because markets have expanded into unfamiliar areas and financial products have become more sophisticated (De Meza, Irlenbursch, & Reyniers, 2008). Thus, the wider adoption of mobile financial services using new information technology could provide consumers with new ways to quickly search for information and could also make financial management easier, possibly impacting consumers 'financial capability. In this study, we explore the incorporation of a new technology in the financial management context, investigating the adoption and use of mobile financial services and the association of mobile financial services use with consumers' financial capability. Empirical studies on the use of mobile services have been presented in the technology and business literature streams. For example, past studies on consumers' adoption of new technology and the use of mobile services have focused on the technical issues of hardware/software development (Imielinski & Badrinath, 1994) as well as the potential of mobile applications to provide insights on development or marketing strategies by increasing consumers' usage of technology (Varshney & Vetter, 2001).Garrett et al. (2014) investigated consumer adoption of mobile payment technology. Limited academic attention has been paid to the potential applications and consequences of mobile services from consumers' viewpoint.

The current study represents an effort to understand consumers' acceptance of new information technology for the purpose of financial management and the impact of such technology on financial capability, and more specifically, to identify and assess the factors that drive consumers' adoption and usage of financial mobile services. To do so, we draw on the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB). The empirical framework enables us to identify factors that are relevant to the adoption and usage of mobile financial services and the resulting impact on consumers' financial capability. We investigate whether the utilization of mobile services could serve as a gateway to improve financial capabilities as a means of communication, an efficient tool for cash management, and a useful source of information.

The technology acceptance model (TAM) addresses how a person's internal psychological factors play a role in adopting a new technology, focusing on two beliefs: perceived usefulness and perceived ease of use (Davis, 1989).Perceived usefulness is defined as the extent to which an individual believes that using a certain tool will enhance his/her job performance, and perceived ease of use is defined as the extent to which an individual believes that using a certain tool will be free of effort. Previous studies on new information technology provide information on valid predictors of consumers' acceptance and/or adoption of a new technology (Chin & Todd, 1995; Doll, Hendrickson, & Deng, 1998; Garrett et al., 2014; Wang, Lin, & Lauren, 2006).The theory of planned behavior (TPB) posits that an individual's intention to perform a certain activity is influenced by several psychological and social antecedents such as attitudinal beliefs, perceived behavioral control, and social influence (Ajzen, 1991).In addition to the fundamental constructs of the TAM and TPB models, this study extends the roles of perceived benefits and perceived costs in predicting the use of mobile financial services.

While mobile data services refer to the convergence of mobile communication technologies with information and data communication services (Hong et al., 2008; ITU 2002), we narrow this down to mobile financial services, which include an array of mobile data services that are used for financial management through a mobile phone. This includes mobile banking, stock trading, conducting mobile transactions, checking balances, using financial applications for money management, communication with financial specialists/other consumers, and reading financial information/news. Thus, the adoption of mobile financial services refers to whether or not a consumer uses an array of mobile phone financial services to engage in specific financial management tasks. This paper contributes to existing mobile technology and financial capability research by exploring the factors that enhance and inhibit the adoption of technology related to financial management as well as the effect of mobile financial service use on financial capability. The findings facilitate strategic management decisions by providing insights into areas where consumers see financial technology as an alternative method of delivering educational content regarding financial management.

Literature Review

Adoption of Mobile Financial Services

One mobile service related to financial management that has been used by many consumers is mobile banking, which carries some similarities with online banking (via computers) in that consumers are able to see account balances and transfer funds among accounts (Garrett et al., 2014; Gu, Lee, & Suh, 2009).

Benefits of mobile financial services areeasy, low-cost access to bill-paying, 24/7 availability of financial services, reduced time spent on financial management tasks, and lower risks associated with carrying cash (Hogarth & Anguelov, 2004). Mobile banking is a more developed form of online banking and has unique features such as mobility, wide scope of usage, personalization, and usage costs (Turban et al., 2006).About 34% of Internet users in the United States have Internet access through their mobile or wireless devices (Pew Research Center, 2015), and almost 44% of Internet users and 25% of all adults in the United States use online banking (Fox, 2005). Available data suggest that mobile banking service use is increasing, particularly among smartphone owners (Federal Reserve Board, 2013).Nearly 60% of Internet users in the United States visit at least one of the top 20 financial institution sites in any quarter (Garrett et al., 2014).Online banking users tend to shift to mobile banking more easily than non-users, and the number of mobile banking users is still on the rise (Fox, 2005).A significant number of online banking users at several large banks have accessed the bank's online banking application via the mobile web (Tower Group, 2007).

Mobile payment is a new, increasingly common form of payment used by consumers to conduct payment transactions through a mobile device (Garrett et al., 2014; Federal Reserve Board, 2015). Money is transferred from the payer to receiver via an intermediary, or directly, without an intermediary (Mallat, 2007).Payments for goods and services are then charged to the consumer's mobile phone bill or deducted from the airtime of prepay subscribers. Current mobile payment applications include, for example, vending, ticketing, purchase of mobile content services, payments on the Internet, and payments for goods and services in shops, restaurants,and corner stores (Garrett et al., 2014; Kreyer, Pousttchi, & Turowski, 2003; Taga & Karlsson, 2005). The results from focus group interviews of Finnish consumers showed that premium pricing, low adoption rates, perceived risks, and perceived incompatibility with large value purchases inhibit mobile payment adoption (Mallat, 2007).This finding suggests that the relative advantage of mobile payments is related to the specific benefits provided by the new mobile technology: time and space-independent payments, remote and ubiquitous access to payment services, and the ability to avoid queuing and complement cash payments. Dahlberg, Mallat, Ondrus, and Zmijewska (2008) found that ease of use, usefulness, security, cost, and compatibility were the most important factors in consumers' utilization of mobile payments. Garrett et al. (2014) found that consumers using mobile payments were more likely to be younger, male, minorities, and to have higher than average income. Although some of today's prevalent mobile financial service applications are focused on helping consumers with financial management tasks (e.g., access to banking; Burstein et al., 2008; Gu, Lee, & Suh, 2009; Mallat, 2007), few researchers have investigated the impact of mobile financial application use in the context of consumers' financial capability.

Theoretical Framework

The present study uses the theory of planned behavior (TPB) and the technology acceptance model (TAM) as a solid base framework to explore the empirical determinants of adopting mobile services for tasks related to personal finance. The advantage of using the theory of planned behavior for this study is that it has been used to explore consumers' intention to use a new technology and allows for incorporating other factors that may influence consumers' use in the empirical model. TAM has been used in studies investigating the adoption of new technologies, and is applied to mobile financial services in the present study. The theory of planned behavior was developed by Ajzen (1991) and addresses three psychological antecedents that influence one's decision to adopt a new activity: attitude, subjective norm, and perceived behavioral control. Attitude refers to one's positive or negative evaluative affect about a certain behavior/object. Subjective norm refers to one's perceptions about how important others' opinions and behaviors are and how strongly one feels the need to conform. Perceived behavioral control includes one's perceptions about the availability of requisite resources/opportunities in carrying out a behavior (Ajzen & Madden, 1986). It often reflects one's level of confidence with performing a behavior. The technology acceptance model (TAM) includes perceived usefulness and perceived ease of use in explaining consumers' adoption of a new technology. Perceived usefulness is defined as the extent to which a consumer believes that a certain technology will be of benefit, and perceived ease of use is the extent to which the consumer believes the technology will be free of effort.

Research Model and Hypotheses

Integrating the fundamental constructs of TPB and TAM, this study investigates the role of various factors in predicting the adoption and use of mobile financial services.

Attitude

As noted in the TPB (Ajzen, 1991), an individual with a more positive attitude toward an object/behavior is more likely to have an intention to use the object or engage in that behavior. Applied to the usage of mobile financial services, a positive attitude toward such services may positively influence the adoption of mobile financial services. The attitude toward mobile financial services is formed based on direct/indirect experiences that allow consumers to evaluate mobile financial services in a positive or negative way. This leads to our first hypothesis.

H1: Consumers with a positive attitude toward mobile financial services are more likely to adopt such services.

Perceived Behavioral Control

Perceived behavioral control refers to an individual's perceived control over a behavior under the existence of barriers (Ajzen, 2002). The concept of perceived behavioral control is associated with external obstacles in using mobile financial services, such as mobility or connectivity. Hence, perceived behavioral control related to environmental constraints has a significant influence on the intention of usage (Taylor & Todd, 1995). The technical difficulty in connecting to mobile financial services can be a critical barrier to their use, leading to our next hypothesis.

H2: Consumers with a higher level of perceived behavioral control are more likely toadopt mobile financial services.

Subjective Norms

The theory of planned behavior incorporates social influences as an explanatory predictor of behavioral intention (Ajzen & Fishbein, 1980). Subjective norms constitute the normative belief structure and reflect social influences by reference groups, or individuals with whom the consumer has a close relationship (e.g., friends, family, colleagues, or mass media such as televisions, newspapers, and magazines).Evidence of the influence of subjective norms on the context of technology use is inconsistent. When a technology is group oriented, the group has a direct impact on the intention of members to adopt the technology (Taylor & Todd, 1995), whereas this effect was not significantly confirmed in regards to individual-oriented technology. Subjective norms have also been found to indirectly affect the intention to use technology through perceived usefulness (Davis, Bagozzi, & Warshaw, 1989). In this study, subjective norm refers to perceived pressure from the people who the consumer thinks are important (Hong et al., 2008). Social influence from consumers' peers or mass media concerning a new technology is an important antecedent of consumer behavior in adopting information technology (Taylor & Todd, 1995; Venkatesh, Morris, Davis, & Davis, 2003).For example, teenagers tend to subscribe to SMS in order to be connected with their peers, indicating that it is a necessary condition for obtaining membership in a group (Ling &Yttri, 2001).Likewise, those who adopt mobile financial services that are popular with other group members can maintain and secure group membership by continuing to use the services. Therefore, consumers' adoption of mobile financial services may increase in response to social influence.

H3: Consumers with a higher level of subjective norm are more likely to adopt mobile financial services.

Perceived Usefulness

Previous researchers have provided empirical evidence regarding the effect of perceived usefulness on a consumer's intention to adopt a new tool (Hu et al., 1999; Venkatesh & Morris, 2000).Consumers who believe that mobile services will be useful to their financial management are more likely to adopt mobile financial services.

H4: Consumers with a higher level of perceived usefulness are more likely to adopt mobile financial services.

Perceived Ease of Use

In this study, perceived ease of use is associated with a user-friendly web environment. When consumers perceive that less effort is required to utilize a tool, they are more likely to get involved. New technology that is easy to use will be less threatening to consumers (Moon & Kim, 2001) and consumers' perceived ease of use is expected to exert a positive influence on using such technology (Wang et al., 2003).

H5: Consumers with a higher level of perceived ease of use are more likely to adopt $_{mobile}$ *financial services.*

Perceived Benefits and Risks

In addition to attitude, perceived behavioral control, subjective norms, perceived usefulness, and perceived ease of use, the adoption of mobile financial services can be affected by one's perceived benefits and risks.

The perceived risk associated with mobile phone use varies according to the situation and may negatively influence consumers' adoption of mobile services. Additional costs of using mobile services have been found to have a significantly negative impact on the behavioral intention to use mobile banking services (Luarn & Lin, 2005).Lee and Lee (2010) identified differences in the perception of benefits and risks of mobile services among U.S. consumers, where the highest level of perceived risks led to the lowest intention to use mobile services in general. Wang et al. (2006) and Mathieson, Peacock, and Chin (2001) found that perceived financial resources (as perceived risks) related to some extra cost of accessing mobile services, such as a service fee or cost of the handset, had a negative influence on using mobile services, with the relationship mediated by perceived usefulness and perceived ease of use.

A qualitative study on consumers' adoption of mobile payments has shown that consumers with experience using mobile payments to purchase diverse commodities such as soft drinks, sweets, tickets, or public transportation tickets perceived that unauthorized use of the mobile phone was likely if the device was stolen/hacked (Mallat, 2007). Lack of transaction records or documentation, errors in payment transactions, and concerns about device and network reliability were also potential risks perceived by mobile financial service users.

Perceived benefits include time- and place-independent payments as well as remote and ubiquitous access to complement cash payments. Those benefits are determined by the enhanced availability of mobile technology (Mallat, 2007).

H6: Consumers with a higher level of perceived benefits are more likely to adoptmobile financial services.
H7: Consumers with a higher level of perceived costs are less likely to adopt mobilefinancial services.
Financial Capability

Consumers' financial capability has become of great importance due to the complexity and deregulation of the financial sector as well as the shift in retirement programs from defined benefit (DB) to defined contribution (DC) plans (i.e., 401(k) plans), placing more responsibility on the consumer (Employee Benefit Research Institute, 2011).An individual's financial security is increasingly dependent on self-directed decisions about investment and retirement. The consequences of insufficient financial capability are growing more severe (Servon & Kaestner, 2008), and financial capability is highly related to the level of retirement wealth in the long run. The concept of financial capability is understood in the context of financial literacy and financial education. Financial literacy and education appear narrower because they stress an individual's knowledge and skills (Kempson, Collard, & Moore, 2005; Lusardi & Mitchell, 2011).The concept of financial literacy lacks the behavioral aspect of financial capability presented by Stănculescnu (2010). Thus, the concept of financial capability involves behavioral elements of financial behavior within different domains.

Many empirical studies on financial capability have included four financial domains: (1) money management, (2) planning ahead, (3) making choices, and (4) getting help (Atkinson,2007; De Meza, Irlenbusch, & Reyniers, 2008; O'Donnell, 2009).The overall financial literacy index (FLI) developed by Stănculescnu (2010)is built on four dimensions, in line with the UK model of financial capability:(1) knowledge and understanding, (2) skills, (3) attitudes and confidence, and (4) participation in the financial system (use of financial services/products). Using this index, Romanian consumers were grouped into four financial literacy groups: financial outsiders, financially reluctant, financial adopters, and financial followers (Stănculescnu, 2010). In the present study, the concept of financial capability captures a person's behavioral aspect of financial management, including money management, making financial choices, and how much s/he is aware of financial issues.
H8: Consumers who use mobile financial services more frequently are more likely to have a higher level of financial capability.

Methodology

Data Collection

The data for the study were collected in the United States through an online survey company, Survey Sampling International (SSI). SSI is a company that provides sampling, data collection, and analytic solutions for surveys (see more information at http://www.surveysampling.com/en). SSI sent the link for the online survey to randomly selected respondents across the United States. These individuals were invited to participate in the survey by logging into the survey community. A pilot test was first conducted with 50 respondents. Based on the results of the pilot study, minor corrections were made to the questionnaire. The online survey was accessed by a total of

1,497 participants between October 1, 2012 and October 10, 2012.
Theresponse rate was 72 percent (N=1,086), with 28 percent (N=413) failing to complete the entire survey. The present study is focused on the use of mobile financial services and thus the sample was restricted to those who were able to access the Internet using their mobile phone. This process decreased the sample size to 714 (65.8%).

The Survey Instrument

Mobile financial services encompass two main domains in the present study: (1) mobile banking, and (2) financial applications (APPS). The survey questionnaire consisted of the following sections:

(1) Current use of the Internet via mobile phone.
(2) Current use of mobile financial services.
(3) Psychological constructs: attitude, perceived behavioral control, subjective norm, perceived usefulness, perceived ease of use, and perceived benefits/risks.
(4) Financial capability.
(5) Demographic information.

The respondents' usage of the Internet via a mobile phone and the use of mobile financial services were measured through dichotomous variables. To measure the respondents' psychological antecedents in the empirical model, items were selected and constructed from previous studies and were rephrased, if necessary, to the financial context of the study. The attitude measure included four items and was adopted from the work of previous researchers (Lee, 2009; Wang et al., 2006).Perceived behavioral control and subjective norms were measured using three items from the social/media influence measures in studies by Hong et al. (2009) and Gu, Lee, and Suh (2009). Items measuring perceived usefulness, perceived ease of use, and perceived benefits/risks were adopted from the study by Davis et al. (1999). In addition, we included eight demographic characteristics as control variables: age, gender, educational attainment, working status, race, marital status, occupation, and total annual household income. The measures of variables in the model are displayed in Table 1.

TABLE 1: *Measures of Psychological Concepts in the Model*

Concept	Items	Mean (St.d)	Score (St.d)
ATT	1. Using mobile financial services is a good idea	3.09 (1.45)	
	2. Using mobile financial services is pleasant TABLE1	3.03 (1.41)	9.05
	3. In my opinion it is desirable to use mobile financial services	2.89 (1.49)	(.13)
PBC	1. Mobile financial services are available to use whenever I need it	3.36 (1.43)	
	2. I find mobile financial services easily accessible and portable	3.18 (1.46)	9.94
	3. In general I have a control over using mobile financial services anytime and anywhere	3.20 (1.47)	(.13)
SN	1. People who are important to me recommend using mobile financial services	2.43 (1.42)	
	2. People whose opinions that I value prefer that I use mobile financial services	2.45 (1.40)	7.73
	3. Media advertising news and reviews suggest financial mobile services to be worth using	2.85 (1.49)	(.12)
PU	1. Using the mobile financial services would enable me to accomplish my tasks more quickly	3.12 (1.49)	
	2. Mobile financial services would make it easier for me to carry out my tasks	3.09 (1.49)	12.74
	3. Mobile financial services is useful	3.33 (1.51)	(.18)
	4. Using the mobile financial services is advantageous	3.12 (1.48)	
PEOU	1. Learning to use mobile financial services would be easy	3.43 (1.44)	6.78
	2. Using mobile financial services does not require a lot of mental effort	3.34 (1.39)	(.09)
PB	1. Using mobile financial services can save time in performing my financial management tasks	3.17 (1.46)	
	2. Using mobile financial services can offer me a wider range of banking products services and investment opportunities	2.90 (1.45)	
	3. Using mobile financial services can save the transaction handling fees in performing banking transaction	2.96 (1.45)	11.98 (.16)
	4. Using mobile financial services is helpful for me to get useful information about financial issues	2.90 (1.45)	
PR	1. I would not feel totally safe providing personal privacy information through the mobile financial services	3.18 (1.50)	
	2. Worried about using mobile financial services because other people may be able to access my account	3.29 (1.44)	
	3. I would not feel secure sending sensitive information through online transactions/banking	3.02 (1.47)	15.16
	4. Mobile financial servers may not perform well because of slow download speeds the servers being down or because the w	2.95 (1.33)	(.17)
	5. Mobile financial servers may not perform well and may process payment incorrectly	2.49 (1.38)	

**5 point Likert Scale; (1) Strongly disagree (2) Somewhat disagree (3) Neutral (4) Somewhat agree (5) Strongly agree*
***ATT: Attitude toward; PBC: Perceived Behavioral Control; SN: Subjective Norm; PU: Perceived Utility; PEOU;*

Perceived Ease of Use; PB: Perceived Benefits; PR: Perceived Risks

Table 2presentsthe items measuring financial capability, which are categorized into three domains: (1) money management, (2) making financial choices, and (3) staying informed about financial issues. The mean score of each item and the mean score for the three domains of financial capability are presented. Money management involves budgeting and controlling one's financial resources by monitoring income and tracking expenditures. The average score for the money management domain was 20.8 (high score of 30). Making financial choices captures one's general awareness of the types of financial products that can help him/her achieve financial goals. Staying informed indicates that the individual is able to monitor financial indicators such as changes in the housing market, stock market, or interest rates; actively searches for information by consulting a professional; wants to learn more about sources of information on financial issues; and thinks it is important to stay current on financial issues. The mean scores for making financial choices and staying informed about financial issues were 16.8 and 14.6 (high score of 30), respectively.

TABLE 2: *Financial Capability Items*

Domains	Items	Mean (St.d)	Score (St.d)
Money Management	1) I do not struggle to cover basic day-to-day needs.	3.23 (1.47)	
	2) I know how much money is available to cover future expenditures.	3.45 (1.35)	
	3) I have a plan to deal with current monthly expenditures.	3.55 (1.31)	20.8
	4) I 'never' or 'very rarely' run out of money before payday.	3.13 (1.54)	(6.4)
	5) I do not borrow to pay back other debts.	3.87 (1.42)	
	6) I manage day-to-day income at least trying to save some money.	3.52 (1.32)	
Making Financial Choices	1) I tend to be good at understanding risks, what risks I face, and the trade-off between risk and reward.	3.41 (1.29)	
	2) I understand the risks I face with my savings/investments and do not have realistic expectations of government support.	3.57 (1.26)	16.4 (4.7)
	3) I actively shop around before buying financial products.	3.37 (1.34)	
	4) I use advice when buying financial products either from many sources or from an appropriate professional advisor.	3.11 (1.38)	
	5) When borrowing, I choose a lender based on the cost of credit and not on reputation.	2.91 (1.28)	
Staying Informed about Financial Issues	1) I know the main activities and regulations issued by the financial regulatory and supervisory structures.	2.74 (1.32)	
	2) I conduct an active search for information by consulting professionals.	2.64 (1.36)	14.6 (5.1)
	3) I want to learn more about sources of information on financial issues and how to interpret the information.	2.86(1.35)	
	4) I'm interested in learning how to compare financial services.	2.84 (1.38)	
	5) Consumer protection issues should be considered by any financial education program.	3.50 (1.28)	

**Each item was measured using 5-point Likert scale; (1) Strongly disagree (2) Somewhat disagree (3) Neutral (4) Somewhat agree (5) Strongly agree*

***Total Score; Money Management (Max=30, Min=6), Making Financial Choices& Staying Informed about Financial Issues (Max=25, Min=5)*

Data Analysis

The data analysis included a descriptive analysis, χ^2-tests, ANOVA, correlation analysis, and logistic regression and multiple regression analyses using SPSS Version 20.The χ^2-tests and ANOVA were used to examine differences in financial capabilities by demographic characteristics. The logistic regression analysis was performed to identify the empirical determinants of who adopts mobile financial services for financial management purposes. The multiple regression analysis was used to investigate the effects of the usage of mobile financial services on consumers' financial capability among mobile financial service users.

Results

Descriptive Statistics

The descriptive statistics for the sample are provided in Table 3.A total of 347 male (48.7%) and 365 female (51.3%) respondents participated in the survey. The participants were between 20 and 86 years old with an average age of 43.7 years. About one quarter of the respondents were less than 30 years old, with a gender distribution of about 48% male and 52% female. Almost 70% of respondents had some college degree, with 68.8% and 9.2% having more than a college degree.

More than half of the respondents were married (52.9%), with 11 3% widowed/divorced/separated, and 35.8% never married. The majority of respondents were Caucasian (76.9%), with 10% Asian, 7.6% African American, 5.5% classified as other. About 48% of respondents were employed for salary/wages, while 23.3% were not employed, 8.2% were retired, and 11.3% were students.

TABLE 3: ***Descriptive Statistics of Sample; Financial Mobile Services Users vs. Non-users*** **(N=714)**

Variables	Users (N=520)		Non-users (N=194)		Total	
	F	%	F	%	F	%
Age						
20-29 years	215	31.3	29	4.2	**244**	**35.6**
30-39 years	117	17.1	28	4.1	**145**	**21.1**
40-49 years	82	12.0	36	5.1	**118**	**17.2**
50-59 years	51	7.4	49	7.1	**100**	**14.6**
60 years and older	33	4.8	46	6.7	**79**	**11.5**
Total	498	72.6	188	27.4	**686**	**100**
Gender						
Male	263	36.9	84	11.8	**347**	**48.7**
Female	256	36.0	109	15.3	**365**	**51.3**
Total	519	72.9	193	27.1	**712**	**100**
Educational Attainment						
High school graduate and less	112	15.9	43	6.1	**155**	**22**
Some college/Bachelor's degree	352	50.0	132	18.8	**484**	**68.8**
Post college degree	50	7.1	15	2.1	**65**	**9.2**
Total	514	73.0	190	27.0	**704**	**100**
Household Annual Income (2012)						
Less than $24,999	84	12.7	39	5.9	**123**	**18.6**
$25,000 - $49,999	162	24.5	51	7.7	**213**	**32.2**
$50,000 - $74,999	117	17.7	45	6.8	**162**	**24.5**
$75,000 - $99,999	70	10.6	24	3.6	**94**	**14.2**
$100,000 and higher	51	10.5	19	10.7	**70**	**10.6**
Total	484	73.1	178	26.9	**662**	**100**
Marital Status						
Married/partnered	254	35.8	121	17.1	**375**	**52.9**
Widowed/divorced/separated	48	6.8	32	4.5	**80**	**11.3**
Never married	214	30.2	40	5.6	**254**	**35.8**
Total	516	72.8	193	27.2	**709**	**100**
Race						
White/Caucasian	378	53.3	167	23.6	**545**	**76.9**
Asian	60	8.5	11	1.6	**71**	**10.0**
Black/African American	44	6.2	10	1.4	**54**	**7.6**
Other	34	4.8	5	0.7	**39**	**5.5**
Total	516	72.8	193	27.2	**709**	**100**
Working Status						
Employed for salary/wages	272	38.4	71	10.0	**343**	**48.4**
Self-employed	43	6.1	20	2.8	**63**	**8.9**
Not working	111	15.7	54	7.6	**165**	**23.3**
Student	68	9.6	12	1.7	**80**	**11.3**
Retired	22	3.1	36	5.1	**58**	**8.2**
Total	516	72.8	193	27.2	**709**	**100**

Determinants of Adopting Mobile Financial Services

The results of the logistic regression analysis predicting the adoption of mobile financial services are presented in Table 4.Hypothesis 1, which states that consumers with a more positive attitude are more likely to adopt mobile financial services, was not supported because attitude was not significant in the regression model.Hypotheses 2, 3, and 4 were all supported. Perceived behavioral control, subjective norms, and perceived usefulness were all associated with a significantly higher likelihood of adopting mobile financial services (p<0.01).Hypotheses 5, 6, and 7 were not supported, with perceived ease of use, perceived benefits, and perceived costs all having insignificant coefficients in the regression model. Among the control variables, age and being male were significant in explaining the adoption of mobile financial services.

TABLE 4: *Results of Logistic Regression Analysis Predicting the Adoption of Mobile Financial Services* (N=714)

Predictor	**B**	**SE**	**Wald**	**Exp (β)**
Constant	-3.352*	0.964	13.577	0.029
Age (reference group: 20s)				
30s	**-1.015***	0.471	4.651	0.362
40s	**-1.805*****	0.473	14.545	0.165
50s	**-1.906*****	0.514	13.751	0.149
60sand older	**-2.773*****	0.655	17.918	0.062
Education (reference: High school and less)				
Some college orbachelor's degree	-0.026	0.355	0.006	0.974
Post college degree	-0.371	0.560	0.439	0.690
Gender (reference: female)				
Male	**0.935***	0.317	08.708	2.547
Marital Status (reference: single)				
Married	-0.041	0.407	0.010	0.960
Partnered	0.777	0.664	1.369	2.175
Widowed/Divorced/Separated	0.773	0.550	1.976	2.167
Race (reference: White)				
African American	0.312	0.487	0.410	1.366
Asian	0.455	0.588	0.597	1.576
Other	1.552	0.821	3.574	4.723
Working Status (reference: Not working)				
Employed for salary/wage	0.243	0.360	0.454	1.274
Self-employed	0.041	0.503	0.007	1.042
Student	-0.241	0.656	0.134	0.786
Retired	0.200	0.646	0.096	1.222
Annual Household Income				
$15,000-$35,000	0.698	0.568	1.512	2.011
$35,000 - $50,000	0.414	0.633	0.428	1.513
$50,000 - $75,000	0.759	0.604	1.583	2.137
$75,000 - $100,000	1.135	0.686	2.737	3.113
$100,000 and more	0.827	0.688	1.446	2.287
Attitude	0.004	0.078	0.003	1.004
Perceived Behavioral Control	**0.208****	0.074	7.936	1.231
Subjective Norms	**0.173****	0.059	8.637	1.189
Perceived Usefulness	**0.180****	0.062	8.491	1.198
Perceived Ease of Use	-0.048	0.084	0.323	0.954
Perceived Benefits	-0.028	0.063	0.204	0.972
Perceived Costs	-0.055	0.031	3.040	0.947
R^2 (Nagelkerke)	.539			
R^2 (Cox&Snell)	.367			
-2LL	360.785			
χ^2	247.073***			
df	29			

*Note: *p<.05, **p<.01, ***p<.001*

Effects of Using Mobile Financial Services on Financial Capability

The results of the multiple regression analysis predicting financial capability are presented in Table 5. Hypothesis 8, which posits that consumers who use mobile financial services more frequently will have a higher level of financial capability, was supported.

Increased frequency of using mobile financial services was associated with a greater likelihood of having a higher score for money management, making financial choices, and staying informed about financial issues (p<0.01).Among the control variables, being male and being employed for salary/wage were significant in explaining all three domains of financial capability.

TABLE 5: *Results of Multiple Regression Analysis Predicting Financial Capability: (1) Money Management, (2) Making Financial Choices, (3) Staying Informed about Financial Issues*

	Money Management			**Making Financial Choices**			**Staying Informed about Financial Issues**		
	B	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**B**
Constant	**15.79*****	11.29		**14.01*****	0.98		**11.18*****	1.08	
Age									
30-39 years	-0.85	0.70	-0.06	-0.79	0.52	-0.07	-0.79	0.58	-0.07
40-49 years	**-1.53***	0.77	-0.10	**-1.23***	0.58	-0.11	**-1.63****	0.65	-0.12
50-59 years	-0.40	0.84	-0.02	-0.84	0.63	-0.07	-1.02	0.71	-0.07
60 years and older	0.46	1.16	0.08	0.27	0.87	0.02	-0.41	0.97	-0.03
Education									
Some college orbachelor's degree	1.05	0.60	0.08	**0.90***	0.45	0.09	0.83	0.50	0.08
Post college degree	1.17	0.96	0.06	1.37	0.72	0.09	**1.68****	0.81	0.10
Gender									
Male	**1.63****	0.50	0.14	**0.75***	0.37	0.85	**0.90****	0.41	0.09
Marital Status									
Married	-0.05	0.65	0.00	-0.15	0.49	-0.02	-0.33	0.54	-0.03
Partnered	-1.12	0.94	-0.04	-0.22	0.72	-0.01	0.25	0.78	0.01
Widowed/Divorced/Separated	-0.57	0.93	-0.03	-0.75	0.70	-0.05	-1.28	0.78	-0.08
Race									
African American	-0.28	0.79	-0.10	-0.29	0.59	-0.02	0.30	0.66	0.02
Asian	-0.13	0.86	-0.00	-1.05	0.65	-0.07	-0.24	0.72	-0.01
Other	-0.14	1.01	-0.00	-0.89	0.75	-0.05	-0.90	0.87	-0.00
Working Status									
Employed for salary/wage	**1.78***	0.61	0.15	**1.05***	0.46	0.12	**1.53****	0.52	0.16
Self-employed	1.27	0.93	0.06	0.98	0.69	0.06	0.91	0.78	0.05
Students	0.87	0.99	0.04	0.13	0.74	0.01	0.45	0.83	0.03
Retired	**3.56**	1.21	0.16	0.94	0.91	0.06	0.08	1.02	0.01
Annual Household Income									
Less than $15,000	-0.57	0.91	-0.04	0.90	0.68	0.09	0.41	0.76	0.03
$35,000 - $50,000	0.10	0.97	0.01	0.60	0.73	0.05	-0.10	0.81	-0.01
$50,000 - $75,000	1.31	0.95	0.09	1.04	0.74	0.10	0.65	0.79	0.06
$75,000 - $100,000	**2.84****	1.06	0.16	**2.11***	0.79	0.16	0.53	0.88	0.04
$100,000 and more	**3.82*****	1.09	0.22	**2.03***	0.17	0.16	0.62	0.91	0.04
Frequency of Using Mobile Financial Services	**0.39****	0.21	0.08	**0.60*****	0.16	0.15	**0.81*****	0.18	0.20
Length of Time of Using Mobile Financial Services	-0.24	0.46	-0.02	-0.05	0.34	-0.00	**1.03***	0.38	0.12
R^2		0.19			0.13			0.19	
χ^2		5.463***			3.640***			5.187***	
df		24			24			24	

*Note: *p<.05, **p<.01, ***p<.001*

Discussion

This study is one of the first to empirically investigate the adoption of mobile financial services from the viewpoint of consumers and the impact of using mobile financial services on financial capability. The results show that perceived behavioral control, subjective norms, and perceived usefulness are all important in explaining the adoption of mobile financial services. Other variables such as attitude, perceived ease of use, perceived benefits, and perceived costs were not significant in the model. Mobile phones area user-friendly tool that many consumers utilize, so they may not consider financial services provided through mobile phones as a brand new. In this sense, consumers' perceptions of any risks/benefits presumably did not play a critical role in adopting those new types of services. Thus, the use of the theory of planned behavior in this context was only partly supported. Increased use of mobile financial services was associated with higher levels of financial capability.

Mobile financial services are introducing previously unbanked individuals to services that they did not have access to in the past, such as conducting financial business through their phone (Anong & Kunovskaya, 2013). Many studies investigating the use of mobile financial services by unbanked consumers are based on developing countries, but many unbanked consumers in the United States could also be reached in order to improve their economic well-being. Ivatury and Mas (2008) stated that mobile phones may be more valuable to poor consumers than rich consumers in regards to engaging in financial transactions. Affordable, secure, convenient, and fast mobile financial services can help the rural poor increase productivity, income, and education (Caskey, Duran, & Solo, 2006; Dupas & Robinson, 2009).

Interestingly, while controlling for all other variables in the model, males were significantly more likely to adopt mobile financial services and to score higher on money management, making financial choices, and staying informed about financial issues. The role of gender in the adoption and use of mobile financial services should be explored in future research. The results of the current study support the relationship between the frequency of using mobile financial services and financial capability, and further research using other samples is needed.

In contrast to racial and ethnic differences in financial literacy shown by previous researchers (Chen & Volpe, 1998;Hogarth & Hilgerth, 2002; Joo, Grable, & Bagwell, 2003; Mandell, 2006), race was not significant in explaining the adoption and use of mobile financial services or in explaining the relationship between the frequency of using mobile financial services and financial capability. This finding could be the result of having a sample with almost 80% White respondents, so further investigation in this area is needed.

One limitation in the present study is related to the sample, as the sampling method relies on the respondents' comfort with mobile phone technology. An experimental study that explores the relationship between mobile phone technology use and financial capability would aid in enhancing our understanding of this topic.Another limitation is the financial capability measures used, which are related to self-reported behaviors rather than observed evidence of financial capability. The financial capability measures are also limited to money management, making financial choices, and staying informed about financial issues. A study that uses a larger sample or perhaps an experimental framework could provide useful information.

As stated by De Meza et al. (2008), the wider adoption of mobile financial services using new technologies could help consumers search for information and manage their finances more easily. Financial educators and planners need to understand the use and adoption of mobile financial services in order to better serve their clients. Currently, there is little knowledge on the use of mobile financial services or how such use affects consumers, and more academic research on the topic is needed. This study contributes to the literature by exploring the determinants of adopting mobile financial services as well as the link between mobile finance services and financial capability.

Mobile phones are tools that consumers use for banking, making payments, budgeting, and shopping, and financial professionals and educators need to be aware of the potential uses of these tools as well as the advantages and disadvantages of each. For example, some mobile financial services may have more benefits for specific groups of consumers, or some common mobile financial services may have more risks than benefits. In order to serve clients and consumers, financial professionals and educators should know the preferences of their audience and provide information and advice that is beneficial and useful.

The existing literature supports the use of mobile phone technology in helping consumers make better financial decisions. Financial professionals and educators could consider training clients or students on how to use mobile phone tools related to personal finance, such as applications that help consumers track their accounts.

A number of money management applications help consumers manage their money by consolidating all of their financial accounts in one place. For example, consumers could add checking, saving, retirement, and credit card accounts to an application, which would help them track their income, spending, and net worth as well as to quickly recognize erroneous charges on their accounts. As technology advances and the financial services industry continues to change, there is a need to continue developing useful applications to provide more specific and customized financial information for consumers. For example, an application that provides one financial tip each day on topics such as preventing financial fraud, investing, or tasks that are recommended during certain life-cycle stages.

Under the complicated and fast-changing financial market, financial educators are advocating for the importance of instilling financial literacy. As for the educational application of mobile financial services, numerous mobile apps are available to facilitate consumers' financial and economic activities but more apps needs to be developed to provide more customized information about spending, saving, loans, investments and other aspects of personal finance. For example, mobile apps for monitoring hidden expenses, tracking their money/bills/accounts in one place, and providing alert for preventing financial fraud. With mobile technology being an integral part of consumers' life, financial literacy apps can be played as easy way to gain financial knowledge and as a quick channel to access financial professionals for getting help.

References

Ajzen, I. (1991). The theory of planned behavior.*Organizational Behavior and Human Decision Processes,50*, 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior.*Journal of Applied Social Psychology, 32*(4), 665-683.

Ajzen, I., &Fishbein, M. (1980).*Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioralcontrol. *Journal of Experimental Social Psychology, 22*, 453-474.

Anong, S. T., &Kunovskaya, I. (2013). M-Finance and consumer redress for the unbanked in South Africa. *International Journal of Consumer Studies, 37*(4), 453-464.

Atkinson, A. (2007). *Financial capability amongst adults with literacy and numeracy needs.*Bristol, UK: Personal Finance Research Centre.

Burstein, F., Cowie, J., Zaslavsky, A., & Pedro, J. S. (2008). Support for real-time decision making in mobile financial applications. *Information Systems and E-Business Management, 6*, 257-278.

Caskey, J. P., Ruiz Duran, C., & Solo, T. M. (2006). The urban unbanked in Mexico and the United States. World Bank Policy Research Working Paper 3835.

Chen, H., &Volpe, R. P. (1998).An analysis of personal financial literacy of college students.*Financial Services Review, 7*, 107-128.

Chin, W. W.,&Todd, P. A. (1995). On the use, usefulness and ease of use of structural equation modeling in MIS research:Anote of caution. *MIS Quarterly, 19*, 237-246.

Dahlberg, T., Mallat, N., Ondrus, J., &Zmijewska, A. (2008). Past, present, and future of mobile payments research: A literature review. *Electronic Commerce Research and Applications, 7*, 165-181

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology.*MIS Quarterly, 13*(3), 319-340.

Davis, F. D., Bagozzi, R. P., &Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Sciences,35*(8), 982-1003.

De Meza, D., Irlenbusch, B., &Reyniers, D. (2008). Financial capability: A behavioral economics perspective. *Consumer Research,69*, 1-108.

Doll, W. J., Hendrickson, A., & Deng, X. (1998). Using Davis's perceived usefulness and ease-of-use instruments for decision making: Aconfirmatory and multi-group invariance analysis. *Decision Science*, 29, 839-869.

Dupas, P., & Robinson, J. (2009). Savings constraints and microenterprise development: Evidence from a field experiment in Kenya. NBER Working Paper No. 14693.

Federal Reserve Board.(2013). Consumers and mobile financial services 2013. Retrieved from http://www.federalreserve.gov/econresdata/mobile-device-report-201203.pdf

Federal Reserve Board.(2015). Consumers and mobile financial services 2015. Retrieved from http://www.federalreserve.gov/econresdata/consumers-and-mobile-financial-services-report-201503.pdf

Fox, S. (2005). *Online Banking Jumps 47% in 2 Years*. Pew Internet and American Life Project.Retrieved from http://www.pewInternet.org/pdfs/PIP_Online_Banking_2005.pdf.

Garrett, J. L., Rodermund, R., Anderson, NaRita, Berkowitz, S., & Robb, C. A. (2014).Adoption of mobile payment technology by consumers.*Family and Consumer Sciences Research Journal*, *42*(2), 358-368.

Gu, J., Lee, S., & Suh, Y. (2009). Determinants of behavioral intention to mobile banking.*Expert Systems with Applications, 36*, 11605-11616.

Hogarth, J. M., &Anguelov, C. E. (2004). Are families who use e-banking better financial managers? *Financial Counseling and Planning, 15*(2), 61-78.

Hogarth, J. M., &Hilgert, M. (2002). Financial knowledge, experience, and learning preferences: Preliminary results from a new survey on financial literacy. *Consumer Interests Annual*, *48*, 1-7.

Hong, S., Thong, J., Moon, J., & Tam, K. (2008).Understanding the behavior of mobile data services consumers.*Information Systems Frontiers, 10*, 431-445.

Hu, P. J., Chau, P., Sheng, O., &Tam, K. (1999).Examining the technology acceptance model using physician acceptance of telemedicine technology.*Journal of Management Information Systems, 16*, 91-112.

Imielinski, T., &Badrinath, B. R., (1994).Mobile wireless computing.*Communications of the ACM, 37*(10), 19-28

International Telecommunication Union (ITU).(2002). *ITU Internet Reports: Internet for a Mobile Generation.* Retrieved from http://www.itu.int/osg/spu/publications/sales/mobileinternet/execsumFinal.pdf.

International Telecommunication Union (ITU).(2011). *The World in 2011:ICT Facts and Figures*. Retrieved from http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf.

Ivatury, G., &Mas, I. (2008).The early experience with branchless banking. Focus Note #46. Washington, DC: CGAP.

Joo, S., Grable, J. E., &Bagwell, D. C. (2003).Credit card attitudes and behaviors of college students.*College Student Journal, 37*, 405-419.

Kempson, E., Collard, S., &Moore, N. (2005).Measuring financial capability: An exploratory study. London: Financial Services Authority.

Kreyer, N., Pousttchi, K., &Turowski, K. (2003).Mobile payment procedures.*E-Service Journal*, *2*(3), 7-22.

Lee, M. (2009). Factors influencing the adoption of Internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications,8*, 130-141.

Lee, H., &Lee, S. (2010). Internet versusmobile services: Comparisons of gender and ethnicity. *Journal of Research in Interactive Marketing, 4*(4), 346-375.

Ling, R.,&Yttri, B. (2001). Nobody sits at home and waits for the telephone to ring: Micro and hyper-coordination through the use of the mobile telephone. In *Perceptual Contact*, edited by J. E. Katz, & M. Aakhus. Cambridge: Cambridge University Press.

Luarn, P., & Lin, H. (2005).Toward an understanding of the behavioral intention to use mobile banking.*Computers in Human Behavior,21*(6), 873-891.

Lusardi, A.,&Mitchell, O. S. (2011). Financial literacy around the world: An overview. *Journal of Pension Economics and Finance, 10*(4), 497-508.

Mallat, N. (2007). Exploring consumer adoption of mobile payments: A qualitative study.*Journal of Strategic Information Systems, 16*, 413-432.

Mandell, L. (2006). *Financial literacy: Improving education results of the 2006 National JumpStart Survey*. Washington, DC: Jumpstart Coalition.

Mathieson, K., Peacock, E., &Chin, W. W. (2001).Extending the technology acceptance model: The influence of perceived use resources.*Advances in Information Systems, 32*, 82-112.

Moon, J., &Kim, Y. (2001).Extending the TAM for a world-wide-web context.*Information and Management, 38*, 217-230.

Mort, G. S., &Drennan, J. (2005).Marketing m-services: Establishing a usage benefit typology related to mobile user characteristics. *Database Marketing and Customer Strategy Management, 12*(4), 327-341.

O'Donnell, N. (2009).Consumer financial capability: A comparison of the UK and Ireland. Research Technical Paper.Central Bank and Financial Services Authority of Ireland.Retrieved from http://www.centralbank.ie/publications/documents/4RT09.pdf.

Pew Internet and American Life Project. (2007). *One-Third of Internet Users Have Logged on Wirelessly.* Retrieved from http://publications.mediapost.co`m/index.cfm?fuseaction=Articles.showArticleandart_aid=56889.

Pew Research Center.(2015). Mobile technology fact sheet. Retrieved fromhttp://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/

Porteous, D. (2006).The enabling environment for mobile banking in Africa.Department for International Development, London. Retrieved from http://www.microfinancegateway.org/gm/document-1.9.25001/36204_file_M_banking_Enab_Env.pdf.

Servon, L. A., &Kaestner, R. (2008). Consumer financial literacy and the impact of online banking on the financial behavior of lower-income bank customers. *Journal of Consumer Affairs, 42*(2), 271-305.

Stănculescnu, M. S. (2010).Analysis of the financial literacy survey in Romania and recommendations. Comprehensive Report Prepared for the World Bank. Retrieved from http://documents.worldbank.org/curated/en/2010/06/16408985/analysis-financial-literacy-survey-romania-recommendations.

Taga, K., &Karlsson, J. (2005).*Arthur D. Little Global M-Payment Update.*Retrieved from http://www.adl.com/industries/time/order_payments_m_i.php.

Taylor, S., &Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, *6*(2), 144-176.

TowerGroup.(2007). U.S. mobile banking forecast: 2007-2012. *ABA Banking Journal*. Reference No. V53:FN.Retrieved from http://www.ababj.com/pdfs/USMblBnkngFrcast2012.pdf.

Turban, E., King, D., Lee, J., &Viehland, D. (2005).*Electronic commerce 2006*: *A managerial perspective*. New Jersey: Pearson Education.

Varshney, U., &Vetter, R. (2001).A*framework for the emerging mobile commerce applications.*Proceedings of the 34th Annual Hawaii International Conference on System Sciences, IEEE Computer Society, Washington, DC.

Venkatesh, V., &Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence and their role in technology acceptance and usage behavior.*MIS Quarterly,24*, 115-139.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*, 415-489.

Wang, Y., Wang, Y., Lin, H., &Tang, T. (2003). Determinants of use acceptance of Internet banking: An empirical study. *International Journal of Service Industry Management, 14*, 501-519.

Wang, Y., Lin, H., &Luarn, P. (2006).Predicting consumer intention to use mobile service.*Information Systems Journal,16*, 157-179