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What Influences Individuals to Use New Online Services: An Empirical Study of Online Banking

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Abstract

A considerable amount of academic research during the past decade has investigated what motivates individuals to use new online services by theory of reasoned action, technology acceptance model, theory of planned behavior, innovation diffusion theory, and/or the combination of the preceding two/three theories. As compared to understanding the adoption of a new online service from social psychology theories, which has been comprehensively investigated during the recent ten years, the literature on understanding individuals to move to a new online service or switch to another provider for the same new online service is seldom studied from the perspectives of economic theories. Therefore, this research aims to fill out the gap and make a contribution in this concern.

1. Introduction

In the recent decade, significant advances in information and communication technology (or called Internet-enabled technology) have yielded numerous web-based services such as online music, movie, game, learning, searching, tax filing, shopping, auctions, community, and banking services. Because social psychology theories suggest that individual behavior is traceable and predictable (Ajzen and Fishbein, 1980; Ajzen, 1991; Yu and Tao, 2007), considerable academic research during the past decade has employed such theories (e.g., theory of reasoned action (TRA), technology acceptance model (TAM), theory of planned behavior (TPB), innovation diffusion theory (IDT), or the combination of two/three theories) to investigate individual motivation to use new online services.

A review of the social psychology theory-based literature reveals that, an important element absent from most TRA/TAM/TPB/IDT literature is whether individual willingness to try or adopt new online services may be attributed to economic consideration rather than personal psychological beliefs. That is, even though people are satisfied with the services delivered by current methods (or providers), they still may have possibility of moving to new services (or providers) as illustrated in the transition from brick-and-mortar bookstore to online bookstore, from shopping mall to online shopping, and/or from ICQ to MSN (Kim et al., 2008; Lin and Bhattacherijee, 2008). By contrast, people may keep using current services even though they believe the usefulness and easy-of-use of new services, as illustrated in the transition from analog TV users to digital TV users (Hazlett et al., 2006) and the market share of 2.5G and 3G (or 3G and 4G) cell phone systems provide another good example (Yu and Tao, 2007).

Besides, existing social psychology theory-based literature excessively focuses on the acceptance of new services against old services while neglects to probe the switch to another service provider when moving to new services and the movement between different service providers but the same new service. That is, even though people are satisfied with current service providers, they may choose another provider instead of prior providers when moving to new services, or switch providers no matter dissatisfaction or satisfaction with new services offered by current providers.

Taken the above together, obviously, the above phenomena cannot fully explained by psychological theories, while may be reasonably explained from the economic viewpoints such as network externality, transition cost and incentive program. Accordingly, this work attempts to investigate what influences people to move to a new online service or switch to another provider for the same new online service by taking online banking services as an instance. Two reasons exist for choosing online banking as this study object.

First, although most of the theory-based literature ignored the economic effect on the adoption of new online services, few researches heeded this phenomenon in the context of online banking. In the works of Sathy (1999) and Polatoglu and Ekin (2001), pricing/cost savings were identified to have remarked influences on individual willingness to bank online. By using a mean-end approach to identify main influences for people unwillingness to bank online, Kuisma et al. (2007) found that economic barriers are crucial reason for resistance to bank online. Recently, by conducting two focus group interviews, Yu (2010) found that incentive programs offering transaction fee waivers, bonuses, accumulation discounts, gifts and the like were

quite useful for helping banks take leading positions in the credit card market and for motivating people to use web-based automatic teller machines (so-called web ATMs) for banking services instead of physical ATMs. Although these studies only cursory discussed the movement to a new service offered by the same provider from the perspectives of economic theories, they may pave a theoretical starting point.

Second, countless surveys (Crego and Schiffrin, 1995; Paswan et al, 2004; Yu, 2008a) indicate that the financial services industry is more customer-centric than other industries, profits from existing customers are much higher than new ones, and every 1% of increase in retaining current customers brings 5-10% of reduction in business cost (Crego and Schiffrin, 1995; Bhattacherjee, 2001). Cumulatively, online banking is chosen as a good practical context for examining the research questions and validating the research structure in understanding what affects individuals to move to a new online service or switch to a new provider for the same new online service.

2. Literature Review

The theory-based research into adoption of online banking perhaps is first conducted in September 1998 in Australia by Sathye (Sathye, 1999). Since then, numerous studies on exploring what influences individual intention to bank online have been conducted. Among these studies, some studies have examined the adoption of online banking from the perspective of banks (Daniel, 1998; Frambach et al., 1998; Nielsen, 2002; Furst et al., 2002; Gopalakrishnan et al., 2003; Khalfan and Alshawaf, 2004; Malthotra and Singh, 2007; Singer et al., 2008) and some have compared online banking with other forms of technology-enabled self-service banking, including modem- based dial-up banking, ATMs, phone banking, and mobile banking (Gardener et al., 1999; Wan et al, 2005; Curran and Meuter, 2005; Laforet and Li, 2005). As expected, most have investigated influences on online banking adoption from the perspective of consumers (Sathye, 1999; Polatoglu and Ekin, 2001; Liao and Cheung, 2002; Karjaluoto et al., 2002; Gerrard and Cunningham, 2003; Wang et al., 2003; Kolodinsky et al., 2004; Khalfan and Alshawaf, 2004; Chan and Lu, 2004; Shih and Fang, 2004; Eriksson et al., 2005; Mavri and Ioannou, 2006; Yu, 2008b and 2010), while certain articles have explored perceptions of online banking among bank executives, information technology managers, and customers or between banks and clients (Aladwani, 2001; Gurau, 2002; Gehling et al., 2007).

Table 1. Theory-based studies of online banking adoption during 1999-2010

Auther(s) (Years)	Theory	Respondent Selection	Sample Size
Sathye (1999)	IDT	Personal clients and business clients	539
Liao et al (1999)	TPB,IDT	Professionals	118
Polatoglu and Ekin (2001)	IDT	Members of Garanti Bank	114
Liao and Cheung (2002)	Cognitive analysis	Regular web-users	323
Karjaluoto et al. (2002)	TRA, TAM	Nordea Bank's customers	1167
Gerard and Cunningham (2003)	IDT	Adults employed in the Downtown	240
Wang et al. (2003)	TAM	Online banking users	123
Chan and Lu (2004)	TAM, TAM2, TPB	University students	499
Kolodinsky et al. (2004)	IDT, TAM	Households	2002
Shih and Fang (2004)	TRA, TPB	Bank customers	425
Eriksson et al. (2005)	TAM	Bank customers	1831
Curran and Meuter (2005)	TAM	Bank customers	628
Wan et al. (2005)	TRA	Adults and seniors	314
Lee et al. (2005)	TRA, IDT	Internet users	1355
Jaruwachirathanakul and Fink (2005)	TPB	Office workers in large organizations	506
Lassar et al., (2005)	TAM, IDT	University students	349
Flavian et al. (2006)	Trust	Bank customers	633
Ndubisi and Sinti (2006)	IDT	Internet users	126
Shih and Fang (2006)	Extended TRA	Bank customers	425
Gurting and Ndubisi (2006)	TAM	Bank customers	133
Cheng et al., (2006)	TAM	Customers	203
Gerrard et al. (2006)	TAM, IDT, TRI	Customers who not banked online	127
Pikkarainen et al. (2006)	Satisfaction	End users	268
Kuisma et al. (2007)	Mean-end	Bank customers who not bank online	30
Amin (2007)	TAM	Young intellectuals	250
Hernandez and Mazzon (2007)	TRA, TAM, TPB and IDT	Internet Banking users and non-users	600
Yiu et al. (2007)	TAM	The public	150
Erisson and Nilsson (2007)	TAM	Internet banking customers	1831
Guriting et al., (2007)	TAM	Bank customers	133
Grabner-Krauter and Faullant (2008)	Trust	Bank customers who were Internet users	381
Qureshi et al. (2008)	TMQ	End-users	235
Aldas-Manzano (2009)	TAM	Internet banking users	511
Amin (2009)	Extended TAM	Bank customers who never bank online	206
Hosein (2009)	TAM	Non online banking users	362
Azouzi (2010)	TAM	University students	53

As Table 1 shows, theory-based studies regarding the adoption of online banking are generally based on TRA, TAM, IDT, TPB, or some mix of two/three theories. After extensively reviewing the above literature grounded in social psychology theories, this study found that one important element, missing from the literature but noted by

the recent work (Yu, 2010), that individual willingness of banking online may be attributed to economic benefits such as incentives offered by banks when using their online banking services.

Although the economic theory has received less attention on the adoption of online banking, numerous studies have exploited the economic theory in investigating e-marketplace adoption (Bakos, 1991 and 1997; Parthasarathy and Bhattacherjee, 1998; Strader and Shaw, 1999; Benslimane et al., 2005; Zhu et al., 2006; Yu and Tao, 2007; Au and Kauffman, 2008) and have widely concluded that the emergence, adoption and growth of the new service/technology heavily depend on the effect of economics such as critical mass, network externalities, transition cost and path dependency. This finding is interesting, which reveals that theory-based studies on online banking adoption are excessively dominated by social psychology theories, while theory-based studies on e-marketplace adoption are excessively dominated by economic theories.

3. Research Hypotheses and Structure

Hypotheses from Transition Cost

In economics, when a product or service has a lock-in characteristic owing to incurring sunk, termination or switch costs, this product or service is considered to have a transition cost between using and discarding it (Jackson, 1985; Weiss and Anderson, 1992; Heide and Weiss, 1995; Shapiro and Varian, 1998; Reimers and Li, 2005). As illustrated in the transition from analog TV users to digital TV users, a transition cost occurs when users switch service or move to another service provider (Hazlett et al., 2006). In an environment where technology/service evolve stochastically over time, potential users choosing among technology/service must consider whether the good and available service/technology today will become unavailable or obsolete service/technology in the future. This is particularly important when the technology/service is largely irreversible.

For a visible technology, the possibility of becoming stuck with an outmoded technology is increasing as people increase adopting a different and incompatible technology. For an invisible service, the possibility of becoming stuck with an irretrievable service is increasing when people increase moving to a different service or service provider. Transition cost can also originate from consumer need for compatibility between newly purchased products/services and earlier investments, which can include capital investments (such as investments in software, computers or membership fees) or psychological investments (such as emotional attitude, use experience or acknowledgement) (Jackson, 1985; Weiss and Anderson, 1992). Consequently, regarding the online services (i.e., email service and online banking services), transition cost occurs when switching from one online service provider to another. Regarding a bank customer, transition cost is considered to be the cost of switching banks, starting online banking by stopping/reducing banking in branches, and using another bank's online services by reducing/discarding current bank's traditional services.

Therefore, the chances of a person switching to different banks or service methods may reduce given high estimated transition cost. That is, if a customer plans to switch or move to online banking/another online bank instead of traditional branches, he/she will estimate the transition cost such as loss of accumulated discounts and bonuses, compatibility costs with current living habits, loss of friendship/familiarity with the original service providers, and so on. Some research (Jackson, 1985; Yu and Tao, 2007) contended that transition cost involves the psychological, material and economic costs incurred by customers when switching service suppliers or technologies, while Klemperer (1995) found there are six types of transition costs, namely compatibility costs with existing infrastructures, supplier switching cost, training cost, costs associated with unused products, loss of discounts, bonuses, member credits and other incentives, and psychological cost.

Building in the above discussion, the following hypotheses are posited:

H_1: Transition cost significantly influences individuals to bank online instead of bank in branches.

H_2: Transition cost significantly influences individuals to move to another bank for using online banking services.

H_3: Transition cost significantly influences individuals to switch banks within same online banking services.

Hypotheses from Network Externality

Numerous studies (Clemons and Kleindorfer, 1992; Choi, 1994; Wang and Seidmann, 1995; Economides, 1996; Choi and Thum, 1998; Hoppe, 2000; Kauffman et al., 2000; Au and Kauffman, 2001; Gallaugher and Wang, 2002; Asvanund et al., 2004) during the last 30+ years have showed that an inferior technology/service may not be replaced by superior alternatives as long as network externalities (such as critical mass) or transition

costs (such as compatibility with present work habits) plays a crucial role in its adoption and use. Typical examples of products exhibiting network externality are telephone, telecommunication, television, newspaper, packaged computer software and information medium as well as web-based services such as electronic mail systems, bulletin board systems, online games and instant message service (e.g., ICQ, MSN).

In terms of economics, "network externality" depicts a scenario where a product's (service's) value or attractiveness increases in correspondence to the rise in the number of consumers (Economides, 1996). A market formed from products (or services) with network externalities is called "network market". In a network market, the value/effectiveness/attractiveness of the product (or service) always rises as long as new consumers are added to the market. In network markets, when the actions of individuals can directly impact the economic utility of other individuals, then each individual is considered to have a network externality on the behaviors of other individuals (Allen, 1988; Brynjolfsson and Kemerer, 1996; Au and Kauffman, 2001; Lee et al., 2003; Yu and Tao, 2007). Recently, via examining the short messages services, some works (Kim et al., 2008; Lin and Bhattacherijee, 2008) concluded that network externality is a significant motivation for people moving to a new wireless service.

The network externalities can be positive or negative. Positive externalities mean that the economic utility of the affected individual is increased, while negative externalities mean that the economic utility of the affected individual is reduced. Network externalities are an economic scale phenomenon that depicts the utility derived by the consumer from the product/service and the rises/falls that occur with a change in the number of consumers using the product/service. Farrell and Saloner (1986) found that network externalities occur not only for single specific products/services but also occur for whole groups of compatible products/services, and that the benefits to existing consumers increase when other customers consume compatible products or same service providers, with good examples being provided by mobile phone networks, computer operating systems, IBM compatible computer, and so on.

Based on the above discussion, the following hypotheses are posited:

H4: Network externality significantly influences individuals to bank online instead of bank in branches.

H5: Network externality significantly influences individuals to move to another bank for using online banking services.

H6: Network externality significantly influences individuals to switch banks within same online banking services.

Research Structure

Given that awareness, image, visibility, critical mass, reference group, observability, friends, families, relatives, peers, opinion leaders, visibility, and result demonstrability may depict a scenario where the action/opinion of a person is influenced by another person's/people's action/opinion. Therefore, in line of this thinking, awareness, image, visibility, critical mass, reference group, observability, friends, families, relatives, peers, opinion leaders, visibility, and result demonstrability may be attributed to network externality. As a result, the effect of network externality on the adoption of online banking is not a new concept, although this concept has not been explicitly asserted. As a result, the research structure is proposed as the following figure.

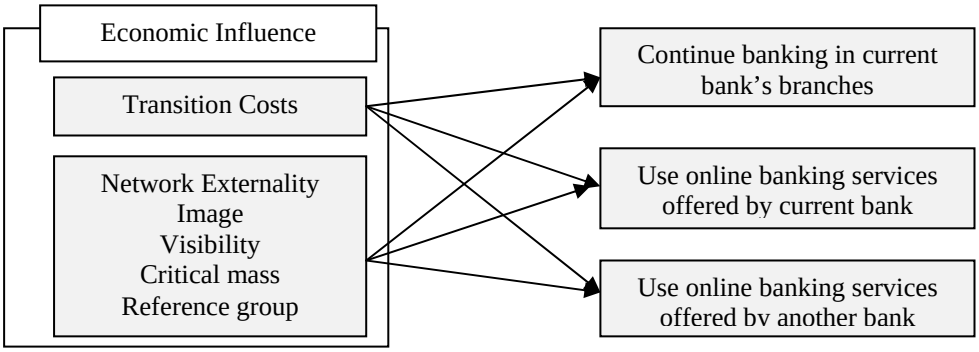

Fig. 1 The proposed research structure

4. Research Methodology and Analysis

In accordance with the above research structure and hypothesis, items used in the survey questionnaire to measure each corresponding construct were culled from the literature and reworded to fit the online banking context. Since the pertinent literature from the perspective of economic to explore the adoption of online banking is deemed insufficient to provide a highly validated research foundation for this work, focus-group interview and panel discussion involving online banking managers and scholars were executed to check and refine the survey questions. Accordingly, the constructs of transition costs and network externality were operationalized by asking the respondents to assess six and 14 questions, respectively, based on a seven-point Likert scale ranging from strongly disagree to strongly agree. After ensuring that the questionnaire is clearly verified to reflect the research purpose and each construct is concretized by the corresponding items, the questionnaires was send out via convenience sampling. Convenience sampling is a kind of non-probability sampling, and used to draw respondents from part of the population which is easier to contact.

A common problem in questionnaire surveys is the response rate and non-response bias (Couper, 2000; Karjaluoto et al., 2002; Sax et al., 2003). As suggested in the literature (Karjaluoto et al., 2002; Sax et al., 2003), offering monetary incentives is apparently effective for increasing the response rate. Therefore, the cover page of the questionnaire described this study is sponsored by National Science Council and ten of those who complete the questionnaire would be rewarded to get 16 GB portable USB. Since people aged below 20 years old cannot open an online banking account according to Taiwanese banking law, only those over 20 are the targeted population in this study.

Among the 343 valid samples, 157 (46%) were female respondents, 185 (54%) were male respondents, and 244 (71%) of them had opened online banking accounts, meanwhile 125 (51%) of 244 had two or more than two online banking accounts. The profile of the 343 respondents reveals that number of respondents aged 20-24 years old is 72 (21% of total respondents), aged 25-34 years old is 195 (51%), aged 35-44 years old is 44 (13%), aged 45-54 years old is 18 (5%), and aged over 55 years old is 13 (4%). The proportions for the respondents' education groups are high school (or below) occupies 22% (102 samples), college holds 17% (79), university is 43% (201), and graduate school (or above) accounts for 18% (83), while the occupation distribution of the samples is that non-IT/ICT Manufacturing takes 9% (32 respondents), IT/ICT Manufacturing accounts for 14% (48 respondents), Service (including Finance and Insurance) accounts for 12% (40), Education/Media accounts for 9% (32), Government accounts for 4% (13), Medical/ Pharmacy accounts for 6% (19), Retail accounts for 5% (17), Students account for 37% (126), and others account for 4% (15). The age and education distributions of the samples roughly resemble the proportions of current Internet population, according to TWNIC survey (2010).

Since each construct is assessed by using a multi-item seven-point Likert scale, reliability of the survey instrument was examined by calculating Crobach's alpha to measure internal consistency, the convergent validity of each construct was verified by the confirmatory factor analysis, and the discriminant validity was examined by the cross-correlation analysis. Regression analysis was used in this study to examine the research model and relationships between independent variables (economic factors) and dependent variables (three scenarios of willingness), and the regression results were summarized in Table 2.

Table 2. Summary of hypotheses 1-6 testing

Dependent Variable	Independent Variables	Standardized Beta Value	P_Value	Hypothesis Testing
Continue banking in current bank's branches	Transition Costs	0.548	0.000	H_1 accepted H_4 partially accepted
	Network Externality	0.333	0.000	
	Image	0.145	0.075	
	Visibility	0.158	0.092	
	Critical mass	0.427	0.000	
	Reference group	0.358	0.000	
Use online banking services offered by current bank	Transition Costs	0.577	0.000	H_2 accepted H_5 partially accepted
	Network Externality	0.277	0.000	
	Image	0.056	0.466	
	Visibility	0.146	0.083	
	Critical mass	0.403	0.000	
	Reference group	0.269	0.000	
Use online banking services offered by another bank	Transition Costs	0.411	0.000	H_3 accepted H_6 partially accepted
	Network Externality	0.169	0.001	
	Image	0.102	0.254	

	Visibility	0.060	0.485	
	Critical mass	0.350	0.000	
	Reference group	0.232	0.000	

The reason to use regression analysis is that regression techniques is quite useful in understanding how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. Table 2 displays H_1, H_2, and H_3 are fully supported, while H_4, H_5, and H_6 are partially supported. In terms of the impact of the construct of Network Externality, Table 2 reveals that Image and Visibility did not hold significant influence on "continue banking in current bank's branches", "use online banking services offered by current bank", and "use online banking services offered by another bank". That is, Network Externality significantly impacted "continue banking in current bank's branches", "use online banking services offered by current bank", and "use online banking services offered by another bank", which can be heavily attributed to Critical Mass and Reference Group.

Accordingly, three implications can be derived from the empirical analysis to give bank executives and academics. First, transition costs hold significant influences on individuals' willingness about "continue banking in current bank's branches", "use online banking services offered by current bank", and "use online banking services offered by another bank". That is, banks may use transition cost factor to retain old customers and keep current customers from moving to another banks, while attract customers to bank online or draw rivals' customers by removing transition cost barriers.

Second, since critical mass and reference group play crucial role in retaining current customers, keeping old customers from moving to rival banks, attract customers to try new online services, and draw other banks' customers, the scale of market and relationship marketing are two important strategies for a bank taking leading position in online service context. Third, Image and Visibility didn't play significant roles in online banking services' competition, which reveals people highlight on solid profits rather than brand effect. That is, number of people banking online deeply affects individual intention to use online banking or stay in current banks, meanwhile incentive programs (such as offering transaction fee waivers, bonuses, accumulation discounts, gifts and the like) are quite attractive for banks to perform marketing strategies against rivals.

5. Concluding remarks and implications

With the unexpected advance in Internet-enabled technologies, various web-based services such as email, instant messaging (i.e., MSN), online searching, online brokerages, online shopping, Blog, peer-to-peer music services, and real time news feeds have become popular in current online context. Due to that extensively reviewing the literature grounded in social psychology theories found individual willingness of using online services may not be fully explained by psychological beliefs, this study takes online banking as an example to understand why people likes to continue banking in current bank's branches, use online banking services offered by current bank, and switch to another bank's online services from the perspective of economics.

Following empirical analysis with hypotheses test and the validation of the research structure as depicted in Fig. 1, some insights relating to economic effects influencing individual to or not to bank online and switch banks has been analyzed and discussed. The insightful information derived from the empirical analysis gives bank executives and academics a better understanding of what motivates individual willingness moving to online banking and/or switching banks within the online banking context. Implications derived from the study might be possible to be generalized to other web-based services. The future study may concurrently take psychological effects and economic effects as constructs to assess which hold heavier influences motivating individual willingness moving to online banking and/or switching banks within the online banking context, as well as to examine whether the economic effects and social psychological effects interrelated.

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