Examining users’ switch from online banking to mobile banking

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Abstract: As an emerging service, mobile banking has received minor adoption among users. This may be for the reason that they are locked into the relationship with online banking and are unable to switch from online banking to mobile banking. Integrating both perspectives of enablers and inhibitors, this research examined users’ switch from online banking to mobile banking. Enablers include relative advantage, perceived ease of use, trust, flow and social influence, whereas the inhibitor is switching costs. The results indicated that switch intention is affected by both enablers and inhibitors. Among them, flow and switching costs have the largest effects. This research provides a new perspective (switch behaviour) of examining mobile banking user behaviour, which has been mainly tested from technology adoption perspective.

Keywords: online banking; mobile banking; switch intention; trust.


Biographical notes: Tao Zhou is a Professor at School of Management, Hangzhou Dianzi University. He has published in Decision Support Systems, Information Systems Management, Internet Research, Electronic Commerce Research, Computers in Human Behavior and several other journals. His research interests include mobile business model and user behaviour.

1 Introduction

The application of the fourth generation (4G) communication technologies has accelerated mobile internet development. According to a recent report, the number of mobile internet users in China has exceeded 594 million, accounting for 88.9% of its internet population (668 million) (CNNIC, 2015). This indicates the great mobile internet market. Faced with the opportunity, service providers have offered a variety of mobile services, such as mobile instant messaging, mobile games, mobile purchase and mobile banking. They expect users to widely adopt and use these services in order to achieve a competitive advantage and make profits. However, a few services have been used by a minority of users. For example, as a transactional application, mobile banking has only
been adopted by 36.2% of mobile internet users (CNNIC, 2015). Nevertheless, mobile banking has received considerable attention from traditional banks. For example, in China, four state-owned banks, which include Industrial and Commercial Bank of China (ICBC), Agricultural Bank of China (ABC), Bank of China (BOC), and China Construction Bank (CCB) have released their mobile banking products. The low adoption rate may affect service providers’ success. Thus, they need to identify the factors affecting user behaviour and adopt measures to facilitate user adoption.

Mobile banking enables users to use their mobile devices to access information and services, such as balance check, transference, bill payment and financial management at anytime from anywhere. This provides great convenience and values to users (Shen et al., 2010), and may promote their adoption and usage. Nevertheless, as users have been using online banking, they may be reluctant to switch from online banking to mobile banking due to the switching costs, which have locked them into the relationship with online banking (Ray et al., 2012). Thus, service providers need to adopt measures to encourage user switch from online banking to mobile banking in order to facilitate mobile banking usage. Otherwise, they cannot recover the costs and effort spent on releasing mobile banking. This may lead to their failure of implementing mobile banking.

Previous studies have used multiple theories such as innovation diffusion theory (IDT), trust theory, task technology fit (TTF) and the unified theory of acceptance and use of technology (UTAUT) to examine mobile banking user behaviour (Luo et al., 2010; Zhou et al., 2010; Lin, 2011). However, they are mainly concerned with users’ usage intention of mobile banking, and have seldom examined user switch from online banking to mobile banking. As noted earlier, as users may have been locked into the relationship with online banking, service providers also need to encourage users’ switch to mobile banking. Otherwise, users cannot adopt and use mobile banking. We propose that user switch may receive a dual influence from both enablers and inhibitors. Enablers include relative advantage, perceived ease of use, trust, flow and social influence. Inhibitors include switching costs. When users feel that mobile banking has more advantages over online banking and is easier to use, they may consider switching from online banking to mobile banking. In contrast, if they feel that switch incurs expensive costs, they may resist switching and keep using online banking. We collected data in China whose mobile internet is developing rapidly but still in its early stage. Structural equation modelling was used to conduct data analysis.

The rest of this paper is organised as follows. We develop the research model and hypotheses in the next section. Then we describe instrument development and data collection in Section 3. Section 4 presents the results, followed by a discussion of these results in Section 5. Section 6 presents the theoretical and managerial implications. We conclude the paper in Section 7.

2 Research model and hypotheses

2.1 Mobile banking user adoption

As mobile banking has not been widely used by users, extant research has paid attention to identify the factors affecting user behaviour. Information systems theories such as IDT, TTF, UTAUT and information systems success model are often used as the theoretical bases. Lin (2011) examined the effects of innovation attributes and knowledge-based trust
on mobile banking user’s behavioural intention. Innovation attributes include relative advantage, ease of use and compatibility, whereas knowledge-based trust includes competence, integrity and benevolence. Zhou et al. (2010) integrated TTF and UTAUT to examine usage intention of mobile banking. They found that TTF affects performance expectancy, which in turn affects usage intention. Chung and Kwon (2009) reported that system quality and information quality affect user satisfaction with mobile banking. Shen et al. (2010) adopted a benefit-cost framework to examine user adoption of mobile banking. They suggested that the key benefit is convenience, whereas the key cost is security.

From these studies, we can find that they are mainly concerned with user adoption of mobile banking, and have seldom examined user switch from online banking to mobile banking. This research tries to fill the gap and provides a more complete understanding of mobile banking user behaviour.

User switch may receive a dual influence from both enablers and inhibitors. Enablers pull users to use mobile banking, whereas inhibitors push them back to use online banking. Kim and Son (2009) also adopted a dual perspective of dedications and constraints to examine post-adoption of online services. Dedications include perceived usefulness and satisfaction, whereas constraints include personalisation and learning. Liu et al. (2011) examined customer loyalty from a dual perspective of pull-in force and push-back force. The pull-in force is relationship quality, whereas push-back force is switching barrier. Consistent with these studies, this research employed a dual perspective of enablers and inhibitors to examine user switch from online banking to mobile banking. Enablers include relative advantage, perceived ease of use, trust, flow and social influence, whereas inhibitors include switching costs.

2.2 Relative advantage

Relative advantage reflects the degree to which an innovation is perceived as being better than its precursor (Rogers, 1983; Moore and Benbasat, 1991). It is a core component of IDT (Rogers, 1983). Compared to online banking, a main advantage of mobile banking is ubiquity. That is, with the help of mobile networks and devices, users have been freed from temporal and spatial constraints. They can access mobile banking for information and services at anytime from anywhere. This brings great convenience and value to users and may promote their switch from online banking to mobile banking. Lin (2011) noted that relative advantage affects user adoption of mobile banking. Kim et al. (2009) suggested that relative benefits of mobile banking affect users’ initial trust, which in turn affects usage intention. Consistent with these studies, we propose,

H1 Relative advantage is positively related to user switch from online banking to mobile banking.

2.3 Perceived ease of use

Perceived ease of use reflects the difficulty of using an information technology. It is a main factor of the technology acceptance model (Davis, 1989). When users perceive that mobile banking is easy to use, they may be willing to switch to mobile banking as they do not need to spend much effort and time on learning to use it. Otherwise, they may be reluctant to conduct switch. Extant research has identified the effect of perceived ease of
use and effort expectancy (similar to perceived ease of use) on mobile banking user intention (Zhou et al., 2010; Lin, 2011). Thus, we suggest,

H2 Perceived ease of use is positively related to user switch from online banking to mobile banking.

2.4 Trust

Trust reflects a willingness to be in vulnerability based on the positive expectation toward another party’s future behaviour (Mayer et al., 1995). Trust includes three dimensions: ability, integrity and benevolence (Zahedi and Song, 2008). Ability means that service providers have the knowledge and expertise necessary to fulfil their tasks. Integrity means that service providers keep their promises and do not deceive users. Benevolence means that service providers are concerned with users’ interests, not just their own benefits. Due to its significance, trust has received considerable attention in the information systems research, especially in the e-commerce context, which involves great uncertainty and risk (Beldad et al., 2010; Bock et al., 2012; Li et al., 2012a).

When users have developed trust in mobile banking, they may believe that mobile banking has enough ability and integrity to ensure payment security. This will mitigate their perceived risk and help promote their switch from online banking to mobile banking. Thus, we suggest,

H3 Trust is positively related to user switch from online banking to mobile banking.

2.5 Flow

Flow reflects a holistic sensation that people feel when they act with total involvement (Csikszentmihalyi and Csikszentmihalyi, 1988). Flow as an optimal experience is characterised by:

1 a seamless sequence of responses facilitated by machine interactivity
2 intrinsic enjoyment
3 a loss of self-consciousness
4 self-reinforcement (Hoffman and Novak, 1996).

Flow reflects a balance between users’ skills and challenges (Guo and Klein, 2009). When the skills are larger than challenges, users feel bored. In contrast, when challenges are larger than skills, users feel anxious. When skills and challenges are lower than the threshold values, users feel apathy. Only when both skills and challenges exceed the threshold values and have a good match will users experience flow.

As an illusive concept, flow includes multiple components, such as perceived enjoyment, perceived control and concentration (Koufaris, 2002). Perceived enjoyment reflects the pleasure and enjoyment associated with using an information technology. It is a core component of flow experience and has been identified to affect user behaviour (Li et al., 2012b; Wang and Li, 2012). Perceived control reflects the feelings of control over the activity and surrounding environment. Concentration reflects user immersion in using the technology. Extant research has also identified other components of flow, such as
Examining users’ switch from online banking to mobile banking

2.5 Flow

Flow has been found to affect user behaviour in various mobile contexts, such as mobile TV (Zhou, 2013) and mobile videophones (Chen et al., 2012). Prior research has revealed the effects of flow on user satisfaction (Deng et al., 2010a), loyalty, word-of-mouth (O’Cass and Carlson, 2010) and return intention (Hausman and Siekpe, 2009; Goel et al., 2011). When users obtain flow associated with using mobile banking, they may feel great satisfaction and continue using it (Lee et al., 2007). This may facilitate their switch to mobile banking. Thus, H4: Flow is positively related to user switch from online banking to mobile banking.

2.6 Social influence

Social influence reflects the effect of other important people’s opinions on individual user’s perceptions of mobile banking. When a user’s friends, peers and leaders recommend him or her to switch from online banking to mobile banking, he or she may comply with their opinions even he or she has not formed positive attitudes toward mobile banking. This represents a compliance process in the social influence theory (Bagozzi and Lee, 2002). UTAUT suggests that social influence is a significant factor affecting user adoption of an information technology (Venkatesh et al., 2003). Numerous studies have validated the effect of social influence on user behaviour (Hong et al., 2008; Shen et al., 2011; Thong et al., 2011). Thus, we state, H5: Social influence is positively related to user switch from online banking to mobile banking.

2.7 The relationships among perceived ease of use, relative advantage, trust and flow

Perceived ease of use may have a significant effect on relative advantage. When users feel that a mobile banking system is difficult to use, they cannot perceive its advantages and utility. The technology acceptance model also suggests that perceived ease of use is a determinant of perceived usefulness (Davis, 1989), which is similar to relative advantage. Perceived ease of use may also affect users’ evaluation of service providers’ ability to provide quality services to them. Thus, perceived ease of use may affect user trust. Further, perceived ease of use may reduce users’ challenges of using mobile banking and help them achieve flow experience. When a mobile banking system is difficult to use, they may feel lack of control and cannot perceive enjoyment associated with using it. Guo and Poole (2009) also noted that perceived complexity affects flow with using online shopping. Thus, we propose, H6: Perceived ease of use is positively related to relative advantage.

H7: Perceived ease of use is positively related to trust.

H8: Perceived ease of use is positively related to flow.

In addition, trust provides a subjective guarantee that users obtain expected outcomes in future (Gefen et al., 2003). Trust enables users to believe that service providers have the
ability and integrity enough to provide a compelling experience to them. Trust may also reduce perceived risk and increase users’ perceived control. This may help them acquire a good experience. Thus, we state:

H9 Trust is positively related to flow.

2.8 Switching costs

Switching costs reflect the expected costs of switching from a current service provider to an alternative one (Ray et al., 2012). Switching costs include multiple components. Ray et al. (2012) noted that switching costs include two parts: vendor-related costs and user-related costs. Vendor-related costs include benefit-loss costs, service-uncertainty costs and brand-relationship costs, whereas user-related costs include search and evaluation costs, transfer costs and learning costs. Kim (2011) suggested that switching costs include uncertainty costs, transition costs, sunk costs and loss costs.

Switching costs may help retain users and prevent them from switch. When users face expensive costs such as effort investment and potential losses, they may be reluctant to switch from online banking to mobile banking. Thus, switching costs will lock users into the relationship with online banking. Extant research has reported the effect of switching costs on user loyalty (Deng et al., 2010b; Wang et al., 2011), repurchase intention (Lee et al., 2011), and user resistance to change (Kim and Kankanhalli, 2009; Kim, 2011). In line with these studies, we propose,

H10 Switching costs are negatively related to user switch from online banking to mobile banking.

Figure 1 presents the research model.
3 Method

The research model includes seven factors. Each factor was measured with multiple items. All items were adapted from extant literature to improve content validity (Straub et al., 2004). These items were first translated into Chinese by a researcher. Then another researcher translated them back into English to ensure consistency. When the instrument was developed, it was tested among five users that had online and mobile banking usage experience. Then according to their comments, we revised some items to improve the clarity and understandability. The final items and their sources are listed in the Appendix.

Items of relative advantage were adapted from Lin (2011) to reflect the efficiency, convenience and usefulness of mobile banking. Items of perceived ease of use were adapted from Venkatesh et al. (2003) to measure the difficulty of learning to use and skilfully using mobile banking. Items of trust were adapted from Pavlou and Gefen (2004) to reflect the credibility, integrity and benevolence of mobile banking. Items of flow were adapted from Lee et al. (2007) to reflect the enjoyment, perceived control and concentration. Items of social influence were adapted from Venkatesh et al. (2003) to measure the effect of other important people’s opinions on individual user. Items of switching costs were adapted from Tsai et al. (2006) to reflect the effort, time costs and losses derived from switching. Items of switching intention were adapted from Anton et al. (2007) to reflect users’ intention to switch from online banking to mobile banking.

Data were collected at the service outlets of China Mobile, China Unicom and China Telecom, which represent three main mobile service providers in China. These service outlets were located in an eastern China city, where mobile internet was better developed than other regions. Users went to these service outlets to pay fees, print invoices and open new services. They often need to wait for some minutes before they are served by the representatives due to the large number of users. This allowed us to interview them and conduct data collection. We contacted users and inquired whether they had online and mobile banking usage experience. Only those users with both online and mobile banking usage experience were selected as the targets and asked to fill the questionnaire. To encourage users’ participation, we promised to send the results to them via email if they will. We scrutinised all responses and dropped those with too many missing values. As a result, we obtained 309 valid responses. Among them, 53.4% were male and 46.6% were female, which are comparable to 57.6% of male and 42.4% of female in the mobile internet population (CNNIC, 2012). A majority of users (88.3%) were between twenty and twenty-nine years old. The CNNIC report (2012) indicates that these users represent the largest group of mobile internet users. These results suggest that our sample characteristics are consistent with those of mobile internet user population.

We conducted two tests to examine the common method variance. First, we performed a Harman’s single-factor test (Podsakoff and Organ, 1986). The results indicated that the largest variance explained by individual factor is 12.76%. Thus, none of the factors can explain the majority of the variance. Second, we modelled all items as the indicators of a factor representing the method effect, and re-estimated the model (Malhotra et al., 2006). The results indicated a poor fitness. For example, the goodness of fit index (GFI) is 0.653 (<0.90). The root mean square error of approximation (RMSEA) is 0.167 (>0.08). With both tests, we feel that common method variance is not a significant problem in our research.
4 Results

Following the two-step approach recommended by Anderson and Gerbing (1988), we first examined the measurement model to test reliability and validity. Then we examined the structural model to test research hypotheses and model fitness.

First, we conducted a confirmatory factor analysis to examine the validity. Validity includes convergent validity and discriminant validity. Convergent validity measures whether items can effectively reflect their corresponding factor, whereas discriminant validity measures whether two factors are statistically different. Table 1 lists the standardised item loadings, the average variance extracted (AVE), the composite reliability (CR) and Cronbach alpha values. As listed in the table, most item loadings are larger than 0.7. The T values indicate that all loadings are significant at 0.001. All AVEs exceed 0.5 and CRs exceed 0.7. This indicates a good convergent validity (Bagozzi and Yi, 1988; Gefen et al., 2000). In addition, all alpha values are larger than 0.7, suggesting a good reliability (Nunnally, 1978).

Table 1  Standardised item loadings, AVE, CR and alpha values

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Standardised loading</th>
<th>AVE</th>
<th>CR</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage (RA)</td>
<td>RA1</td>
<td>0.888</td>
<td>0.71</td>
<td>0.88</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>RA2</td>
<td>0.894</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RA3</td>
<td>0.728</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived ease of use (EOU)</td>
<td>EOU1</td>
<td>0.744</td>
<td>0.62</td>
<td>0.83</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>EOU2</td>
<td>0.796</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EOU3</td>
<td>0.813</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social influence (SOI)</td>
<td>SOI1</td>
<td>0.819</td>
<td>0.67</td>
<td>0.80</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>SOI2</td>
<td>0.813</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust (TRU)</td>
<td>TRU1</td>
<td>0.751</td>
<td>0.55</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>TRU2</td>
<td>0.702</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TRU3</td>
<td>0.776</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow (FLOW)</td>
<td>FLOW1</td>
<td>0.703</td>
<td>0.54</td>
<td>0.78</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>FLOW2</td>
<td>0.859</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FLOW3</td>
<td>0.624</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching costs (SC)</td>
<td>SC1</td>
<td>0.741</td>
<td>0.59</td>
<td>0.81</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>SC2</td>
<td>0.801</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SC3</td>
<td>0.753</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch intention (INT)</td>
<td>INT1</td>
<td>0.767</td>
<td>0.54</td>
<td>0.78</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>INT2</td>
<td>0.742</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>INT3</td>
<td>0.685</td>
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</tbody>
</table>

To examine the discriminant validity, we compared the square root of AVE and factor correlation coefficients. As listed in Table 2, for each factor, the square root of AVE is significantly larger than its correlation coefficients with other factors. Thus, the scale has good discriminant validity (Fornell and Larcker, 1981; Gefen et al., 2000).
Table 2  The square root of AVE (shown as bold at diagonal) and factor correlation coefficients

<table>
<thead>
<tr>
<th></th>
<th>RA</th>
<th>EOU</th>
<th>SOI</th>
<th>TRU</th>
<th>FLOW</th>
<th>SC</th>
<th>INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA</td>
<td>0.840</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EOU</td>
<td>0.549</td>
<td>0.785</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOI</td>
<td>0.360</td>
<td>0.553</td>
<td>0.816</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRU</td>
<td>0.246</td>
<td>0.326</td>
<td>0.428</td>
<td>0.744</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLOW</td>
<td>0.273</td>
<td>0.254</td>
<td>0.371</td>
<td>0.398</td>
<td>0.735</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>−0.348</td>
<td>−0.383</td>
<td>−0.366</td>
<td>−0.532</td>
<td>−0.172</td>
<td>0.765</td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td>0.564</td>
<td>0.509</td>
<td>0.526</td>
<td>0.551</td>
<td>0.583</td>
<td>−0.511</td>
<td>0.732</td>
</tr>
</tbody>
</table>

Second, we adopted structural equation modelling software LISREL to estimate the structural model. Figure 2 presents the results. Table 3 lists the recommended and actual values of some fit indices. All fit indices have better actual values than the recommended values. This indicates a good fitness (Gefen et al., 2000). The explained variance of relative advantage, trust, flow and switch intention is 33%, 14%, 18%, and 68%, respectively.

Figure 2  Results estimated by LISREL

![Diagram](image)

Note: *P < 0.05; **P < 0.01; ***P < 0.001. The bold figures are the explained variance.

Table 3  The recommended and actual values of fit indices

<table>
<thead>
<tr>
<th>Fit indices</th>
<th>chi²/df</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>NFI</th>
<th>NNFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended value</td>
<td>&lt;3</td>
<td>&gt;0.90</td>
<td>&gt;0.80</td>
<td>&gt;0.90</td>
<td>&gt;0.90</td>
<td>&gt;0.90</td>
<td>&lt;0.08</td>
</tr>
<tr>
<td>Actual value</td>
<td>2.13</td>
<td>0.902</td>
<td>0.869</td>
<td>0.964</td>
<td>0.937</td>
<td>0.957</td>
<td>0.061</td>
</tr>
</tbody>
</table>

Notes: chi²/df is the ratio between chi-square and degrees of freedom; GFI is goodness of fit index; AGFI is the adjusted goodness of fit index; CFI is the comparative fit index; NFI is the normed fit index; NNFI is the non-normed fit index; RMSEA is root mean square error of approximation.
5 Discussion

As shown in Figure 2, except the path from perceived ease of use to switch intention (H2), other path coefficients are significant. Enablers including relative advantage, trust, flow and social influence have positive effects on switch intention, whereas the inhibitor-switching costs has a negative effect on switch intention.

Among the enablers of switch intention, flow has the largest effect ($\beta = 0.37$). Flow as an optimal experience has been identified to affect user behaviour (Hoffman and Novak, 2009). When users are in flow, they perceive enjoyment and are immersed in using mobile banking. This brings great satisfaction to users and enables them to continue using it. Thus, users may switch to use mobile banking services. Due to the constraints of mobile devices such as small screens and slow responses, users may have a poor experience associated with using mobile banking. The results indicated that trust has a strong effect ($\beta = 0.32$) on flow. Thus, service providers can build users’ trust to improve their usage experience.

Relative advantage also has a significant effect ($\beta = 0.28$) on switch intention. This is consistent with extant results, which reported the effect of relative advantage on user adoption of mobile banking (Kim et al., 2009; Lin, 2011). This indicates that when users acquire the expected utility such as reliable and ubiquitous services, they may form intentions to switch from online banking to mobile banking. Users often need to sit before desktop computers to use online banking. When using mobile banking, they expect to check account balance, conduct transference and pay bills at anytime from anywhere. If users cannot obtain ubiquitous and convenient payment services, they may perceive low benefits of mobile banking. This may undermine their switch intention from online banking to mobile banking.

Trust has a low but significant effect ($\beta = 0.13$) on switch intention. Extant research has identified the significant effect of trust on mobile banking user behaviour (Chung and Kwon, 2009; Luo et al., 2010; Lin, 2011). This suggests that when users have established trust in mobile banking, they will be willing to switch to mobile banking. Built on mobile networks, mobile banking is vulnerable to hacker attack and information interception. Viruses such as worms and Trojan horses may also infect mobile devices. These problems increase users’ concern on mobile banking security. They may need to build enough trust to mitigate perceived risk and conduct switch to mobile banking.

The results indicated that perceived ease of use has no effect ($\gamma = 0.02$) on switch intention. Previous research has found the insignificant effect of perceived ease of use on usage intention when users gained more direct experience (Venkatesh and Davis, 2000). Nevertheless, perceived ease of use has significant effects on relative advantage, trust and flow. This suggests that these factors mediate the effect of perceived ease of use on switch intention. When users feel that learning to use and skillfully using mobile banking do not entail their much effort, they may readily perceive the utility of mobile banking and obtain a good experience. They may also build trust in service providers’ ability and integrity to provide quality services to them. Service providers need to improve mobile banking interface design and present an easy-to-use system to users. For example, they can develop mobile banking applications catering to various mobile operation systems such as IOS, Symbian and Android. These applications have better interface design and
Examining users’ switch from online banking to mobile banking

usability compared to the wireless application protocol mobile banking products. Service providers can also use location-based services to acquire user location and provide nearby automated teller machines and bank outlets to the user. This may reduce user effort spent on information search and improve their perceived ease of use.

Social influence has a significant effect ($\beta = 0.13$) on switch intention. The effect of social influence on user behaviour has been validated in extant research (Shen et al., 2011; Venkatesh et al., 2012). This indicates that peer’s opinions have a significant effect on a user’s decision. Service providers can invite a few influential users to post their comments on mobile banking, which may affect user switch intention. They can also use incentives such as points to encourage early adopters to recommend mobile banking to later adopters. These early adopters’ opinions may play a significant role in later adopters’ switch intention.

Switching costs have a strong negative effect ($\beta = -0.37$) on switch intention. Switching costs have been identified to be a significant constraint factor affecting user behaviour (Kim and Son, 2009; Kim, 2011). Users cannot switch to mobile banking if they need to bear the expensive costs, such as learning costs and lost benefits. Switching costs include three parts: sunk costs, learning costs and artificial costs (Chen and Hitt, 2002). Sunk costs mean the costs spent on using original products such as online banking. Learning costs mean the costs spent on learning to use new products such as mobile banking. Artificial costs mean the lost benefits such as convenience and awards associated with switch. Service providers may be unable to affect sunk costs, but they can reduce learning costs and artificial costs to facilitate user switch. For example, they can use discount and points to encourage user switch to mobile banking.

It is worth noting that our research is conducted in China, which features a typical oriental culture. Ho (2012) pointed out that culture has a significant effect on user adoption of wireless services. Thus, our results need to be interpreted with caution. For example, due to the high collectivism of Chinese culture, an individual user may perceive more social influence from other users. This may affect his or her switch from online banking to mobile banking. In addition, compared to western cultures, Chinese culture has relatively high uncertainty avoidance. This may undermine users’ trust and negatively affect their switch intention. Future research can generalise our results to other western cultures.

6 Theoretical and managerial implications

From a theoretical perspective, this research examined user switch from online banking to mobile banking, which represents an emerging application. As noted earlier, extant research has focused on user adoption of mobile banking, and has seldom considered user switch from online banking to mobile banking. Nevertheless, users may be locked into the relationship with online banking and reluctant to switch to mobile banking due to the switching costs. This research tries to fill the gap and identified the factors affecting user switch. Future research can pay more attention to users’ cross-channel switch from offline to online to mobile channel. Second, we combined both perspectives of enablers and inhibitors to examine user switch. Enablers include relative advantage, perceived ease of
use, trust, flow and social influence, whereas the inhibitor is switching costs. The results provide a complete picture of understanding user behaviour by integrating a dual perspective of enablers and inhibitors. Third, we found that flow, which reflects an optimal experience, has a strong effect on switch intention. This also complements previous research on mobile banking user adoption, which has mainly identified the effect of technological perceptions such as perceived usefulness on user behaviour.

From a managerial perspective, our results imply that service providers need to consider both perspectives of enablers and inhibitors in order to facilitate user switch from online banking to mobile banking. On one hand, they need to deliver an engaging experience to users. Users expect to obtain ubiquitous information and services through mobile banking. They also expect to use mobile banking without much effort. These aspects entail service providers to improve the interface design and system reliability of mobile banking. On the other hand, service providers need to curb the effects of switching costs. For example, they can improve the usability of mobile banking to decrease users’ learning costs. They can also use incentives such as points, discounts and free strategy to attract users’ switch to mobile banking. In fact, many Chinese banks have offered more discounts (such as 50%) over online banking transaction costs to facilitate user adoption of mobile banking.

7 Conclusions

As an emerging service, mobile banking has been adopted by a minority of users. Thus, researchers need to identify the factors affecting user behaviour. Drawing on both perspectives of enablers and inhibitors, this research examined user switch from online banking to mobile banking. The results indicated that users’ switch intention receives strong influences from flow and switching costs. Future research need to pay more attention to flow when examining mobile user behaviour.

This research has the following limitations. First, we only included those users with both online banking and mobile banking usage experience into the sample. Future research could also investigate the potential users that had adopted online banking but not mobile banking. Second, we conducted this research in China, which features a collectivistic culture. This may affect user perceptions such as trust and social influence. Thus, our results need to be generalised to those countries with individualised cultures. Third, besides the factors identified in our research, there may exist other factors affecting switch intention, such as satisfaction and habit. Future research can examine their effects. Fourth, we mainly conducted a cross-sectional study. However, user behaviour is dynamic. Thus, a longitudinal research may provide more insights into user behaviour development.

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Examining users’ switch from online banking to mobile banking

References


Examing users’ switch from online banking to mobile banking


Appendix

Measurement scale and items

Relative advantage (RA) [adapted from Lin (2011)]
RA1 Mobile banking allows me to conduct banking transactions more efficiently.
RA2 Mobile banking is a convenient way to conduct banking transactions.
RA3 Mobile banking is useful for managing my finances.

Perceived ease of use (EOU) [adapted from Venkatesh et al. (2003)]
EOU1 Learning to use mobile banking is easy for me.
EOU2 Skillfully using mobile banking is easy for me.
EOU3 I find that mobile banking is easy to use.

Social influence (SOI) [adapted from Venkatesh et al. (2003)]
SOI1 People who influence my behaviour think that I should use mobile banking.
SOI2 People who are important to me think that I should use mobile banking.

Trust (TRU) [adapted from Pavlou and Gefen (2004)]
TRU1 Mobile banking is trustworthy.
TRU2 Mobile banking keeps its promises.
TRU3 Mobile banking keeps customer interests in mind.

Flow (FLOW) [adapted from Lee et al. (2007)]
FLOW1 When using mobile banking, my attention is focused on the activity.
FLOW2 When using mobile banking, I feel in control.
FLOW3 When using mobile banking, I find a lot of pleasure.

Switching costs (SC) [adapted from Tsai et al. (2006)]
SC1 Switching from online banking to mobile banking will cost me much effort.
SC2 Switching from online banking to mobile banking will cost me much time.
SC3 Switching from online banking to mobile banking will incur much loss to me.

Switch intention (INT) [adapted from Anton et al. (2007)]
INT1 I have considered switching from online banking to mobile banking.
INT2 I have no intention to renew with online banking.
INT3 I intend to use mobile banking in the future.