Dealing with the Transition from Web to Mobile Services: The Role of Consistency and Trust

Yongqiang Sun
*Wuhan University*, sunyq@whu.edu.cn

Xiao-Liang Shen
*Wuhan University*, xlshen@whu.edu.cn

Nan Wang
*University of Science and Technology of China*, kewang@mail.ustc.edu.cn

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DEALING WITH THE TRANSITION FROM WEB TO MOBILE SERVICES: THE ROLE OF CONSISTENCY AND TRUST

Yongqiang Sun, School of Information Management, Wuhan University, Wuhan, China, sunyq@whu.edu.cn

Xiao-Liang Shen, Economics and Management School, Wuhan University, Wuhan, China, xlsxhen@whu.edu.cn

Nan Wang, School of Management, Hefei, China, kewang@mail.ustc.edu.cn

Abstract

With the advancement of mobile technologies, numerous web service providers begin to extend their web services to the mobile context. Thus, the mechanism about users’ mobile service adoption behavior under the context of web – mobile service transition attracts both practitioners and researchers’ attention. In this study, regarding the consistency between the web services and its corresponding mobile services as a critical factor to capture the service transition, we propose a typology of consistency and examine the extent to which and when consistency contributes to users’ mobile service adoption intention. Specifically, consistency is classified into the behavioral consistency (e.g., operational consistency) and the object-based consistency which includes the consistency in information, system and service in terms of the information systems success model. We also contend the mediating effect of behavioral consistency between object-based consistency and adoption intention, and the moderating effect of users’ initial trust in web services. A field survey with 235 mobile service users is conducted in a mobile word-of-mouth platform to test the research model. The results confirm our mediating and moderating hypotheses. The implications for theory and practice are also discussed.

Keywords: Mobile services, service transition, consistency, trust, IS success model, word-of-mouth services
1 INTRODUCTION

Mobile devices such as mobile phones and tablets (e.g., iPad) have become a widely used instrument for users to access a variety of services including banking, commerce, chatting, gaming etc. (Lopez-Nicolas et al., 2008). Even Bill Gates who has engaged in the traditional personal computer (PC) business in a long time has to admit that the portable devices would become the most popular form of the computing tool within five years (Berger & Niccolai, 2012). The war in terminal devices impels the content or service providers to extend their traditional web services to the mobile context so as to keep or expand their user population. Besides offering the WebPages which are accessible through the mobile devices, service providers also develop lots of mobile applications that are customized to match with the features of mobile devices, such as Amazon Mobile, Facebook, and Youtube. Users of the original web services may or may not continue using the corresponding mobile services by their mobile devices. Thus, it is interesting to know the factors influencing users’ mobile service adoption behaviour in the web–mobile service transition context.

Most of previous studies on mobile service adoption tend to treat mobile services as a special technology or innovation and examine users’ adoption behaviour by drawing on the general technology acceptance theories including technology acceptance model (TAM) (e.g., Davis, 1989), innovation diffusion theory (IDT) (e.g., Moore & Benbasat, 1991), and task–technology fit theory (TTFT) (e.g., Goodhue & Thompson, 1995). For example, based on TAM and IDT, Wu and Wang (2005) investigate the role of perceived usefulness, perceived ease of use, compatibility, perceived risk and cost in mobile commerce acceptance. Lopez-Nicolas et al. (2008) also propose that mobile service adoption is determined by perceived usefulness, perceived ease of use, perceived benefits and social influence. Similar propositions can also be found in the a variety of other studies such as Mallat et al. (2009), Gu et al. (2009), and Wu et al. (2011).

However, the mobile services discussed in our research context are different from previous studies. Unlike those mobile services which are originated in the mobile domain, the mobile services transited from web services have several unique features. First, the mobile services possess a strong relationship with the web services. This relationship can be reflected in the consistency or similarity (Stewart, 2003) between the mobile services and web services. Second, users’ initial perceptions about the mobile services may be inherited from their perceptions about the web services through the mechanism of perception transfer (Delgado-Ballester & Hernandez-Espallardo, 2008). These unique features calls for viewing the adoption of this type of mobile service from a new perspective rather than the prior theoretical explanations on the initial technology adoption.

Regarding the consistency between the web services and mobile services as a critical factor that sheds light on the service transition, this study tries to examine whether or not keeping the consistency between web and mobile services can facilitate users’ mobile service adoption behaviour. Specifically, this study firstly provide a typology of consistency to clarify the measurement issues of consistency during web–mobile service transition. Further, the study provides an in-depth understanding on the extent to which and how consistency affects mobile service adoption. During the theorization process, the mediating and moderating mechanisms are highlighted.

The study contributes to the literature on mobile services in several ways. First, unlike most of previous studies that explain the mobile service adoption using the general technology acceptance theories, this study in terms of the unique features of the web–mobile service transition provides a research model to capture this special research context. Second, this study offers a typology of consistency and investigates the hierarchy of effects between different types of consistency, providing a framework for future research on the similar issue. Third, this study also discusses two different mechanisms to explain the moderating role of initial trust in web services and figures out what mechanisms should be used under what conditions, advancing the theoretical understanding on consistency and trust.
2 THEORETICAL BACKGROUND

2.1 Object-based and Behavioural Consistency

When extending the web services to the mobile context, one question that service providers have to answer is whether or not to keep the consistency of the services in the two different contexts. Regarding that the consistency between the mobile services and web services can reduce users’ learning costs (Ahn, 1999), when the consistency is high, users can directly apply their prior experience in the web services to the mobile service usage process. Thus, most of service providers tend to pay attention to the consistency between the two types of services when extending the service scope. This is also called as the standardization strategy (Szymanski et al., 1993; Theodosiou & Leonidou, 2003).

To understand whether and how consistency can influence users’ mobile service adoption behaviour, we examine the consistency perceptions that users form when facing the service transition. Before discussing on the impacts of consistency perceptions on mobile service adoption behaviour, a typology of consistency is firstly proposed based on the theories on individual behaviour and technology acceptance behaviour in particular.

According to the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), external variables influence beliefs about the outcomes associated with performing a behaviour which in turn shape attitudes toward performing a behaviour and intention to perform the behaviour. Within the IT literature, Davis (1989) proposes that individuals’ intention to adopt a technology is determined by two major beliefs about the outcomes associated with using the technology namely perceived usefulness and perceived ease of use and removes the attitudes from the model. Besides, the information systems success model proposes that technology adoption behaviour is determined by users’ beliefs about three features of information systems namely information quality, system quality and service quality (DeLone & McLean, 2003). These two theories have been developed in parallel and have not been integrated for a long time until 2005 when Wixom and Todd (2005) proposed an integrated research model by distinguishing beliefs about the system (i.e., object-based beliefs) from beliefs about using the system (i.e., behavioural beliefs). The perceived usefulness and perceived ease of use in TAM are behavioural beliefs while the information quality, system quality and service quality in IS success model are object-based beliefs.

Consistently, we propose a typology of the consistency perceptions by identifying the object-based consistency beliefs and the behavioural consistency beliefs. Specifically, behavioural consistency is captured by operational consistency which refers to the extent to which users consider that the operations of the mobile services are consistent with the operations of web services. It reflects an overall consistency perception about users’ mobile service usage behaviour.

Following the framework of IS success model, we figure out that there are three dimensions of object-based consistency namely information consistency, system consistency and service consistency. The information consistency refers to the extent to which the information provided in the mobile services is consistent with the information provided in the web services. Actually, regarding that the processing speed and the network stability of mobile devices are not so good as traditional PCs, the amount of information in the mobile services may be relatively less than in the web services. Thus, we use this construct to capture this difference. The system consistency refers to the extent to which the systems (e.g., interface, navigation structure, menu etc.) of mobile services and web services are consistent. Because the screen of mobile devices is relatively small and the information input of mobile devices is not so convenient, the system design may be different between web services and mobile services. Thus, this construct is used to capture this difference. Service consistency refers to the extent to which the services provided in the two service contexts are consistent. Because mobile devices have the advantages in portability and ubiquity, mobile services may include some services (e.g., location-based services) that do not exist in web services. Thus, this construct is used to reflect this difference.
2.2 Perception Transfer and Initial Trust Perception

In the web-mobile service transition context, since users may have experience in the web services, their prior perceptions about the web services may be used to evaluate the corresponding mobile services. That is to say, users’ prior perceptions about web services can be transferred to the evaluation on mobile services (i.e., perception transfer) (Delgado-Ballester & Hernandez-Espallardo, 2008). Thus, when forming the final evaluation on the mobile services, users may engage in two types of evaluations: the evaluation on prior web services and the evaluation on the relationships between web services and mobile services. Combing their prior evaluations on web services and the evaluations on the linkage between web and mobile services, the perceptions about the mobile services are achieved.

The theoretical underpinning for the perception transfer can be traced to the cognitive balance theory (Heider, 1946). This theory argues that when evaluating on an object (e.g., A), if an individual has a prior perception about another object (e.g., B) relevant to this object, s/he tends to balance the triadic relationships: the relationship between the individual and A, the relationship between the individual and B, and the relationship between A and B. Triads are balanced when all relationships among actors are positive or when one is positive and the other two are negative.

In our study, the triadic relationships are the relationships between users and web services, between users and mobile services, and between web and mobile services. Taking users’ intention to use mobile services as the relationship between users and mobile services, and consistency as the relationships between web and mobile services, we need to explore the factors to reflect the relationships between users and web services. In this study, regarding the importance of trust in adopting mobile services (Kim et al., 2009), we use the construct trust in web services to capture users’ initial perceptions about web services. Based on users’ evaluation on the trust of web services and consistency between web and mobile services, they can make their final decision on whether or not to use the mobile services.

3 RESEARCH MODEL

![Research Model Diagram]

*Figure 1. Research model*
Based on the typology of consistency perceptions and the perception transfer theory, we propose our research model in Figure 1. We argue that the impacts of the three object-based consistency perceptions on mobile service adoption intention are mediated by the behavioural consistency perceptions (i.e., operational consistency). We also argue that the initial trust perceptions on web services can directly influence the mobile service adoption intention as well as moderate the relationship between operational consistency and mobile service adoption intention.

3.1 Object-based Consistency, Behaviour-based Consistency and Intention to Use

As stated in the theoretical background section, information consistency, system consistency, and service consistency are object-based beliefs, while operational consistency is the behavioural belief. According to the theory of reasoned action (Fishbein & Ajzen, 1975), the behavioural beliefs are determined by the external variables which can be reflected by the object-based beliefs (Wixom & Todd, 2005), because object-based beliefs influence the way in which information about the behaviour is perceived and judged (Fazio & Olson, 2003). Within our research context, when users perceive that the information, system and service of web and mobile services are inconsistent, they may not be able to obtain their required information and services through operating the system in a way similar with what they do in the web service context. For example, they may expect there are certain information and services in the mobile service context. However, because of the inconsistency between the web and mobile services, they cannot get the information or services. Further, they may be used to searching for information through certain navigation route but this route may be not available in the mobile service context because of the system inconsistency. All of these suggest that inconsistency in information, system and service will lead to the inconsistency in the operations. Thus, we propose that

H1a: Information consistency is positively associated with operational consistency.
H1b: System consistency is positively associated with operational consistency.
H1c: Service consistency is positively associated with operational consistency.

The relationship between operational consistency and intention to use can be explained in several ways. First, operational consistency between web and mobile services can reduce the learning costs (Ahn, 1999), making users easily operate the mobile services using the same approach of operating web services. According to TAM, perceived ease of use can enhance the technology adoption behaviour (e.g., Davis, 1989), suggesting the positive relationship between operational consistency and intention to use mobile services. Second, according to the perception transfer theory (Delgado-Ballester & Hernandez-Espallardo, 2008), if an individual has a favourable initial perception towards the web services, when the consistency between web and mobile services is high, s/he may be more likely to use the mobile services because the positive perceptions can be transferred to the mobile services. It is worthy noting that here we assume that the initial perceptions are positive rather than negative. More explanations will be provided when proposing the interaction effect and showing the data analysis results. Here, assuming the positive initial perception about web services, we propose the positive relationship between operational consistency and intention to use mobile services.

H2: Operational consistency is positively associated with intention to use mobile services.

3.2 Direct and Moderating Roles of Trust

According to the perception transfer theory, we firstly propose the direct effect of trust in web services. Within our research context, when extending the web services to the mobile context, users’ initial perceptions (e.g., trust in web services) will be transferred to the perceptions about mobile services (e.g., trust in mobile services) (Stewart, 2006). Previous studies on mobile services also argue that trust in the services has an important impact on the intention to use mobile services (e.g., Kim et al., 2009). Thus, we propose that
**H3**: Trust in web services is positively associated with intention to use mobile services.

As to the interaction effect between trust in web services and operational consistency, there are two opposite explanatory mechanisms. On one hand, according to the perception transfer theory, when users’ initial trust is very low, operational consistency may have a negative effect on adoption intention because the negative evaluation on web services can be transferred to the evaluation on mobile services. When the initial trust in web services is high, the positive evaluation will be transferred to mobile services, suggesting the positive relationship between consistency and intention. This is consistent with Stewart’s (2006) arguments on trust transfer. On the other hand, when users’ initial trust on web services is very high, users may majorly make evaluations on mobile services based on their initial perception and pay less attention to the consistency between web and mobile services. In this case, compared to the situation with moderate level of initial trust, the relationship between operational consistency and intention should be relatively weak when initial trust is very high. Consistent with this argument, Fang et al. (2013) postulate that when trust is very high, the effectiveness of e-commerce institutional mechanisms becomes not so important. To reconcile these two mechanisms, we propose that the moderating effect of initial trust should be in an inverted-U shape (as shown in Figure 2).

![Figure 2. The inverted-U moderating effect of initial trust](image)

When initial trust in web services is very low, the relationship between operational consistency and intention is weak; following the increase of initial trust, the relationship between operational consistency and intention becomes stronger; however, when the initial trust is very high, the relationship between operational consistency and intention becomes weak. That is to say, whether the moderating effect of initial trust is positive or negative depends on the level of initial trust per se. For the low to moderate initial trust, the moderating effect is positive; while for the moderate to high initial trust, the moderating effect is negative. Thus, we take this hypothesis as an exploratory question. Which opinion holds should rely on the further examination of the value of initial trust in web services. Thus, we propose that

**H4**: Trust in web services strengthens the relationship between operational consistency and intention to use mobile services when the trust in web services is relatively low.

**H4’**: Trust in web services weakens the relationship between operational consistency and intention to use mobile services when the trust in web services is relatively high.
4 RESEARCH METHODS

4.1 Research Setting

A special type of mobile services – mobile electronic word-of-mouth (eWOM) services – was taken as a case to examine the proposed research model. Mobile WOM services were derived from the web eWOM services, showing that it is consistent with the research objective to examine the mobile service adoption behaviour in the web – mobile service transition context. Specifically, A famous Chinese eWOM website Dianping.com was selected as the research site. Initiated in 2003, Dianping.com provides users a platform to post their ratings and reviews on restaurant and other entertainment services and help other users to make decision on the consumption of these services. According to the statistics in March 2011, Dianping.com has more than 30 million active users and the reviews cover 1 million vendors across 2,000 Chinese cities. To extend their service scope, Dianping.com has successively launched the mobile Internet service in 2008 and the mobile application in 2010. These services enable users to obtain relevant information anytime and anywhere. In this study, our research focus is on the mobile application of Dianping.com rather than the mobile Internet service because mobile application is more fit with mobile devices and can provide more personalized services to users.

4.2 Measures

All the constructs except for consistency perceptions in this study were measured using multi-item scales adapted from validated measures in prior studies (see Appendix). Minor changes in the wording were made to fit the specific research context of mobile Dianping.com. A seven-point Likert scale was used for all items. Specifically, three items adapted from Kim and Han (2009) were used to measure intention to use mobile eWOM services; trust in web services was measured using three items adapted from McKnight et al. (2003). The measures for operational consistency were developed to capture the extent to which users perceive the operations of the web and mobile eWOM services were consistent and similar. The information consistency, system consistency, and service consistency were measured by asking subjects to evaluate the consistency in a variety of design issues (e.g., review information, interface, etc.). They were taken as the formative constructs. The face validity of the instruments were first assessed by several PhD students majored in information systems and several actual users of Dianping.com. The statistic validity was further assessed and reported in the data analysis section.

4.3 Data Collection Procedure

A web-based online survey was used to collect the data. Since this study examined users’ adoption of mobile eWOM services, the target participants should have certain experience in the mobile application of Dianping.com. Participants were recruited through several channels. First, we sent invitation letters to the registered users of Dianping.com whose contact information can be found in the Dianping. Second, since Dianping.com had a micro-blog account, we can search for the potential participants by sending short messages to the followers of the company’s micro-blog account. In the invitation letter or short message, we provided a brief description of the research objective as well as an URL of the online questionnaire webpage. To encourage their participation, certain incentives (e.g., prepaid calling card) were provided through a lucky draw.

In total, about 2000 invitation letters were sent out, and 235 usable responses were gathered, with a response rate of 12%. Among these participants, 47.7% were male; more than 70% were 26 years or higher; over 75% were with a bachelor or high degree; over 80% had more than 7 years of experience in Internet; more than 60% had more than 3 years of experience in Dianping.com and more than 60% had more than 3 months of experience in mobile application of Dianping.com.
Partial Least Squares (PLS), SmartPLS in particular, was used to analyze the data and examine the hypotheses. As a second-generation multivariate technique, PLS could simultaneously assess the measurement model and the structural model. Compared to the covariance-based structural equation modelling (SEM), PLS requires a relatively small sample size, has no restriction on normal distribution, and is more appropriate for exploratory analysis and for handling formative constructs (Chin et al., 2003). Thus, PLS is more suitable for the current study. Following the two-step analytical procedures (Hair et al., 1998), we examine the measurement model and the structural model respectively.

5.1 Measurement Model

The measurement models for reflective and formative constructs were examined in different ways. The reflective constructs including intention to use, operational consistency and trust in web services were examined by checking its reliability and validity. The reliability was assessed by checking the composite reliability (CR) and the average variance extracted (AVE). As shown in Table 1, the CR values for all three constructs were above 0.70 and AVE values for all three constructs were above 0.50, suggesting these constructs were with good reliability (Fornell & Larcker, 1981). The validity includes both convergent validity and discriminant validity. Convergent validity was assessed by checking whether the item loadings were great enough. As shown in Table 1, the item loadings for all three constructs were above 0.80 and significant, suggesting these constructs were with good convergent validity (Fornell & Larcker, 1981). The discriminant validity was assessed by checking if or not the square root of the AVE was greater than the correlations relevant to this construct. As shown in Table 3, the square roots of the AVE were greater than the correlations, suggesting good discriminant validity for these constructs.

<table>
<thead>
<tr>
<th>Reflective Constructs</th>
<th>CR</th>
<th>AVE</th>
<th>Items</th>
<th>Loadings</th>
<th>T-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to Use (INTU)</td>
<td>.951</td>
<td>.866</td>
<td>INTU1</td>
<td>.917</td>
<td>59.095</td>
</tr>
<tr>
<td>(CR=.951, AVE=.866)</td>
<td></td>
<td></td>
<td>INTU2</td>
<td>.934</td>
<td>68.620</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>INTU3</td>
<td>.941</td>
<td>93.029</td>
</tr>
<tr>
<td>Operational Consistency (OC)</td>
<td>.939</td>
<td>.795</td>
<td>OC1</td>
<td>.893</td>
<td>63.877</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OC2</td>
<td>.886</td>
<td>48.895</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OC3</td>
<td>.906</td>
<td>70.046</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OC4</td>
<td>.881</td>
<td>58.001</td>
</tr>
<tr>
<td>Trust in Web Service (TWS)</td>
<td>.937</td>
<td>.832</td>
<td>TWS1</td>
<td>.891</td>
<td>49.841</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWS2</td>
<td>.938</td>
<td>106.378</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWS3</td>
<td>.907</td>
<td>63.720</td>
</tr>
</tbody>
</table>

Table 1. Reliability and loadings of reflective constructs

The measurement model for formative constructs (e.g., information consistency, system consistency and service consistency) was examined by checking the item weights. As shown in Table 2, some item weights were not significant. According to the rules suggested by Petter et al. (2007), the variance inflation factors (VIF) and the item loadings should be further checked. The results showed that the VIFs for all the items were below the suggested threshold value 3.3 (Hair et al., 1998). The loadings for all the items were greater than 0.50 and significant, suggesting that these items had significant absolute values (Petter, et al., 2007). Thus, according to Petter et al.’s (2007) suggestions, these items were retained in the analysis to ensure the completeness of the concept.
<table>
<thead>
<tr>
<th>Formative Constructs</th>
<th>Items</th>
<th>Weights</th>
<th>T-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Consistency (IFC)</td>
<td>IFC1</td>
<td>.303</td>
<td>2.193</td>
</tr>
<tr>
<td></td>
<td>IFC2</td>
<td>-.130</td>
<td>0.950</td>
</tr>
<tr>
<td></td>
<td>IFC3</td>
<td>.028</td>
<td>0.218</td>
</tr>
<tr>
<td></td>
<td>IFC4</td>
<td>.336</td>
<td>3.192</td>
</tr>
<tr>
<td></td>
<td>IFC5</td>
<td>.023</td>
<td>0.203</td>
</tr>
<tr>
<td></td>
<td>IFC6</td>
<td>.600</td>
<td>5.951</td>
</tr>
<tr>
<td>System Consistency (SSC)</td>
<td>SSC1</td>
<td>.442</td>
<td>3.858</td>
</tr>
<tr>
<td></td>
<td>SSC2</td>
<td>.234</td>
<td>2.145</td>
</tr>
<tr>
<td></td>
<td>SSC3</td>
<td>.222</td>
<td>1.894</td>
</tr>
<tr>
<td></td>
<td>SSC4</td>
<td>.232</td>
<td>1.980</td>
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<tr>
<td>Service Consistency (SVC)</td>
<td>SVC1</td>
<td>.479</td>
<td>4.773</td>
</tr>
<tr>
<td></td>
<td>SVC2</td>
<td>.504</td>
<td>4.297</td>
</tr>
<tr>
<td></td>
<td>SVC3</td>
<td>.092</td>
<td>0.813</td>
</tr>
</tbody>
</table>

Table 2. Weights of formative constructs

<table>
<thead>
<tr>
<th></th>
<th>INTU</th>
<th>OC</th>
<th>TWS</th>
<th>IFC</th>
<th>SSC</th>
<th>SVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTU</td>
<td>0.931</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OC</td>
<td>0.474</td>
<td>0.892</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWS</td>
<td>0.526</td>
<td>0.465</td>
<td>0.912</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFC</td>
<td>0.347</td>
<td>0.643</td>
<td>0.479</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSC</td>
<td>0.395</td>
<td>0.676</td>
<td>0.465</td>
<td>0.608</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>SVC</td>
<td>0.370</td>
<td>0.702</td>
<td>0.349</td>
<td>0.620</td>
<td>0.691</td>
<td>NA</td>
</tr>
</tbody>
</table>

Table 3. Correlations and discriminant validity

Notes: INTU=Intention to use, OC=Operation consistency, TWS=Trust in web services, IFC=Information consistency, SSC=System consistency, SVC=Service consistency; The numbers in the diagonal row are square roots of the AVE.

5.2 Structural Model

![Structural Model Diagram](image)

Figure 3. PLS results

The PLS results of the structural model were reported in Figure 3. The results showed that information consistency ($\beta=.256$, $t=4.067$), system consistency ($\beta=.279$, $t=4.139$), and service consistency ($\beta=.350$, $t=5.815$) positively influence operational consistency ($R^2=.599$). Operational consistency, in turn, positively influences trust in web services ($\beta=.334$, $t=5.184$) and intention to use ($\beta=.331$, $t=5.606$). Trust in web services negatively influences intention to use ($\beta=-.154$, $t=2.036$). The $R^2$ for intention to use is .364. The significance level is $^*p<.05$, $^{**}p<.01$.
had significant effects on operational consistency, leading supports to H1a, H1b, and H1c. It was also found that the relationship between operational consistency and intention to use was significant ($\beta=.331$, $t=5.606$), supporting H2. The results also showed that trust in web services had a significant effect on intention to use ($\beta=.334$, $t=5.184$), indicating that H3 was supported. The interaction effect between trust in web services and operational consistency was tested by using the multiplicative approach (See Chin, et al., 2003). The impacts of the interaction component on intention to use was negative and significant ($\beta=-.154$, $t=2.036$), suggesting that H4' was supported while H4 was not supported. When further examining the value of trust in web services, we found that the mean value of trust was 5.613 and the standardized deviation was 0.966, suggesting that the trust was relatively high. This is consistent with our expectations. Further, when including the interaction effect in the model, the R-square increased from .344 to .364 with an increase of .020 ($f^2$-statistics=.031), showing a mediate effect size. The interaction effect was also illustrated in Figure 4.

![Figure 4. Interaction effect between operational consistency and trust](image)

Note: OC=Operation consistency; TRST=Trust in web services.

Further, we also analyzed the mediating effects of operational consistency according to the Baron and Kenny’s (1986) method. As shown in Table 4, the impacts of information consistency and service consistency on intention were fully mediated by operational consistency while the relationship between system consistency and intention was partially mediated by operational consistency. However, when considering other constructs in the proposed model, the direct effect of system consistency on intention became insignificant ($\beta=0.059$, $t=0.538$), so this direct effect was removed from the model.

<table>
<thead>
<tr>
<th>Coefficient in Regressions</th>
<th>Mediating</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV M DV IV $\rightarrow$ DV IV $\rightarrow$ M IV + M $\rightarrow$ DV</td>
<td>IV M Mediating</td>
</tr>
<tr>
<td>IFC OC INTU .414** .635** .130 .392** FULL</td>
<td></td>
</tr>
<tr>
<td>SSC OC INTU .433** .672** .172* .359** PARTIAL</td>
<td></td>
</tr>
<tr>
<td>SVC OC INTU .375** .701** .077 .421** FULL</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Mediating effects of operational consistency

Note: IFC=Information consistency; SSC=System consistency; SVC=Service Consistency; OC=Operational consistency; INTU=Intention to use; IV=Independent variable; M=Mediator; DV=Dependent variable. *$p<.05$, **$p<.01$. 

6 DISCUSSIONS AND IMPLICATIONS

6.1 Key Findings and Limitations

This study attempts to examine the role of consistency in the web – mobile service transition. The key findings of the study include: (1) The results show that the impacts of information consistency, system consistency, and service consistency on intention to use were mediated by the operational consistency, suggesting that the inconsistency in the design issues can lead to users’ inconsistency in operations which lead to their non-use of the mobile services. In other words, even if there are inconsistencies in information, system and service, if they do not induce inconsistency in operations, these inconsistencies may not hinder users’ adoption behaviour; (2) The results show that trust in web services can facilitate users’ intention to adopt mobile services but it will weaken the relationship between operational consistency and intention to use. This suggests that when users have a strong trust perceptions about the web services, whether or not the mobile and web services are consistent becomes not so important.

Before discussing the implications of the study, several limitations should be first acknowledged. This study investigates one single mobile service (e.g., mobile eWOM services) in one single culture (e.g., China). Applying the conclusions to other research contexts may be cautioned. Future research on mobile services should pay attention to the distinctions between other mobile services and the mobile eWOM services and consider the potential moderators to advance the research model. Further, in different societies with different culture, the power of perception transfer mechanism may be different. In the collectivistic society where the relationship and collectivism is respected, the perception transfer may be more powerful than in the individualistic society where people behave more independently (Hofstede et al., 2010). This provides an opportunity for future studies to examine the cross-culture issues of perception transfer.

6.2 Theoretical Implications

This study has several implications to the theories on mobile services. First, this study enriches the literature on mobile services by providing a mobile service acceptance model in the context of web – mobile service transition. Previous studies on mobile service adoption treat mobile services as a new technology and innovation and then analyze the mobile service adoption behaviour by using the general technology acceptance theories such as technology acceptance model, innovation diffusion theory, and task – technology fit theory. The phenomenon of service transition has been not recognized and examined for a long time. However, following the rapid development of mobile devices and wireless network, the transition from web services to the mobile services has become a more and more popular issue today. Thus, this study is among the earliest studies to investigate the service transition. The research framework and conclusions can be taken as the basis for future research.

Second, this study advances the theoretical understanding on consistency by providing a typology of consistency and investigating the hierarchy of effects between different types of consistency. Previous studies on consistency just take consistency as an overall concept without identifying the different categories of consistency and their different roles. In this study, we classify the consistency perceptions into the object-based beliefs and the behavioural beliefs and argue the mediating effects of the behavioural beliefs. This study also figures out three dimensions of object-based consistency beliefs namely information consistency, system consistency and service consistency. The classification of the consistency perceptions can provide a framework for future research on the consistency. Distinguishing the object-based and behavioural beliefs also enriches our understanding on the technology acceptance behaviour in general.

Third, this study extends the application scope of the perception transfer theory to the service transition context and advances the theoretical understanding on the roles of initial perception by
figuring out the two opposite mechanisms to explain the moderating role of initial perceptions. The study theoretically reconcile the debates on the valence of the moderating effect of initial perception by proposing the inverted-U moderating effect of initial perception. The study also highlights the conditions under which the moderating effects should be positive or negative. This theorization makes the perception transfer theory and the moderating mechanisms to be used in a much broader context.

6.3 Practical Implications

This study also derive several practical implications. First, the study provides practitioners with a framework to evaluate users’ consistency perceptions. Specifically, when measuring the consistency perceptions, both the object-based beliefs and the behavioural beliefs should be considered. As to the object-based consistency, information, system and service consistency should be taken into account. Second, the study suggests practitioners to think about how to better leverage the initial perception. The practitioners should highlight the consistency between mobile and web services when users’ initial perceptions are positive and reduce the consistency when the initial perceptions are negative.

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Appendix: Measures

**Intention to Use (INTU) (Kim & Han, 2009)**

INTU1. I intend to use mobile Dianping.com in the future.
INTU2. I expect that I would use mobile Dianping.com in the future.
INTU3. I plan to use mobile Dianping.com in the future.

**Trust in Mobile Services (TMS) (McKnight, et al., 2003)**

TMS1. Mobile Dianping.com is truthful in its dealings with me.
TMS2. I would characterize mobile Dianping.com as honest.
TMS3. Mobile Dianping.com is trustworthy.

**Operational Consistency (OC) (Developed)**

OC1: The operations of web and mobile Dianping.com are *very close*.
OC2: Users can operate the web and mobile Dianping.com in *similar* way.
OC3: The operations for the web and mobile Dianping.com are *consistent*.
OC4: There is *no significant difference* between the operations of the web and mobile Dianping.com.

**Information Consistency (IFC) (Developed)**

Please assess the information consistency between the web and mobile Dianping.com:

IFC1: Vendor information
IFC2: Review information
IFC3: User information
IFC4: Community information
IFC5: Discount information
IFC6: Notice information

**System Consistency (SSC) (Developed)**

Please assess the system consistency between the web and mobile Dianping.com:

SSC1: Interface
SSC2: Search
Service Consistency (SVC) (Developed)
Please assess the service consistency between the web and mobile Dianping.com:

- SVC1: Online consulting
- SVC2: User complaint
- SVC3: Conflict solution

References


