The Role of Trust in the Adoption of Mobile Commerce
: Comparison to the Adoption of E-Commerce

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Abstract

Understanding users’ acceptance of the Internet, and particularly, their intentions to use Internet commerce and mobile commerce are important in explaining how these areas of commerce have grown exponentially in recent years. This paper studies new technology factors to better understand and manage electronic commerce activities. The proposed theoretical model explains factors as they relate to the technology acceptance model, suggests that trust and other factors are related, and reveals the importance of the hedonic factor. The study’s results imply that methods of stimulating and facilitating customer participation in mobile commerce should be differentiated from those of Internet commerce.

Keywords: Mobile commerce, Internet commerce, Technology Acceptance Model, Trust

1. Introduction

Computer users have long used the Internet to share data, collaborate on work, and exchange messages, but their usage has grown even more in recent years. Recently, millions of computer users worldwide have begun to use the Internet for online commercial activities [1,2,3]. A wide variety of people now participate in online and mobile commerce, fields that have grown in response to consumer needs for communication, information, and entertainment. A core stream of information system (IS) research involves identifying the determinants of individual user adoption and information technology (IT) usage [2,4,5]. Understanding users’ decision-making processes in IT adoption and usage is an area that has generated great interest in IS research.

The success of Internet commerce and mobile commerce hinges on consumer willingness to adopt new technology and to engage in activities that involve systems and devices that are different from those that they have used in the past. The rapid development of modern wireless and wired communication technologies has promoted the importance of Internet commerce and mobile commerce among consumers, but users’ insufficient acceptance has hindered their successful adoption of new IT. As Internet and mobile applications are rapidly and widely developed for consumers, it is crucial to understand consumer perceptions and adoption of Internet and mobile technologies.

The Internet enables millions of people worldwide to exchange information and conduct business. Keeney [6] suggested that Internet commerce is a function of the customer’s perception of the benefits and costs of both a product and the processes of finding, ordering, and receiving it. Given its ongoing momentum, it seems clear that mobile commerce will continue to gain greater importance in the future [7]. In a turbulent Internet and mobile commerce environment, service providers need to understand how to satisfy customers if they hope to sustain their growth and market share, as customer satisfaction is critical to establishing long-term customer relationships [8]. Companies can maintain customer relationships by understanding customers and determining which factors are crucial to their acceptance of new IT.

The advantages of Internet commerce are its efficiency, convenience, broad selection, low cost, and ability to provide a large amount of information. In comparison, mobile commerce is more useful for consumers with urgent demands but is harder to engage in because of the small devices involved. It is possible to gain insight into the factors affecting the acceptance of mobile commerce-related technology in consumer contexts by examining the applicability of the technology acceptance model (TAM) [9]. Based on the theory of reasoned action, The TAM is a parsimonious model, asserting that all influences of external variables such as system design features on behavior are mediated by usefulness and ease of use. The TAM was originally developed to explain individuals’ adoption of technology in workplace settings. Various versions of the model have been proposed over time, in both
the workplace and consumer contexts [10,11,12]. The key difference between workplace and consumer contexts with respect to the TAM, is that in the latter, the hedonic factor may be an important added aspect of the model [13]. The model in this study aims to examine Internet commerce and mobile commerce adoption from the perspective of the technology user. This study is one of the first to compare the acceptance of Internet commerce and mobile commerce, and its findings provide evidence of the factors involved in customer decision-making processes.

Another purpose of this study is to identify the relationship between trust and other factors and propose a theoretical explanation of the varying effects of trust on IT adoption by differentiating between Internet commerce and mobile commerce.

2. Theoretical background and hypotheses

2.1. Mobile commerce

With the rapid growth of mobile technology, expectations of mobile commerce are increasing. While mobile technology capabilities have continuously expanded in recent years, the nexus between business strategies and the value of mobile technology is not yet fully understood.

Mobile commerce refers to an emerging arena within which commercial transactions are made possible by using handheld mobile devices that are connected through wireless networks. Most scholars consider mobile commerce to be a subset of electronic commerce [14,15,16]. Vrechopoulos [17] explains that mobile commerce provides services and products through mobile networks and devices and is an extension of electronic commerce based on Internet technology.

Despite their connection, in this study, it is necessary to distinguish between mobile commerce and traditional electronic commerce. As such, this study uses “Internet commerce” to refer only to electronic commerce performed using computer devices connected through wired networks.

Based on the above definitions, it could be said that because mobile commerce is an extension of electronic commerce, it has inherited all of the characteristics of traditional electronic commerce and Internet commerce. As such, companies that already use Internet commerce for their business are likely to find that adding a mobile dimension does not require drastic changes in their existing information systems. However, it is important to note that mobile commerce includes not only Internet commerce applications running through mobile devices and wireless networks but also many new applications that have been made possible by user mobility and the unique capabilities of wireless networks.

Two distinct features of mobile commerce are mobility and broad reach [14,15]. Mobility implies portability and allows users to conduct business in real-time in mobile commerce environments, while broad reach refers to the fact that customers and vendors can reach each other at any time via mobile devices. Ubiquity, convenience, localization, and personalization are other characteristics of mobile commerce [18].

Even though mobile commerce is able to provide individuals with abundant flexibility in terms of time and place, real-world customers have often been reluctant to participate in it. The limitations of mobile devices are difficulties that reduce the potential benefits of mobile commerce. For example, mobile commerce customers receive limited or insufficient information as a result of the constraints of mobile terminals [3].

As mobile commerce is regarded as an extension of electronic commerce, both are adopted in similar ways. Therefore, we can apply a prior Internet commerce research model [19] to mobile commerce research. By using the same approach in Internet commerce for mobile commerce, this study analyzes the differences between users’ acceptance of Internet commerce and mobile commerce.

2.2. Trust

Much research has been done on trust in a diverse range of fields such as anthropology, economics, organizational behavior, psychology, and sociology. Despite disciplinary differences, researchers have tried to come to a shared understanding of trust [20].

In an integrated approach, Mayer [21] defines trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to control that other party.” Based on a cross-
disciplinary collection of scholarly writings, Rousseau [22] defines trust as “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.” An important attribute of trust is vulnerability [23,24] because trust always exists in uncertain environments. Trust allows people to take part in risky activities that they cannot monitor and in which they may be disappointed by the actions of others [25]. Trust is crucial in situations such as transactional buyer-seller relationships, and especially in those containing an element of risk, such as interaction with an e-vendor.

Although a variety of disciplines have dealt with the concept of trust, trust in Internet commerce and mobile commerce should be defined in a manner that is specifically based on the Internet environment. In this regard, Doney and Cannon [26] define trust from the business perspective as involving “buyer-seller relationships as the perception by a prospective buyer of credibility and benevolence in the target of trust.” Jarvenpaa and Tractinsky [25] have defined trust in the electronic commerce environment as “a consumer’s willingness to rely on the seller in an online environment and take action in circumstances where such action makes the consumer vulnerable to the seller.”

There are several factors that may lead to risks when people build trust. Relationships of different forms also entail different risks [27], and risks vary with the form of relationships. In addition, risk factors depend on the environments and people involved [28]. Trust is based on the expectation that others will behave as expected, and thus, people are often willing to be vulnerable in spite of risky environments.

Other important aspects of trust are trustee belief [28,29] and how this belief can be obtained. Some antecedents of trust are regarded to be particularly important in this respect. Different streams of research on trust have identified a number of trust antecedents including knowledge-based trust, institution-based trust, calculative-based trust, cognition-based trust, and personality-based trust [19,29]. Since initial relationships have no interaction history, knowledge-based trust does not apply in such cases [23].

The difference between the amount of information possessed by buyers and sellers is referred to as information asymmetry [30]. Information asymmetry may give rise to opportunistic behaviors such as the misrepresentation of product quality, which could lead to buyers’ mistrust or even sellers’ market failure. In Internet and mobile commerce, the inability to inspect a product physically and exclusive reliance on electronic information is a big problem for buyers. In the context of information asymmetry, a customer can be expected to trust an e-vendor more when the customer believes that the e-vendor has more to lose than to gain by cheating or has nothing to gain by breaking customer trust. Calculative trust is deterrence-based in that individuals will not engage in opportunistic behaviors for fear of facing the adverse consequences of being perceived as untrustworthy [31]. Based on this, we devised the following hypotheses:

- **H1a**: Calculative-based beliefs will positively affect trust in Internet commerce.
- **H1b**: Calculative-based beliefs will positively affect trust in mobile commerce.

Cookies, click-stream data trails, and easy-to-implement online surveys have permitted unprecedented tracking of what consumers search for, click on, and ultimately buy [32]. This has also caused customers to hesitate to give out their personal information or buy products. When the risk of identity theft or personal information theft is removed, customers engage in Internet commerce and mobile commerce more freely [33]. Therefore, institution-based structural assurances are particularly important in Internet commerce and mobile commerce. Given this, we developed the following hypotheses:

- **H2a**: Perceptions of structural assurances built into a website will positively affect trust in Internet commerce.
- **H2b**: Perceptions of structural assurances built into a mobile site will positively affect trust in mobile commerce.

Situational normality is an assessment that determines whether a transaction will be successful, based on how normal or customary the situation involved appears to be [34]. People tend to extend greater trust when the nature of an interaction is in accordance with what they consider to be typical and anticipated. In the context of Internet and mobile commerce, when a site represents what customers
expect based on their experience and knowledge of similar sites, customers will be more inclined to trust the e-vendor [19]. Based on this, the following hypotheses can be made:

\textit{H3a: Perceptions of situational normality will positively affect trust in Internet commerce.}
\textit{H3b: Perceptions of situational normality will positively affect trust in mobile commerce.}

Except in the case of auctions, most Internet commerce and mobile commerce do not end with one transaction but instead are continuing processes based on familiarity. In the context of knowledge-based trust, familiarity is an important factor [29]; in the case of one-time transaction processes, familiarity is not important to building trust, and cognition-based trust is needed [19,29]. Familiarity with a trustworthy e-vendor can increase consumer trust. Familiarity increases as the amount of knowledge about an e-vendor accumulates, based on a consumer’s successful previous transactions through the e-vendor’s Internet or mobile site. Based on this, the following hypotheses can be put forward:

\textit{H4a: Familiarity with a trustworthy e-vendor will positively affect trust in Internet commerce.}
\textit{H4b: Familiarity with a trustworthy e-vendor will positively affect trust in mobile commerce.}

In the context of Internet commerce and mobile commerce, where physical examination and inspection of a product is not possible, consumers perceive potential risks. These environments thus have fatal consumer privacy weaknesses and issues involving monetary transactions, product purchase, and merchandise services. Trust helps reduce the social complexity that a consumer faces in Internet commerce and mobile commerce by allowing the consumer to subjectively rule out the undesirable but possible behaviors of an e-vendor. The following hypotheses can be developed based on this:

\textit{H5a: Trust in an e-vendor will positively affect the intended use of Internet commerce.}
\textit{H5b: Trust in an e-vendor will positively affect the intended use of mobile commerce.}

2.3. Technology Acceptance Model (TAM)

The function of trust in Internet commerce and mobile commerce is more complex than in general commerce because the trust relationships exist between three entities: the customer, the vendor, and the Internet site. As the customer and vendor cannot meet face-to-face, they meet only through an Internet or mobile site. Well-designed sites can enable customers to form a good perception of vendors. The success of Internet commerce and mobile commerce thus hinges on consumers’ willingness to adopt new technology and engage in activities using systems and devices that are different from what they have used in the past [35]. This makes it necessary to consider not only trust but also the TAM.

According to the TAM [9], the fundamental determinants of user acceptance are two variables: perceived usefulness (PU) and perceived ease of use (PEOU). People tend to decide to use an application based on whether doing so will help them perform their job better. PU is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” [9]. However, even if potential users believe that a given application is useful, they might believe that the system is too hard to use. PEOU refers to “the degree to which a person believes that using a particular system would be free of effort.” [9] PU has a significantly greater correlation with usage behavior than PEOU does, but PEOU is an antecedent of PU and a direct determinant of system usage.

Although the TAM has been successfully applied to diverse non-organizational settings including the Internet [19], a number of exceptions have been reported in the literature [35,36]. While Davis’ TAM asserts that the PU-usage relationship is stronger than the PEOU-usage relationship, some researchers have found that PEOU is a strong predictor of user acceptance in hedonic contexts [35,37]. Heijden’s research [37], for example, studies differences in user acceptance models for productivity-oriented and pleasure-oriented information systems and asserts that PU loses its dominant value in favor of PEOU in a hedonic information system. Hedonic systems aim to provide self-fulfilling value to the user, in contrast to utilitarian systems, which aim to provide instrumental value to the user. If consumers seek self-fulfilling value or hedonic-oriented products, PEOU will have a greater effect on intended use than PU. Accordingly, the following hypotheses are proposed:
H6a: PU will positively affect the intended use of Internet commerce.
H6b: PU will positively affect the intended use of mobile commerce.
H7a: PEOU will positively affect the intended use of Internet commerce.
H7b: PEOU will positively affect the intended use of mobile commerce.
H8a: PEOU will positively affect the PU of Internet commerce.
H8b: PEOU will positively affect the PU of mobile commerce.

As mobile commerce is similar to Internet commerce, using Gefen’s model integrating trust and the TAM in the e-commerce context, we suggest the following hypotheses, which extend the scope of the commerce environment.

Users will be able to successfully complete Internet commerce and mobile commerce tasks with service providers that can be trusted. Trust establishes the credibility of a service provider in delivering what has been promised. Trust in service providers also builds PU by giving customers subjective assurance that the vendor providing Internet commerce or mobile commerce services can deliver the services as promised [19]. As such, we suggest the following:

H9a: Trust will positively affect PU in Internet commerce.
H9b: Trust will positively affect PU in mobile commerce.

Processes that are explained well and are easy to understand can create trust in business transactions [38]. PEOU also increases trust through the perception of ease of use with regard to Internet and mobile sites. As such, we propose the following:

H10a: PEOU will positively affect trust in Internet commerce.
H10b: PEOU will positively affect trust in mobile commerce.

In some cases, based on existing well-established cognitive patterns, users may perceive Internet and mobile sites to be easy to use and to require less cognitive learning effort. Situational normality can increase PEOU, since consumers’ prior knowledge of how to use a site is directly applicable to their purchasing from a site [19]. As such, we suggest the following:

H11a: Situational normality will positively affect PEOU in Internet commerce.
H11b: Situational normality will positively affect PEOU in mobile commerce.

The more familiar consumers are with a site from prior visits, the more they perceive the site to be easy to use. Familiarity, in terms of an acquired cognitive map of the procedures involved in a situation, provides users with additional tools to solve problems more quickly, with greater ease, and with fewer errors [19]. As such, we propose the following:

![Figure 1. Research model](image-url)
H12a: Familiarity with an e-vendor will positively affect PEOU in Internet commerce.
H12b: Familiarity with an e-vendor will positively affect PEOU in mobile commerce.

Figure 1 depicts the research model, summarizing these hypotheses on Internet commerce and mobile commerce.

3. Methodology

For this study, data were collected from undergraduate students who had experience with Internet commerce and mobile commerce and who were asked to assess ringback tone service vendors from whom they had made a purchase. There are several reasons for our choice to use ringback tone services in our study. First, we had to employ products available through both Internet commerce and mobile commerce, since our research aims to compare the different behavioral intentions of customers in these two forms of commerce. Second, ringback tone services are low-touch items, that is, products that typically require little examination before purchase and, therefore, require less trust in a vendor than in a vendor of other products. Finally, by using hedonic-oriented products, we were able to investigate whether PEOU is a much stronger factor affecting intended use than PU is.

We borrowed Gefen’s [19] questionnaire, extending it to make it applicable to mobile commerce. The same questionnaire was used to facilitate a comparison between Internet commerce and mobile commerce. A five-point Likert scale was used (1 = “strongly disagree” to 5 = “strongly agree”). The TAM scales of PU and PEOU were adapted from Davis’ scales [9]. Intended use relating to specific outcome behaviors is consistent with the approach of Crosby et al. [39]. Trust items were composed to reflect specific consumer beliefs regarding mobile commerce vendor integrity, benevolence, ability, and predictability, as in the previous empirical research on buyer-seller relationships [39]. Calculative-based trust-building items represent consumers’ calculations that a mobile commerce vendor has nothing to gain by being dishonest, uncaring, or unknowledgeable. Familiarity items deal with customer familiarity with an e-vendor. Situational normality items assess whether an interaction is typical of the type of mobile commerce vendor involved. Structural assurance items capture some of the typical steps taken by Internet sites to assure their customers that interactions are safe [19].

The questionnaire used for this study was administered to users who have experience purchasing ringback tones through Internet commerce or mobile commerce. Because the pilot test showed that older respondents tend to use Internet commerce heavily, we decided to obtain survey data on younger individuals, and thus, focused on undergraduate students in Korea.

Questionnaires from respondents who had not purchased ringback tone services or did not answer questions on the topic were discarded, as were questionnaires with other missing values. The final dataset contains 204 responses on Internet commerce and 207 responses on mobile commerce. In terms of age, most Internet commerce respondents were in their early 20s (20: 53%, 21: 17%, other: 30%). Of the total respondents 142 (60%) were men and 82 (40%) were women. Mobile commerce respondents were also typically in their early 20s (20: 50%, 21: 16%, other: 34%). Of them, 119 (57%) were men and 90 (43%) were women. Most respondents preferred Internet commerce (respondents with Internet commerce experience: 96%; respondents with mobile commerce experience: 72%) to mobile commerce (respondents with Internet commerce experience: 5%; respondents with mobile commerce experience: 28%).

4. Analysis and results

We chose the partial least squares (PLS) structural equation analysis to test the hypotheses. PLS employs a component-based approach for estimation purposes and can readily handle formative factors [40]. PLS also places minimal restrictions on sample size and residual distributions [40]. A study by Chin has provided the efficiency and effectiveness of a PLS approach, which is better suited to explaining complex relationships than other methods are [24]. We conducted two-stage analytical procedures. Confirmatory factor analysis was first conducted to assess the measurement model and then employed to evaluate structural relationships.

To validate the measurement model, convergent validity was evaluated by examining composite reliability and average variance extracted (AVE) from the measures. Values for composite reliability
are recommended to exceed 0.70 [40], while AVE values should be greater than the generally recognized cut-off value of 0.50 [41]. All of our composite reliability and AVE values meet the recommended threshold values. Tables 1 and 2 summarize the results.

Discriminant validity indicates the extent to which a given construct is different from other constructs. To evaluate discriminant validity, the AVE can be compared with the square of the correlations among the latent variables [41]. Tables 1 and 2 show that all AVEs are greater than the off-diagonal elements in the corresponding rows and columns, demonstrating discriminant validity. (Square roots of the AVE are the bolded diagonal values in those tables.)

Table 1. Composite reliability, AVE, and correlation of construct values in Internet commerce

<table>
<thead>
<tr>
<th>Composite Reliability</th>
<th>AVE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculative-based trust</td>
<td>0.782</td>
<td>0.557</td>
<td>0.746</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural assurance</td>
<td>0.836</td>
<td>0.600</td>
<td>0.098</td>
<td>0.775</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Situational normality</td>
<td>0.827</td>
<td>0.617</td>
<td>0.186</td>
<td>0.238</td>
<td>0.785</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Familiarity</td>
<td>0.861</td>
<td>0.756</td>
<td>0.045</td>
<td>0.311</td>
<td>0.287</td>
<td>0.869</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>0.825</td>
<td>0.611</td>
<td>0.270</td>
<td>0.563</td>
<td>0.403</td>
<td>0.349</td>
<td>0.782</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td>0.861</td>
<td>0.554</td>
<td>0.212</td>
<td>0.192</td>
<td>0.445</td>
<td>0.498</td>
<td>0.455</td>
<td>0.744</td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>0.878</td>
<td>0.590</td>
<td>0.242</td>
<td>0.230</td>
<td>0.469</td>
<td>0.369</td>
<td>0.519</td>
<td>0.656</td>
<td>0.768</td>
</tr>
<tr>
<td>Intended use</td>
<td>0.846</td>
<td>0.733</td>
<td>0.085</td>
<td>0.096</td>
<td>0.212</td>
<td>0.420</td>
<td>0.207</td>
<td>0.305</td>
<td>0.251</td>
</tr>
</tbody>
</table>

Hypotheses 2, 5, 8, 10, 11, and 12 are supported for both Internet commerce and mobile commerce. However, hypotheses 4 and 6 are not supported for either Internet commerce or mobile commerce. Hypotheses 1, 3, 7, and 9 are supported for Internet commerce but not supported for mobile commerce, implying the need for different strategies according to each context of commerce.

The results of testing the proposed theoretical model and hypotheses with PLS are summarized in Figures 2 and 3.

Hypotheses 2, 5, 8, 10, 11, and 12 are supported for both Internet commerce and mobile commerce. However, hypotheses 4 and 6 are not supported for either Internet commerce or mobile commerce. Hypotheses 1, 3, 7, and 9 are supported for Internet commerce but not supported for mobile commerce, implying the need for different strategies according to each context of commerce.

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![Figure 2. Path coefficients in Internet commerce](image-url)
With regard to factors affecting intended use, such as trust, PU, and PEOU, notable results were found for both Internet and mobile commerce.

First, this study found that trust is an important factor influencing intended use in mobile commerce but not in Internet commerce. Since the ringback tone services chosen for the test involve relatively low purchase risk compared to other merchandise, they are not strongly affected by trust, which explains why our assumptions about Internet commerce are not supported. In addition, Internet-related technology and the Internet market are so mature that trust in one particular service provider’s site has no strong influence on its intended use.

In the mobile commerce environment, wireless Internet access fees for selecting a product vary according to the type of Internet service subscription. Usually, it requires much time to connect to a ringback tone service site and download a tone. Meanwhile, the information provided is very limited because of the characteristics of mobile communication. The possibility of selecting an unsatisfactory ringback tone is increased by the lack of information about the service provider and by unexpected increases in mobile communication costs.

Trust supports user action in circumstances involving risks and uncertainty. Accordingly, as mobile commerce is still in its initial stages, it can be assumed that trust issues affect usage and that the risks involved with a service provider and market environment have major effects that may weaken in more mature stages. In other words, because mobile commerce is still considered to involve a more dangerous environment than Internet commerce, trust is regarded as being of relatively high importance.

Another interesting point is that the hypothesis that PU affects intended use was rejected for both Internet commerce and mobile commerce. Many studies across diverse areas and in various research settings have confirmed that PU is the strongest predictor of user acceptance. However, our results with ringback tone services as hedonic-oriented products reveal that PU is not a stronger determinant of intended use than PEOU is. Since determinants affecting intended use depend on the utilitarian or hedonic nature of a product [37], the test results for hedonic-oriented products support the hypothesis that PEOU affects intended use. The respondents for this study were mostly in their early 20s and tended to be more hedonic. Heijden [37] suggests that hedonic values can play a pivotal role in increasing acceptance of otherwise utilitarian information systems, and that the hedonic nature of an information system can become an important boundary condition affecting the validity of the TAM.

Although our findings show that PEOU has a significant effect on intended use in Internet commerce, this was not the case for mobile commerce. Prior studies have verified that PEOU is an important factor affecting intended use in hedonic contexts, and our results imply that the mobile commerce setting is somewhat more difficult for users than the Internet commerce setting is. This suggests that the use of mobile commerce would increase if the relevant difficulties could be addressed.

4.2. Antecedents of trust

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This study found that the calculative-based antecedent factors of trust affect trust formation in Internet commerce but not in mobile commerce. Calculative-based antecedent factors of trust mean that customers form trust in service providers, expecting that the service providers will not carry out any harmful acts that cause the customers disadvantage rather than advantages [19].

In the Internet environment, there are so many ringback tone service providers competing with one another that subscribing to and canceling services is easy. However, in mobile commerce, since very few ringback tone service providers exist, each of whom is strategically allied to one of the mobile communication companies, once a user is subscribed, canceling a service is not easy. Once customers have chosen a mobile communication company, they have no choice but to use the particular ringback tone service provider that is allied to that mobile communication company. However, because ringback tone service providers are not the same companies as the mobile communication companies, they are not very sensitive to customer behaviors. Therefore, it is possible that these providers could engage in actions that are detrimental to customers, such as by providing low-quality services.

This study’s assumption that the awareness of structural assurances presented at a site has positive effects on the formation of trust in a service provider was supported for both mobile commerce and Internet commerce. The path-coefficients from the results revealed that structural assurances have a great influence on trust formation. Therefore, institution-based structural assurances are crucial factors in both Internet commerce and mobile commerce.

Our assumption that institution-based situational normality affects trust formation was strongly supported for Internet commerce but not for mobile commerce. Since there are various types of ringback tone service sites on the Internet, the ease of comparison among sites and the availability of information about service providers encourage predictable provider behavior. Trust in service providers can thus be formed through institution-based situational normality in Internet commerce. In contrast, in the mobile commerce environment, differences among service providers are not important, comparison is not easy, and information is quite limited. Service provider behaviors may not be predictable based on only institution-based situational normality, making it difficult to build trust in service providers.

Our hypothesis that knowledge-based familiarity with a service provider has positive effects was not supported for either Internet commerce or mobile commerce. Although consumers are well aware of service providers, if they learn of their negative aspects rather than of positive ones, this does not positively affect trust formation.

4.3. Antecedents of PEOU

This study found that institution-based situational normality and knowledge-based familiarity, both of which are regarded as the antecedent factors of PEOU, support both Internet commerce and mobile commerce. Institution-based situational normality and knowledge-based familiarity provide knowledge by means of existing experiences. Users experience ease of use when carrying out transactions that are facilitated by existing knowledge and do not require the learning of new knowledge.

Because PEOU is the most important factor affecting intended use in Internet commerce, vendors need to pay more attention to institution-based situational normality and knowledge-based familiarity to encourage intended use, particularly as they have indirect effects on intended use via PEOU.

4.4. Antecedents of PU

As suggested by the TAM, the effect of PEOU as an antecedent of PU is great in all Internet commerce and mobile commerce conditions. Based on the combination of trust and the TAM, we made the new assumption that trust would affect PU. This was supported only in the Internet commerce environment and not in the mobile commerce environment. The characteristics of the respondents of the survey demonstrate that the majority of people who have experience in mobile commerce prefer to use Internet commerce. In Internet commerce, when trust in a service provider is built through successive transactions, site use increases over the long run. In mobile commerce, however, even when the majority of clients form trust in a service provider, they might move to Internet ringback tone service sites due to their convenience and availability. In the mobile environment, almost no customers have relationships with service provider sites long enough to build trust, which is likely why our assumption was not supported.
Although PEOU is an antecedent of PU, it also appears to be an antecedent of trust, as trust and the TAM were combined. This study’s assumption that PEOU would have positive effects on trust formation was supported in both mobile commerce and Internet commerce environments. In the mobile commerce environment, PEOU appears to have no direct effects on intended use, but since it has indirect effects through trust formation, it could be regarded as a crucial factor in both types of commerce environments.

5. Conclusion

This study analyzed user involvement in Internet commerce and mobile commerce. As mobile commerce is a subset of traditional electronic commerce, this research applied the same approach developed for Internet commerce to mobile commerce. A comparison of the two types of commerce revealed several interesting insights.

First, trust is an important factor affecting intended use in mobile commerce but not in Internet commerce. In the Internet environment, because of technological developments and market maturity, trust in a particular service provider’s site has no strong influence on the intended use of that site. In contrast, mobile commerce is still in its initial stage, and trust in a particular site can thus have a significant influence on the intended use of the site. Therefore, it is important to build trust in mobile sites through structural assurance.

Although according to prior research, PU rather than PEOU is a prominent predictor of user acceptance, the results of this study suggest that PEOU is the strongest predictor of user acceptance in Internet commerce, likely because of the characteristics of hedonic-oriented products and customers. This means that different strategies are needed for Internet and mobile commerce, based on consumer perceptions and adoption of Internet and mobile technologies.

The limitations of mobile devices can also cause users to hesitate to engage in mobile commerce. This suggests that user acceptance of mobile commerce could be increased by focusing on easy-to-use interface design. Given its distinct features, mobility, and broad reach, mobile technology should keep developing easier-to-use and more user-oriented interfaces.

This paper has some limitations. First, samples were gathered only from individuals who were a little bit biased. In most cases, the samples were the individuals in their early 20s, who are regarded as being more hedonic-oriented. Thus, we need to perform similar research with less biased people. Second, we used ringback tone services to test the research model because mobile commerce is still in its initial stage of development and the choice of products is limited. Thus, bias may have crept into the research design because more utilitarian products were not included in the test. Future research should involve a more varied range of products available through mobile commerce and Internet commerce. Third, this study measured behavioral intention instead of actual consumer behavior. Finally, for a more in-depth analysis of consumer perceptions and adoption of Internet and mobile technology, the TAM needs to be modified, as in the cases of the combined technology acceptance model and theory of planned behavior (C-TAM-TPB) [35] and the extended TAM (TAM 2) [36].

This study on Internet commerce and mobile commerce adoption is an initial step toward comparing Internet and mobile commerce acceptance. We hope that its findings encourage further research and more in-depth and extensive analyses of consumer perceptions and adoption of Internet and mobile technologies.

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7. References