The Impact of Transaction Trust on Consumers’ Intentions to Adopt M-Commerce: A Cross-Cultural Investigation

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Abstract

Mobile commerce (M-commerce) has been acknowledged as one of the most representative transaction types driving e-commerce worldwide; however, the potential security threats that keep consumers from M-commerce still confound the M-commerce industry. This research attempts to explore two questions: What are the dimensions of transaction trust that may significantly affect consumers’ intentions to adopt M-commerce, and what are the cultural dimensions that may significantly moderate the impact of transaction trust on consumers’ intentions to adopt M-commerce? A research framework based on the BATE model and Hofstede’s cultural dimensions was established to identify how transaction trust and cultural value affect consumers’ intentions to adopt M-commerce. Results revealed that transaction trust significantly affects consumers’ intentions to adopt M-commerce. However, while uncertainty avoidance moderates the impacts of business trust and security on consumers’ intentions of M-commerce adoption, both individualism/collectivism and long-term/short-term orientation moderate the relationship between security trust and consumers’ intentions of M-commerce adoption.

Introduction

M-Commerce (mobile commerce) for B2B and B2C has emerged and become a universal trend in the real world. This impressive coverage of mobile technology and ongoing growth rates hold great potential for new business opportunities in the area of M-commerce. M-commerce can deal with all the transaction functions, such as mobile banking, mobile entertainment, mobile advertising, and mobile ticketing. However, M-commerce is still at the initial stage and hence requires extensive research in various disciplines.1 Floh and Treiblmaier2 argued that lowering perceived risks associated with online transactions as well as maintaining transaction trust are vital keys to attracting and retaining customers. Kim et al.3 observed that the e-commerce literature has not fully investigated the e-business implications for M-commerce. In addition, as wireless data transmit through many different networks, M-commerce systems tend to encounter higher risks of security and privacy infringement than the traditional e-commerce systems.5 Thus, security should be included in the dimensions of transaction trust.

With a rise of cross-national online transactions, an issue regarding whether cultural differences affect consumers’ intentions to adopt online transactions thus emerges. The underlying motivations for this research mainly lie in exploring the dimensions of transaction trust and cultural value that may affect consumers’ intentions of M-commerce adoption via wireless devices and further assisting the M-commerce industry in serving prospective customers better.

Literature Review

M-commerce

M-commerce is described as the applications of wireless devices and data connection to conduct transactions, which result in the transfer of value in exchange for information, services, or goods (see Nokia Web site). As compared with e-commerce, M-commerce highlights the mobility of its transaction devices, such as PDAs and mobile phones.

Transaction trust

Cardholm5 created the BATE model, which describes a framework for trust in e-business. The BATE model consists of four dimensions: business trust, administrative trust, technical trust, and experience-based trust. Cardholm et al.6 argued that online shoppers dealing with M-commerce...
transactions assign more weights on business trust and experience-based trust than on administrative trust and technical trust of the model. Hence, in this research, business trust and experience-based trust were selected as two dimensions of transaction trust.

Security

Karvonen proposed that 70% of corporate procurement officers expressed that they had no intentions to purchase over the Internet owing to the security concerns. Consumers’ perceptions of security depend on the actual level of security services available for the online transactions.

Dimensions of cultural value

Hofstede proposed five cultural dimensions: power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, and long-term/short-term orientation. Hofstede suggested that the cross-cultural differences in these dimensions represent the national personality.

Impact of transaction trust and cultural value on M-commerce adoption

This research focused on how cultural value moderates the impact of transaction trust on consumers’ intentions to adopt M-commerce. A construct consisting of security and two dimensions of the BATE model was used to examine consumers’ intentions to adopt M-commerce. Furthermore, cultural value may moderate the relationship between M-commerce adoption and transaction trust.

Hypotheses

The dimensions of transaction trust in the BATE model are expected to positively affect consumers’ intentions to adopt M-commerce. As Cardholm et al. indicated, in the BATE model, business trust and experience-based trust are more relevant to M-commerce than are administrative trust and technical trust. A brand with strong business trust and customers’ past experiences in the related online transactions are assumed to have positive impacts on consumers’ intentions to adopt M-commerce. Hence, H1 and H2:

H1: A brand with strong business trust arouses higher consumers’ intentions to adopt M-commerce.

H2: Positive online experiences lead to higher consumers’ intentions to adopt M-commerce.

It is logical to presume that M-commerce vendors equipped with well-developed security mechanisms may enhance consumers’ intentions of M-commerce transactions. That is, security fulfills a role in affecting consumers’ intentions to adopt M-commerce, which leads to H3:

H3: Higher security in M-commerce leads to higher consumers’ intentions to adopt M-commerce.

This research also examines how cultural value moderates the impact of transaction trust on consumers’ intentions to adopt M-commerce. Cardholm et al. argued that uncertainty avoidance and individualism/collectivism significantly affect transaction trust in consumers’ intentions to adopt M-commerce. Hence, H4:

H4: Uncertainty avoidance moderates transaction trust in consumers’ intentions of M-commerce adoption.

Due to higher risk perception, consumers with high uncertainty avoidance tend to trust more in the well-known M-commerce vendors as compared with those with low uncertainty avoidance. H4a is thus proposed:

H4a: Consumers with high uncertainty avoidance exhibit higher business trust in the intentions to adopt M-commerce than do those with low uncertainty avoidance.

Consumers with high uncertainty avoidance are reluctant to tolerate potential transaction risks and thus tend to evaluate the M-commerce transaction security on the basis of the current security mechanisms. Therefore, H4c is addressed:

H4c: Consumers with high uncertainty avoidance exhibit higher reliance on security in the intentions to adopt M-commerce than do those with low uncertainty avoidance.

As Cardholm indicated, individualism/collectivism can affect transaction trust in consumers’ intentions to adopt M-commerce. Hence, H5:

H5: Individualistic/collectivist culture moderates transaction trust in consumers’ intentions to adopt M-commerce.

One implication of individualistic culture is to attach importance to objectivity rather than compromise or concession. An online brand or an online vendor with a positive image represents objective judgments from the public and thus is more acceptable by people from individualistic cultures. H5a is thus established:

H5a: Consumers from individualistic cultures exhibit higher business trust in the intentions to adopt M-commerce than do those from collectivist cultures.

Individualistic culture is characterized by the self-confidence and egotism. Hence, personal experiences in online transactions are assigned more weights than external factors by consumers from individualistic cultures. For individualistic consumers, the more positive their online experiences, the higher their trust in M-commerce. H5b is thus established:

H5b: Consumers from individualistic cultures exhibit higher experience-based trust in the intentions to adopt M-commerce than those from collectivist cultures.
Consumers from individualistic cultures tend to regard security as an objective criterion to assess how safe the M-commerce may be and rely on the security mechanisms offered by the M-commerce providers to determine their intentions of the M-commerce adoption. Hence, H5c:

H5c: Consumers from individualistic cultures exhibit higher reliance on security in the intentions to adopt M-commerce than do those from collectivist cultures.

Hofstede argued that the long-term orientation culture tends to persist and preserve and is reluctant to adapt to new circumstances. Hence, long-term/short-term orientation culture can moderate the relationship between transaction trust and M-commerce, leading to H6:

H6: Long-term/short-term orientation culture moderates transaction trust in consumers’ intentions to adopt M-commerce.

Due to the innate nature of resistance in the new technology, consumers of the long-term orientation culture tend to have lower business trust in M-commerce than do those of the short-term orientation, regardless of the reputation of the M-commerce service providers. Hence, H6a:

H6a: Consumers of the long-term orientation culture exhibit lower business trust in the intentions to adopt M-commerce than do those of the short-term orientation culture.

Consumers of the long-term orientation culture view M-commerce as a new technology and thus are suspicious of the applicability of their past experiences in online transactions to M-commerce. Hence, H6b is established:

H6b: Consumers of the long-term orientation culture exhibit lower experience-based trust in the intentions to adopt M-commerce than do those of the short-term orientation culture.

Even if a security mechanism is in place, consumers of the long-term orientation culture appear to disbelieve the effectiveness of security mechanisms of M-commerce providers and thus assign fewer weights in security mechanism for the intentions of M-commerce adoption. H6c is thus addressed:

H6c: Consumers of the long-term orientation culture exhibit lower reliance on security in the intentions to adopt M-commerce than do those of the short-term orientation culture.

Methodology

Instrument development and sample selection

In this study, question items for transaction trust,12–14 cultural value,13,15 and consumers’ intentions to adopt M-commerce16 were adapted from prior studies. Due to heterogeneous cultural characteristics and homogeneous e-business advancement, Australia and Taiwan were selected to examine their consumers’ intentions to adopt M-commerce. Two hundred fifty college students from universities of eastern Australia and northern Taiwan joined this survey; 112 questionnaires were returned with no missing data.

Factor analysis

The results indicated that there are eight factors with Eigenvalues greater than 1. These factors explained 69.75% of the total variance. Specifically, security, well-known and service, experience, and reputation are under the construct “transaction trust.” Dependence, trust, and new technology are under the construct “cultural value,” while intention is under the construct “intentions to adopt M-commerce.”

Regression equations

This research established seven multiple regression equations to represent the correlation of each variable:

Equation 1: \( Y = b_0 + b_1X_1 + e_1 \) (for H1)

Equation 2: \( Y = b_0 + b_2X_2 + e_2 \) (for H2)

Equation 3: \( Y = b_0 + b_3X_3 + e_3 \) (for H3)

Equation 4: \( Y = b_0 + b_4X_4 + b_5X_4 + b_6X_4 + e_4 \) (for collinearity diagnostics for \( X_1, X_2 \) and \( X_3 \))

Equation 5: \( Y = b_0 + b_4X_4 + b_5X_4 + b_6X_4 + e_6 \) (for H4a, H4b, H4c)

Equation 6: \( Y = b_0 + b_1X_1Z_1 + b_1X_2Z_1 + b_3X_3Z_1 + e_7 \) (for H6a, H6b, H6c)

where transaction trust = \( X \), culture value = \( Z \), intention to adopt M-commerce = \( Y \), business trust = \( X_1 \), experience-based trust = \( X_2 \), security = \( X_3 \), uncertainty avoidance = \( Z_1 \), individualism/collectivism = \( Z_2 \), long-term/short-term orientation = \( Z_3 \).

Hypothesis Tests and Results

A multiple linear regression analysis was administered to test the hypotheses. Transaction trust (business trust, experience-based trust, and security) served as an independent variable, and intentions to adopt M-commerce served as a dependent variable in the regression. In addition, cultural value (uncertainty avoidance, individualism/collectivism, and long-term/short-term orientation) was treated as a moderator. Table 1 shows the results of the regressions.

H1 test results indicated that business trust positively affects consumers’ intentions to adopt M-commerce (\( b_1 = 0.89, t = 20.04, p < 0.001 \)). Hence, H1 is supported.

H2 test results showed experience-based trust positively affects consumers’ intentions to adopt M-commerce (\( b_2 = 0.84, t = 16.32, p < 0.001 \)). Hence, H2 is supported.

H3 test results showed security has a positive effect on consumers’ intentions to adopt M-commerce (\( b_3 = 0.91, t = 23.68, p < 0.001 \)). Hence, H3 is supported.

For the tests of H4a, H4b, and H4c, equation 4 indicated that consumers’ intentions to adopt M-commerce are significantly affected by business trust, experience-based trust, and security simultaneously (\( b_4 = 0.34, t = 5.29, p < 0.001 \); \( b_5 = 0.14, t = 2.34, p < 0.05 \); \( b_6 = 0.52, t = 8.31, p < 0.001 \); see Table 1). However, the regression outcomes of equation 5 demonstrated that after considering the moderating effect of uncertainty avoidance, business trust (\( b_4 = 0.44, t = 3.4, p < 0.05 \)) and security (\( b_6 = 0.47, t = 3.81, p < 0.001 \)) were posi-
tively and significantly affected, while experience-based trust was not affected ($p > 0.05$; see Table 1). Hence, H4a and H4c are supported, but H4b is not supported.

For the tests of H5a, H5b, and H5c, the regression outcomes of equation 6 demonstrated that after considering the moderating effect of individualism/collectivism, while security was significantly affected ($b_{12} = 0.75, t = 5.32, p < 0.001$; see Table 1), business trust and experience-based trust were not differentially affected ($p > 0.05$). Hence, H5a and H5b are not supported, but H5c is supported.

For the tests of H6a, H6b, and H6c, equation 7 implied that after considering the moderating effect of long-term/short-term orientation, only security was significantly affected ($b_{15} = 0.82, t = 5.26, p < 0.001$; see Table 1), as compared with not differentially affected business trust and experience-based trust ($p > 0.05$). Hence, H6a and H6b are not supported, but H6c is supported.

**Discussion**

Support of H4c, H5c, and H6c implied that the impact of security trust on consumers’ intentions of M-commerce adoption was significantly moderated by uncertainty avoidance, individualism/collectivism, and long-term/short-term orientation. In sharp contrast, while business trust was affected by uncertainty avoidance, no cultural dimensions significantly were proved to affect the experience-based trust. Those facts seem somewhat inconsistent with the argument of Hofstede. The incomplete cultural effects might be ascribed to several causes, as follows.

**Uncertainty avoidance**

Consumers with high uncertainty avoidance tend to have higher intentions to transact with a famous M-commerce vendor with a positive image. The potential risks of privacy

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### Table 1. Results of Standardized Multiple Linear Regressions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Eq. 1</th>
<th>Eq. 2</th>
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<td>$X_1$</td>
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<td>0.338</td>
<td>0.841</td>
<td>0.143</td>
<td>0.914</td>
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<td>(20.037)</td>
<td>(5.294)</td>
<td>(16.319)</td>
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<td>(1.335)</td>
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*Figures for each corresponding variable are standardized coefficients ($\beta$), $t$ value, and $p$ value in sequence. $^{*}p = 0.05$. 

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infringement or financial losses may be reduced by the well-designed security mechanisms of the M-commerce service providers, which subsequently enhance consumers’ intentions to adopt M-commerce. Moreover, past online experiences does not differentially affect the intentions of consumers with high uncertainty avoidance to adopt M-commerce, implying that past experiences in e-commerce are not identical to M-commerce for these consumers. Those notions provide probable grounds for the results of H4a, H4b, and H4c.

**Individualism/collectivism**

Consumers from individualistic cultures tend to exhibit more personal opinions and thus may be attracted by either famous or unknown brands. Moreover, their past online experiences represent no guarantees for M-commerce. Hence, collectivist consumers’ intentions of M-commerce adoption appear to be subjectively rather than objectively (i.e., security mechanism) affected, as compared with the individualistic consumers. Those notions provide probable grounds for the results of H5a, H5b, and H5c.

**Long-term/short-term orientation**

Past online experiences may be inapplicable to M-commerce for consumers of both long-term and short-term orientations. Hence, consumers of the long-term orientation do not exhibit differentially lower business trust and experience-based trust in the intentions of M-commerce adoption than those of the short-term orientation. According to Hofstede, however, consumers of the long-term orientation culture tend to resist the new technology and thus have lower security trust. Those notions provide probable grounds for the results of H6a, H6b, and H6c.

In summary, all dimensions of transaction trust affect consumers’ intentions to adopt M-commerce (support of H1, H2, and H3). Furthermore, different dimensions of cultural value were found to significantly moderate different dimensions of transaction trust in consumers’ intentions to adopt M-commerce. These findings concluded that a higher business trust, a higher experience-based trust, or a higher security trust leads to higher consumers’ intentions to adopt M-commerce. In contrast, the moderating effects of cultural values can be explored in the following observations. First, uncertainty avoidance significantly moderates the impacts of business trust and security on consumers’ intentions to adopt M-commerce. Second, individualism/collectivism significantly moderates the relationship between security and consumers’ intentions of M-commerce adoption. Third, long-term/short-term orientation significantly moderates the impact of security on consumers’ intentions to adopt M-commerce.

**Disclosure Statement**

The author has no conflict of interest.

**References**


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