

9TH IADIS INTERNATIONAL CONFERENCE INFORMATION SYSTEMS 2016

VILAMOURA, ALGARVE, PORTUGAL

9 - 11 APRIL

PROCEEDINGS

EDITED BY:
MIGUEL BAPTISTA NUNES
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PHILIP POWELL



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international association for development of the information society

**9th IADIS INTERNATIONAL CONFERENCE
INFORMATION SYSTEMS 2016**

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Organised by



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FOREWORD

These proceedings contain the papers of the 9th IADIS International Conference Information Systems 2016, which was organised by the International Association for Development of the Information Society in Vilamoura, Algarve, Portugal, 9 - 11 April 2016.

The IADIS Information Systems Conference 2016 aims to provide a forum for the discussion of IS taking a socio-technological perspective. It aims to address the issues related to design, development and use of IS in organisations from a socio-technological perspective, as well as to discuss IS professional practice, research and teaching. A set of key areas has been identified. However, these do not aim at being prescriptive, or set in stone, and any innovative contributions that do not fit into these areas have also been considered.

The following main tracks have been object of paper submissions:

- IS in Practice, Technology Infrastructures and Organisational Processes
- IS Design, Development and Management Issues and Methodologies
- IS Professional Issues
- IS Research
- IS Learning and Teaching

The IADIS Information Systems Conference 2016 had 85 submissions from 17 countries. Each submission has been anonymously reviewed by an average of 4 independent reviewers, to ensure the final high standard of the accepted submissions. Out of the papers submitted, 14 got blind referee ratings that published them as full papers, which means that the acceptance rate was 16%. Some other submissions were published as short papers and a doctoral consortium. Extended versions of the best papers will be selected to be published in a special issue of the Journal of Electronic Commerce in Organizations (JECO) journal (ISSN: 1539-2937) and also in the IADIS Journal on Computer Science and Information Systems (ISSN: 1646-3692) indexed by Emerging Sources Citation Index by Thomson Reuters.

The conference, besides the presentation of full papers, short papers and doctoral consortium also includes a keynote presentation and a tutorial from internationally distinguished researchers. We wish to thank Professor Kevin Grant, Kent Business School, University of Kent, UK, for accepting our invitation as keynote speaker and Professor Paul Nieuwenhuysen, Vrije Universiteit Brussel, Belgium, for his tutorial presentation.

The conference will also include a panel entitled "Challenges and Opportunities in Information Systems" with Profs. Philip Powell, Miguel Baptista Nunes, Pedro Isaías and Kevin Grant.

As we all know, a conference requires the effort of many individuals. We would like to thank all members of the Program Committee for their hard work in reviewing and selecting the papers that appear in the book of the proceedings.

Last but not the least, we hope that everybody will have a good time in Vilamoura, Algarve and we invite all participants for the next year edition of the IADIS International Conference of Information Systems 2017.

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CULTURE AND E-COMMERCE ACCEPTANCE IN INDONESIA

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ABSTRACT

The purpose of this research was to examine the impacts of Indonesia national culture in the consumer e-commerce acceptance. Based on Hofstede's cultural dimensions, this research investigates the moderating effect of power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation. The Partial Least Square (PLS) method was employed to analyze the model. Involving 172 respondents through online and direct survey, this study found that all variables of national culture except masculinity and long-term orientation moderate e-commerce acceptance in Indonesia. The research contributes to the theory as well as to the practice. The discussion on the implications for theory and practice are included in the paper.

KEYWORDS

e-commerce, national culture, acceptance, Indonesia

1. INTRODUCTION

E-commerce refers to the business type, which enables a company or individual to conduct business through electronic network, especially Internet. E-commerce has allowed companies to establish a market presence, or to enhance its current market position, by providing a cheaper and more efficient distribution chain for their products or services. Nowadays, almost any product or service can be offered via e-commerce, from hotels, banks, and financial services to accessories, books, and songs. The phenomenon of e-commerce, hence, has been one of the fruitful topics for many researchers.

Despite the numbers of research in e-commerce, only few studies have focused on the effects of culture on e-commerce acceptance. Previous studies show that behaviour in e-commerce different from one country to another (Goethals, Carugati, and Leclercq 2008; Yoon 2009). Therefore the main objective of this research was to explore the impact of national culture in the e-commerce consumer acceptance. In doing so, current study examined e-commerce consumer acceptance by examining model of Gefen, Karahanna, and Straub (2003) in Indonesia and using Hofstede's cultural values as moderating variables in the model.

Table 1. E-Commerce Buyer Penetration Worldwide, by Region (% of internet users)

Region	2013	2014	2015	2016
North America	72.0%	73.6%	74.9%	76.3%
Western Europe	64.0%	65.2%	66.3%	76.3%
Asia-Pacific	42.1%	44.1%	46.8%	48.9%
Central & Eastern Europe	41.6%	43.4%	44.3%	44.4%
Middle East & Africa	31.3%	33.1%	34.0%	35.0%
Latin America	28.2%	29.9%	30.9%	31.8%
Worldwide	41.3%	42.7%	44.3%	45.4%

Source: (eMarketer 2014)

2. THEORETICAL FRAMEWORK

2.1 e-Commerce Customer Acceptance

Derived from the Theory of Reasoned Action (TRA) (Ajzen and Fishbein 1980), Technology Acceptance Model has been validated and modified many times and therefore is one of the robust model. The model posits that Perceived Ease of Use (PeoU) and Perceived Usefulness (PU) determine user intention and technology usage behaviour (Davis 1989).

However, this research modifies the model by incorporating Trust in the model. Trust is vital since the nature of e-commerce where the sellers and buyers do not really meet face to face. Anxiety about security, trust of the vendor and privacy influence the willingness of the customers to involve in e-commerce (Gefen 2000; McKnight and Chervany 2002; Doney and Cannon 1997; Pavlou 2003). Gefen, Karahanna, and Straub (2003) argue that intention to use online shopping were determined by the assessment of the system by the customers and trust in the online shopping. They found that PEOU and PU along with Trust were the antecedents of e-commerce acceptance. Hence, we employ the integrated model of trust as the foundation model of this research.

2.2 National Culture Dimensions

Study by Hofstede (1984) on cultural dimensions provides a theoretical foundation for exploring the impact of cultural dimensions on the acceptance of IT-based innovations such as e-commerce. Culture can be defined as the mind's collective programming that is then differentiating members of a group of society from those of another (Hofstede 1983). Hofstede describes five dimensions to identify national cultures; they are power distance (PDI), individualism (IDV), masculinity (MAS), uncertainty avoidance (UAI), and long-term orientation (LTO). Table 2 presents the dimensions along with a brief description of each.

Table 2. Hofstede's Cultural Dimensions

Dimensions	Abbrv.	Description
Power distance	PDI	Degree of inequality among members which the society considers normal
Individualism	IDV	Degree of preference for an independence social framework
Masculinity	MAS	Degree of preference for achievement, heroism and assertiveness
Uncertainty avoidance	UAI	Degree to which the individuals in the society feel comfortable with uncertainty
Long-term orientation	LTO	Degree of orientation towards future rewards

2.3 Impacts of Cultural Dimensions on e-Commerce Acceptance

Culture shapes customers' point of view toward him/herself and toward the other, and therefore influences attitude. Suh and Kwon (2002) argue that customers with different culture have different attitudes, preferences and values. The differences cause them reluctant to buy foreign products although we are in globalization era. Previous research in the impact of culture on IT acceptance provides useful insight. Yoon (2009) found that national values affect customers' acceptance in China, while Capece et al. (2013) also found similar results in Italia, and Wahlberg (2015) in Sweden. Furthermore, Straub, Keil, and Brenner (1997) concluded that different culture accept technology differently. A study by Goethals, Carugati, and Leclercq (2008) provides an evidence that e-commerce behavior is different even in two culturally similar countries.

3. RESEARCH MODEL AND HYPOTHESES

To fulfill the research objective, this study incorporates Hofstede's cultural dimensions of PDI, IDV, MAS, UAI, and LTO as moderators in a technology acceptance model. Figure 1 summarizes hypotheses in the current research.

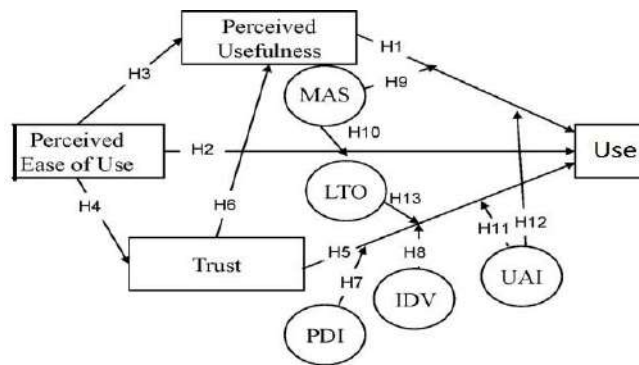


Figure 1. Research Model and Hypotheses

3.1 e-Commerce Acceptance Model

Based on Gefen, Karahanna, and Straub (2003), we propose these following hypotheses for e-commerce acceptance:

- Hypothesis 1.** *Perceived Usefulness (PU) has a positive impact on e-Commerce Use.*
- Hypothesis 2.** *Perceived Ease of Use (PEoU) has a positive impact on e-Commerce Use.*
- Hypothesis 3.** *Perceived Ease of Use (PEoU) has a positive impact on Perceived Usefulness (PU).*
- Hypothesis 4.** *Perceived Ease of Use (PEoU) has a positive impact on Trust.*
- Hypothesis 5.** *Trust has a positive impact on e-Commerce Use.*
- Hypothesis 6.** *Trust has a positive impact on Perceived Usefulness (PU).*

3.2 Power Distance

Power distance, refers to the acceptance by the individuals in the society toward power. Individuals in Large Power Distance societies accept a hierarchical order in which all of the society members has a place and further justification is not required. Contrary, individuals in Small Power Distance (low PDI) societies try to find power equalization and require justification for power inequalities. In a small power distance, customers believe that companies will be less likely to behave unethically than customers in Large Power Distance (high PDI) (Straub, Keil, and Brenner 1997). Hence, customers in high PDI society have less trust toward e-commerce than do customers from low PDI.

Hypothesis 7. *The higher the degree of Power Distance (PDI), the lower the effect of Trust on e-Commerce Use.*

3.3 Individualism

Individualism is a preference for an independent social framework, whereas Collectivism is a preference for a tightly knit social framework. Collectivistic society tend to emphasize on strong relationships and interdependence, therefore they are sensitive to boundaries (Triandis, Bontempo, and Villareal 1988). Trust is more important in a collectivistic society, and they are less likely to trust individuals from outside their group. In other words, an individualistic society may have more trust toward e-commerce than a collectivistic.

Hypothesis 8. *The higher degree of Individualism (IDV), the higher the effect of Trust on e-Commerce Use.*

3.4 Masculinity

Because Perceived Usefulness (PU) is strongly related to achievement of task goals (Srite and Karahanna 2006), thus the higher the degree of Masculinity (MAS), the higher the effect of PU on IT adoption. On the other hand, because high Perceived Ease of Use (PEoU) is related with less frustrating work, while the Feminine values concern on quality of work life, hence the lower the degree of MAS, the higher the effect of PEoU on IT adoption. Based on those propositions, we propose the following hypotheses:

Hypothesis 9. *The higher degree of Masculinity (MAS), the higher the effect of Perceived Usefulness (PU) on e-Commerce Use.*

Hypothesis 10. *The higher degree of Masculinity (MAS), the lower the effect of Perceived Ease of Use (PEoU) on e-Commerce Use.*

3.5 Uncertainty Avoidance

Innovation, by its nature, is associated with greater risks and uncertainty (Kirton 1976). Technological innovations, such as e-commerce, will be accepted if the benefits earned by its users exceed the risks or costs (Ellen, Bearden, and Sharma 1991). However, members of societies with high uncertainty avoidance tend to feel threatened by ambiguity, risky and uncertain situations. Trust, hence, would be likely to have less effect on members of society on a high UAI values.

Hypothesis 11. *The higher the degree of Uncertainty Avoidance (UAI), the lower the effect of Trust on e-Commerce Use.*

UAI has been referred as a determinant of IT adoption (Straub, Keil, and Brenner 1997). Societies with low UAI are tolerant with innovation. They are willing to try out new technologies. Furthermore, Png, Tan, and Wee (2006) posit that the higher UAI culture, the less likely to adopt IT.

Hypothesis 12. *The higher the degree of Uncertainty Avoidance (UAI), the lower the effect of Perceived Usefulness on e-Commerce Use.*

3.6 Long-term Orientation

Along with Trust, which is closely related to risk of uncertainty, people with high Long-term Orientation (LTO) values believe in secure future rewards. Although future rewards are contingent assets which is not yet certain. People with high LTO values, hence have a strong beliefs that let them to take risk.

Hypothesis 13. *The higher degree of Long-term Orientation (LTO), the higher the effect of Trust on e-Commerce Use.*

4. RESEARCH METHOD

This research involved 172 valid questionnaires of e-commerce users in Indonesia. The respondents for this study are those who have experience in using online e-commerce transaction. The questionnaires are directly distributed as well as through online survey. Among respondents, 62 are males and 110 are females. In term of age, most of the respondents (91.3%) are below 20 years old, and 77.9% of the respondents are university students. More than 95% respondents have more than 3 years experience in using e-commerce transactions. More detail descriptive statistics of the respondents are presented in Table 3.

Measurements in the questionnaire for PU, PEoU, Trust and e-Commerce Use are based on the studies by Gefen (2000); Gefen, Karahanna, and Straub (2003); Pavlou (2003), while for the cultural dimensions of PDI, IDV, UAI, MAS, and LTO are based on research by Hofstede (1983, 2009); Srite and Karahanna (2006). Using a Likert score, the questionnaire is ranging from 1 (strongly disagree) to 6 (strongly agree). Smart PLS was applied to analyze the questionnaires.

Table 3. Descriptive Statistics of Respondents

Measure	Characteristics	Frequency	Percentage
Gender	Male	62	36%
	Female	110	64%
Age	Below 20	15	8.7%
	Over 20	157	91.3%
Occupation	University students	134	77.9%
	Highschool students	2	1.2%
	Civil servants	4	2.3%
	Entrepreneurs	10	5.8%
	Others	22	12.8%
e-Commerce experience	More than 3 years	8	4.7%
	Less than 3 years	164	95.3%

5. RESULTS

Two-step procedures were undertaken in the PLS analysis: measurement model assessment and structural model assessment. The following sections present the results of each assessment:

5.1 Measurement Model Assessment

The assessment was undertaken to ensure the reliability and validity of the measurements, by examining three indicators: (1) item reliability, (2) internal consistency, and (3) discriminant validity. The minimum value for the item loading was 0.6, as suggested by Gefen, Straub, and Boudreau (2000), while the threshold for average variance extracted (AVE) was 0.50 (Fornell and Larcker 1981; Hair, Ringle, and Sarstedt 2011). In terms of internal consistency, Bagozzi and Yi (1988) and Chin (1998) suggested that all variables should exceed 0.6. Based on those criteria, the results demonstrate that the measurement model was sufficient. Furthermore, results of Discriminant Validity and Cross-loading Analysis show that the items in the questionnaire are valid.

5.2 Structural Model Assessments

The assessment of structural model was divided into two categories, main effects and interaction model. The main effects examination was carried out to test the relationships among main variables (PU, PEOU, Trust and e-Commerce Use). While the assessment of interaction model was undertaken to test the moderation effect of cultural dimensions (PDI, IDV, MAS, UAI, and LTO) on the main variables. Table 7 presents the results of both assessments.

From the results of main effects assessment, we can come to a conclusion that all relationships are significant because *t-values* exceed *T-table* (significance level of 0.05), hence the hypotheses 1 until hypothesis 6 are statistically proven. Furthermore, in order to examine the moderation effects of cultural dimensions on the main variables, this research analyzed interaction effect as suggested by Chin, Malcolin, and Newsted (2003). By applying PLS, we follow a hierarchical process.

Table 4. Results of structural model assessment

Hipotesis	Path	Path Coefficient	t value	R ²
Assessment of Main Effects				
H1	PU → Use	0.216	2.100*	0.593
H2	PEoU → Use	0.295	3.644*	
H3	PEoU → PU	0.431	4.432*	0.365
H4	PEoU → Trust	0.358	3.849*	0.128
H5	Trust → Use	0.200	2.210*	
H6	Trust → PU	0.296	2.843*	
Assessment of Interaction Model				
H7	Trust → Use	0.382	3.216*	
	PDI → Use	0.587	5.592*	
	Trust*PDI → Use	-0.324	2.584*	0.366
H8	Trust → Use	0.297	1.709*	
	IDV → Use	-0.344	1.828*	
	Trust*IDV → Use	0.627	4.748*	0.306
H9	PU → Use	0.106	0.808	
	MAS → Use	0.293	2.696*	
	PU*MAS → Use	0.450	2.745*	0.530
H10	PEoU → Use	0.287	1.424	
	MAS → Use	0.501	3.498*	
	PEoU*MAS → Use	0.029	0.111	0.453
H11	Trust → Use	0.580	6.598*	
	UAI → Use	-0.395	4.223*	
	Trust*UAI → Use	0.514	4.933*	0.445
H12	PU → Use	0.574	6.985*	
	UAI → Use	-0.333	4.009*	
	PU*UAI → Use	0.401	4.501*	0.474
H13	Trust → Use	0.168	0.840	
	LTO → Use	0.333	1.678*	
	Trust*LTO → Use	0.216	0.727	0.337

*significant at the 0.05 level

Totally, 14 structural models from 7 hypotheses (H7-H13) were examined and the results are shown in Table 4. The moderation effects in the table are indicated by the last line of each calculation in each hypothesis. We found that H7, H8, H9, H11, and H12 have been proven statistically significant. Based on the results, we concluded that those relations are quasi moderating effects, since the direct effects of the cultural dimensions on e-commerce use are significant as well. None of the moderators is pure moderator in the interaction.

However, the interaction effects of PEoU x MAS and Trust x LTO have insignificant effects on e-Commerce Use. Thus, H10 and H13 are rejected. But the t-value and path coefficient in the main effects model indicated that MAS and LTO both have significant effects on e-Commerce Use directly at the level of 0.05. Hence, we suggest that MAS and LTO are not moderator variables but an antecedent of e-Commerce Use.

6. DISCUSSION, IMPLICATIONS AND CONTRIBUTIONS

Based on this research, which involved 172 e-commerce users in Indonesia, we found that dimension of Uncertainty Avoidance is the most influential cultural dimension impacting consumer e-commerce acceptance. The dimension moderates the relationships between Perceived Usefulness on e-Commerce Use as well as between Trust on e-Commerce Use. The moderating effect on Trust on e-Commerce Use is the strongest, though.

Value of uncertainty avoidance closely relates to the attitude toward innovations. As e-commerce is one of the innovations in the digital era, different individual may have different attitude toward it. The attitude is determined by personal values, including cultural values (Doney and Cannon 1997).

The findings indicate that in Indonesia where the people tend to avoid uncertainty, building trust is fundamental. Trust is an essential factor for innovations acceptance (Warkentin et al. 2002). Without trust, people reluctant to use new technologies. To build trust, companies and e-commerce developers as the service providers as well as government as the regulators have an important role. Companies and e-commerce developers should provide secure systems which guarantee to proper use and protection of personal data of the users. Government on the other hand, has a role to enact laws in protecting customers. Both parties can work together to educate people and make them knowledgeable about new technologies.

This research generates insight in the relationship between variables of Perceived Ease of Use and e-Commerce Use, which is proven to be the most significant. When companies are dealing with customers who have various background and knowledge about new technology, developing user-friendly system is substantial. The system should be easy to use and provide a clear steps of transaction, so that the customers can maintain their expectation.

Contrary to the propositions, Masculinity does not have a moderating effect of the relationship between Perceived Ease of Use and e-Commerce Use. The result and also the characteristics of respondents which is dominated by female customers are surprising facts. One possible explanation for the results is that because this research is about shopping, which is closely associated with women. The result that Long-term Orientation has no mediating role on the relationship between Trust and e-Commerce Use is also unexpected.

This study contributes to the research on technology acceptance in general, and especially in the developing countries. The results showed that national culture affects e-commerce customers' acceptance. The findings of this research also contribute to the practice: companies, e-commerce developers and government as discussed in the earlier section.

7. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This research was conducted by involving respondents through direct distribution of questionnaire as well as through online survey. Direct survey mostly involved university students. This might have affected the external validity of the results. Therefore in the future research which involving respondents with more various background is needed. The determinant coefficient in the research was low, which indicates that the research model can be improved in the future by incorporating other variables. Future research might apply other relevant theories to improve the model.

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