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The influence of infrastructural trust on electronic commerce development in Indonesia

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Keywords
Influence, Infrastructural, Trust, Electronic, Commerce, Development, Indonesia

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The Influence of Infrastructural Trust on Electronic Commerce Development in Indonesia

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Abstract
The advent of E-commerce opens an opportunity for fostering an environment that promotes the globalisation of markets throughout the world, especially those in developing countries like Indonesia. The importance of trust as a key facilitator of E-commerce is increasingly being recognized in academic and practitioner communities. However, empirical research in this area has been overwhelmed by contradictory conceptions of the trust construct, while inadequate attention is paid to the influence of trust constructs on E-commerce development in different cultural environments and settings. It is, therefore, the aim of this paper to address the gap by providing an exploratory study on the influence of trust to E-commerce development in Indonesia. A series of paired sample t-tests were carried out to determine whether there was any significant difference between levels of confidence (or any significant difference in the expected problems) between Indonesian and non-Indonesian websites.

Keywords
Electronic commerce, Trust, Developing Countries.

INTRODUCTION
Electronic commerce (E-commerce), as one of the most expeditious achievements in Information Technology, is causing fundamental changes in way business is conducted. The rapid growth of E-commerce signals the advantages that E-commerce may offer to businesses. These advantages include diffusion of information, development of new technologies, the promotion and sales of products and services, and collaboration between those in a supply chain (Plant, 2000). E-commerce also opens an opportunity in fostering an environment that promotes the globalisation of markets throughout the world, especially those in developing countries like Indonesia.

The importance of trust as a key facilitator of E-commerce is increasingly being recognized in academic and practitioner communities. In E-commerce transactions, the consumers’ perception of the business legitimacy and trustworthiness are critical, since transferring trust from the physical world to the electronic version is a process that requires an adequate trust infrastructure (Gritzalis and Gritzalis, 2001). However, empirical research in this area has been overwhelmed by contradictory conceptions of the trust construct, while inadequate attention is paid to the influence of trust construct on E-commerce development in different cultural environments and settings. It is, therefore, the aim of this paper to address the gap by providing an exploratory study on the influence of trust to E-commerce development in Indonesia. The aim of this study was to determine whether Indonesian E-commerce users had differing levels of confidence of Indonesian websites as compared to international web-sites. The paper is organised as follows: section 2 introduces some issues that affect E-commerce in developing countries (through a literature review). Section 3 highlights the methodology chosen for this study. This paper then presents the result and findings of the exploratory survey in section 4. The conclusion and address for future research are presented in section 5.
LITERATURE REVIEW

IT and E-commerce in Developing Countries

Developing countries are increasingly utilising Information Technology (IT) to solve their developmental problems. Lending for IT by the World Bank has been growing at six times the growth rate of total Bank lending, and it is present in 90% of the Bank’s lending operations (Kenny and Lewin, 2004). The extent of IT’s impact on World Bank development efforts has been rated great or very great by 79% of projects (Hanna, 1993, Kenny and Lewin, 2003).

Over the past decade, much of the IT effort has been directed towards E-commerce adoption and use. However, the overall use of E-commerce in developing countries remains at a very lower level compared to developed countries. For example, International Telecommunications Union has reported that in 2003, the personal computer ratio per 100 inhabitants in Asia Pacific countries is 52.18 for high-income, 40.67 for medium-income and 1.97 for low-income countries (International Telecommunication Union (ITU), 2004). Developed countries today have 10.74 internet hosts per 100 inhabitants compared to just 0.02 internet hosts per 100 people in developing countries. Teledensity (main lines per 100 inhabitants) is 54.59 for developed countries and 0.18 for the least developed countries (LDCs). There are also enormous differences in access to telecommunications both between and within developing countries. For instance, while in developing countries a considerable proportion and sometimes the majority of the population lives in rural areas, over 80 percent of the main telephone lines are located in urban areas (Chinn and Fairlie, 2004).

Infrastructural Trust

There have been many studies examining the concept of trust in the use and expansion of E-commerce. Shapiro et al. (1992) suggested that while trust included grounded knowledge of business partners and mutual empathy, a necessary first step was that all parties needed to have trust in the infrastructure being used in business dealings. Further studies (Lewicki & Bunker 1996, Ratnasingam 1998, 2002, Keen et al 2000) suggest that trust in the infrastructure and technology of E-commerce is mandatory in order to allay fears of security breaches etc. Indeed, these studies have shown that failure of technology has an immediate impact both on the level of interaction as well as the level of enthusiasm to conduct business.

While clearly technology is an integral part of any E-commerce infrastructure, a number of recent studies (Lee & Turban 2001, Reichheld & Scheffter 2000) have shown that infrastructural trust also includes business culture, business law and consumer protection. These studies show that confidence in infrastructure is essential to trust in business partnership dealings.

IT and E-commerce in Indonesia

Indonesia, as the focus of this study, is regarded as one of the developing countries within the Southeast Asian region. As such, it is facing the typical problems in terms of IT development. For example, the latest information provided by the World Bank (2004) shows that the total number of personal computers (PCs) per 1000 people in Indonesia is approximately 12 units, far below other neighbouring developing countries such as Malaysia and Thailand (Figure 1).
In order to overcome low computer penetration rate problems in Indonesia, the government has proposed a new policy to stop importing used PCs in order to give opportunities for Indonesian entrepreneurs to assemble PCs at reasonable prices (Kominfo, 2004). It is the aim of this policy to support the development of SMEs in Indonesia as well as act as an encouragement for creating a new environment that is conducive to promoting the use of IT in Indonesia. Indonesia can be said to be slowly joining the information superhighway. Dial-up connections are still the predominant method for consumers seeking to connect to the internet. For Indonesia to achieve real benefit from the internet, the nation must not only bring the internet to its vast rural population, but also use the internet to bridge the many hundreds of islands. By doing so, essential educational, medical, and agricultural information could be distributed from the urban core to remote destinations via internet terminals in central locations. However, due to the geographical condition of Indonesia as an archipelago country, development of fiber-optic-based backbones remains a difficult hurdle to overcome. Therefore, before the E-commerce can have a meaningful impact, Indonesia must first overcome a weak infrastructure. The commercial use of the internet, commonly referred to as E-commerce is growing slowly, in Indonesia. However, one of the greatest impediments to E-commerce is the limited number of Indonesians with credit cards. Added to this problem are the restrictive usage regulations placed on card ownership by the issuing banks. For those who have cards, many banks require the card owner's permission (via telephone calls prior to each internet purchase) to avoid credit card fraud.

Culture and E-commerce

Tilquist (1997) asserts that the success of E-commerce across national borders is a reflection of several variables, including national economies, national literacy, national cultures, telecommunications availability, and technology penetration and acceptance. Tilquist's (1997) idea was also supported by a study from Rose and Straub (1998) which found cultural biases play a role in technology acceptance.

In addition, a study conducted by Cheung and Lee (2001), involving 400 business students at the City University of Hong Kong, showed how culture can affect the notion of trust in E-commerce along with the consumer's propensity to trust, the vendor's trustworthiness, and certain external factors such as the nation's legal framework. The study also concluded that people with different cultural backgrounds, personality types and developmental experiences vary in their propensity to trust. Although they refer to Hofstede's work, different cultural environments and experience differences are not tested in their study.

It is therefore, the aim of this study to provide an understanding, through an exploratory survey of the influence of trust on E-commerce development in different cultural environment and setting, like Indonesia.

METHODOLOGY

In noting the problems with infrastructure and credit card use in internet purchases in Indonesia, the primary aim of this study was to determine the level of trust in Indonesian website as well as overseas websites.
As this study was primarily exploratory, no hypotheses were developed. This approach is in accordance with earlier studies (see Aaker and Day, 1990).

As indicated, the primary focus of the study was to determine whether there were differences in the level of trust, by Indonesian internet users, between websites within Indonesia and websites elsewhere. As such, the sample population were current users of the internet. A questionnaire was developed. The questionnaire asked whether the respondent had purchased from any website at all. For those that have purchased over the internet, respondents were asked to rate their own trust in Indonesian websites and International websites across a 5 point Likert scale, the answers being 1- 5 strongly agree that I can put my trust in the website and 5- I strongly disagree that I can put my trust in the websites.

The questionnaire was sent by email to 450 Indonesian university students and graduates. The email stated the purpose of the research and included the list of questions. Recipients were asked to forward the invitation to others, thus creating a snowball sample.

RESULT AND FINDINGS

Responses were obtained from 151 individuals, giving a response rate of 33 percent. 104 respondents indicated that they had purchased using the internet, and figure 2 indicates the demographics of the respondents. An examination of the responses showed that all of the respondents that had purchased through the internet had answered the questions concerning trust of the e-commerce. The data was exported to the SPSS statistical package.

<table>
<thead>
<tr>
<th>Age</th>
<th>20 - 24</th>
<th>25 - 29</th>
<th>30 - 34</th>
<th>35 - 39</th>
<th>40 and</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>53</td>
<td>44</td>
<td>28</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>98</td>
<td>53</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of hours on Internet</th>
<th>&lt; 3</th>
<th>4-10</th>
<th>11-20</th>
<th>20-30</th>
<th>&gt;30</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>32</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Purchased on internet</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>104</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 2. Demography of the Respondents*

For each of the website groupings (Indonesian and non-Indonesian websites), respondents were asked their level of confidence and their expectation of problems across a 5 point Likert scale. A series of paired sample t-tests were carried out to determine whether there was any significant difference between levels of confidence or any significant difference in the expected problems in Indonesian versus non-Indonesian websites.

*Figure 3 shows the differences in the level of confidence between Indonesian website usage and non-Indonesian website usage.*

<table>
<thead>
<tr>
<th>Indonesian website usage</th>
<th>Std. Deviation</th>
<th>Non-Indonesian website usage</th>
<th>Std. Deviation</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.38</td>
<td>Mean</td>
<td>2.3</td>
<td>0.858</td>
<td>-8.942</td>
</tr>
</tbody>
</table>

*Figure 3. Response on Confidence*
Figure 4 shows the differences in the expected problems between Indonesian website usage and non-Indonesian website usage.

<table>
<thead>
<tr>
<th>Indonesian website usage</th>
<th>Std. Deviation</th>
<th>Non-Indonesian website usage</th>
<th>Std. Deviation</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2.68</td>
<td>3.27</td>
<td>0.937</td>
<td>5.34</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Figure 4. Response on Expected Problems

An examination of figures 3 and 4 shows that there is a high statistically significant difference, both in terms of trust, as well as in terms of expectation of problems, between the Indonesian website and non-Indonesian website use.

As it can be seen from figure 3, the mean for confidence in purchasing from Indonesian website by Indonesian user was above the median value of 3. This would suggest the lack of trust of Indonesian users in purchasing product from Indonesian company over the internet, compared to those from non-Indonesian website which shows the mean below median value of 3.

Similarly, the response on expected problems, shown in figure 4, shows that most Indonesians believe that they will encounter more problems in purchasing products from Indonesian websites compared to non-Indonesian websites. This is reflected through the mean value of 2.68 for Indonesian websites against 3.27 (above the median value of 3) for non-Indonesian website.

An early study by Evers & Day (1997) concluded that users were more inclined to use technology that was adapted to their culture. While this study is in no way attempting to reconstruct the Evers & Day approach to Indonesian Ecommerce users, the study does show that fundamental to any Ecommerce activity is the need for infrastructural trust. Clearly, despite Indonesian websites being developed for the Indonesian user, inherent problems both with technology as well as the business culture have reduced the impact and trust in the use of those sites.

Furthermore, while the survey did not look specifically at other problems - such as credit card use, number of computer use in Indonesia and so on - it is obvious that the average Indonesian user of E-commerce does encounter serious problems purchasing from Indonesian websites compared to non-Indonesian website. Thus it appears that the perception by Indonesian users of international websites is that they have a better infrastructure both in terms technology as well as legal/financial frameworks providing a greater level of confidence in E-commerce usage. This would tend to support the views of Tillquist (1997) and Rose and Straub (1998) who suggest that cultural biases play a role in technology acceptance.

CONCLUSIONS

This paper has presented a preliminary study examining the influence of infrastructural trust on E-commerce development in Indonesia through a series of paired sample t-tests. The findings suggest that there appears to be differences in the level of trust in infrastructure of Indonesian websites compared to international websites. This is reflected through the analysis of the confidence and expected problems gathered from the questionnaire's responses.

The results of this study are useful not only for government bodies but also for businesses, in developing countries such as Indonesia, which have economic reasons to be concerned with the development of E-commerce for businesses.

In moving forward, further studies need to be done to examine other factors - such as gender, age, education, number of hours on internet, sector of business and so on - that may affect trust in the infrastructure of E-commerce in Indonesia. Furthermore, a comprehensive set of standard measures should be developed for each factor, allowing for fair comparisons among countries.

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