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# World Wide Web Diffusion Among Indonesian Bank Employees: a case of international research in information systems

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**Abstract**

*This paper investigates the roles of formal and informal networks and perceived compatibility with task/ work in World Wide Web (WWW) diffusion among Indonesian bank employees. In doing so the paper also provides insights into various factors that influence the international information system research processes. It is anticipated that these factors (or some variations) will be important determinants of the success of any international IS research. A structural equation model is first developed based on an extensive literature review for the WWW diffusion. Data is collected via a questionnaire based survey in Indonesian banks following the process of international IS research. The results show that the informal network and compatibility are significant factors of WWW diffusion among the Indonesian banking employees, but the formal network is not. Possible explanations of the results are provided from cultural perspectives.*

**Keywords**

IS Research Methodologies (IB01), Cultural Differences (BD05), PLS (AI0610), Departmental Support (GC02), and Personal Support (GC03)

## INTRODUCTION

This study investigates various factors related to WWW diffusion among Indonesian bank employees. In order to carry out this research successfully, various issues of international business/ IS research have been identified and strictly followed. We believe that such issues must be addressed properly in order to avoid problems with appropriate methodology. This view is supported by cross-cultural study literature (Adler, 1984; Usunier, 1998). For instance, Adler (1984) criticises traditional research methods that assume universality. Even though the researcher does not intend to undertake cross-cultural or comparative research, he/ she may still have to address some specific issues. Usunier (1998) points out that research that is centred on a specific country; usually where the researcher is from, is essentially a comparative research design, albeit implicitly. The reason being that this type of specific research makes an attempt to demonstrate distinctive management concept and practices in a particular context. With regards to such methodological concerns, while this paper presents findings from a WWW diffusion study among Indonesian banking employees, it also aims to give an insight into various issues related to international IS research processes, especially in the context of Indonesia. This specific context adds an important dimension in conducting research in an appropriate manner. A number of important issues emerge to conduct a valid research in an international arena, which are likely to be applicable in similar research contexts.

## BRIEF BACKGROUND

The World Wide Web (WWW) has long been regarded as an important source of knowledge repository. This research thus looks into the factors of WWW diffusion among the Indonesian bank employees, in fact knowledge workers. The pervasive use of information technology to support knowledge workers' task/ job is widely recognised (Bolisani and Scarso, 1999; Davenport *et al.*, 1996). Literature also suggests that roles of external parties, such as IT centres, peers, colleagues, consultant and local MIS staff are important determinants of IT usage (Attewell, 1992; Compeau and Higgins, 1995; Govindarajulu and

Reithel, 1998; Lee, 1986; Winter *et al*., 1997). The current research distinguishes these external parties in terms of formal and informal networks. The differentiation of formal and informal network is identical to the notion of 'in-group' and 'out-group' situation in cultural study (Brislin, 1993; Cushner and Brislin, 1996). In this study, informal networks refers to socially constructed networks including peers, friends, and colleagues who can be asked for help in order to overcome knowledge barriers about specific IT issues. While a formal network is defined as any formal institution that is responsible for promoting IT adoption and diffusion, such as IT centres, consultants and IT departments. In addition, prior studies suggest that another important factor to affect IT acceptance is perceived compatibility (Rogers, 1995; Tornatzky and Klein, 1982). Framed in an adapted Technology Acceptance Model (TAM) (Davis, 1986), the impact of these factors on WWW acceptance was empirically tested in the Indonesian banking sector. Therefore, two dominant research questions guide this study:

1. What are the roles of formal/ informal networks in the diffusion of WWW in Indonesian bank employees?
2. What is the impact of perceived compatibility in the diffusion of WWW in Indonesian bank employees?

Since the research was conducted in Indonesia, the process of international research was adapted and a number of issues were identified to be important determinants of the success of international IS research. Another important sub-objective of this research was, therefore, to identify and articulate these issues of International IS research formally.

## HYPOTHESES

Based on extensive literature review some hypotheses have been developed to study the above research questions. These hypotheses, which are presented in Figure 1 (described later), are as follows:

**Hypotheses related to basic TAM relationships:**

H1a: There is a direct effect of perceived usefulness on WWW acceptance.

H1b: There is a direct effect of perceived ease of use on WWW acceptance.

H1c: There is a direct effect of perceived ease of use on perceived usefulness.

**Hypotheses related to perceived compatibility:**

H2a: There is a direct effect of perceived compatibility on perceived usefulness.

H2b: There is a direct effect of perceived compatibility on perceived ease of use.

**Hypotheses related to formal/ informal networks:**

H3: There is a direct effect of formal network on self-efficacy.

H4: There is a direct effect of informal network on self-efficacy.

**Hypotheses related to self-efficacy:**

H5a: There is a direct effect of self-efficacy on WWW acceptance.

H5b: There is a direct effect of self-efficacy on perceived usefulness.

H5c: There is a direct effect of self-efficacy on perceived ease of use.

## INTERNATIONAL RESEARCH DESIGN ISSUES

There are two main issues to consider regarding research design in international arena. Firstly, in terms of research instrument development, there is a need to adapt the original instruments into the current study due to differences in language and research context with its own culture and preconception. Wright (1996) claims that research could not be freed from cultural bias since all assumptions, values, biases and beliefs would be brought into research, whether it is intended or not. Therefore, simple literal translation of such instrument from source language to the target language seems to risk translation fidelity.

Brislin (1993) suggests that careful examination should be undertaken to meet 'equivalence' of concepts that consist of translation equivalence, conceptual equivalence and metric equivalence. He criticises the use of instruments in other cultures without adjustments (Brislin, 1976). Indeed, Sekaran (2000) highlights the importance of maintaining similar meaning by considering certain issues in translating research instrument.

In terms of translation equivalence, there are etic and emic issues to consider. Brislin describes etic and emic as follows: "An emic analysis documents valid principles that describe behaviour in any one culture, taking into account what people themselves value as meaningful and important. The goal of etic analysis is to make generalization across cultures that take into account what the people themselves value as meaningful and important" (Brislin, 1976:215). Etic-emic analysis is related to a decentering procedure that is based on a back-translation technique. Decentering is defined as "a process by which one set of materials is not translated with as little change as possible into another language. Rather, material in one language changed so that there will be a smooth, natural-sounding version in the second language" (Brislin, 1976:222). Basically two bilinguals can be used in a back-translation process; the first is to translate from source language into target language and the other is to re-translate from target language into source language (Brislin, 1976). Concepts that survive from back-translation process are considered as etic items, while those that do not translate well or lost are deemed as emic aspects (Brislin, 1993). In addition, there is a need for another translation fidelity assessment by pre-testing the translated material on a target sample to ensure comprehension (Harpaz, 1996). It is, therefore, critical that the research instrument be adjusted in order to grasp target information in new settings. Otherwise, such study will experience problems of validity since it may measure something different than intended (Judd et al., 1991).

Secondly, international research issues are also concerned about the country-specific characteristics such as *culture*, which may have an impact on data collection procedures. In our study, some important country-specific factors have been identified as: the ways to collect data (how), when to collect data (timing), and who to contact (who). The question of 'how' is to do with means of collecting data; whether to use postal service (snail mail) or collecting the responses directly. The use of postal service must depend on its quality of service, which may not be the same across the country. In some cases, researchers may be confronted with unreliable and slow postal service (Usunier, 1998). Collecting data directly has to be via an important 'contact' person. His/ her judgement and influence is very vital for successful data collection.

Another country-specific factor is data collection 'period'. The researcher has to know the appropriate time to send and get the responses back. For example, conducting a mail survey during long country-specific holidays could yield low and slow responses. If the researcher arranges to collect the responses directly, such period is also not a good time for travelling. In addition, data collection can also be affected by weather and season.

The last country-specific factor, which has been found to be important in this research, is the use and the position of the contact person. This issue is related to the accessibility of samples, especially in a country with a relatively high ascription culture that regard kinship as important factor (Trompenaars and Hampden-Turner, 1997). Although access can be obtained using formal procedures, it may take a long time to get approval. However, the process can be accelerated with the recommendation from a VIP, such as a board member. This is more pervasive in government-owned companies that often require recommendation from higher government official to secure the access, especially when the research is dealt with sensitive issues. Relationships with respected persons and institutions indicated by written recommendation, is often required in this particular culture.

## RESEARCH METHODOLOGY

We addressed the above international research design issues in our specific application in Indonesia. The following sections detail our procedure. To investigate the impact of formal/ informal networks and perceived compatibility on the use of the WWW in Indonesian banking institutions, a structural equation type research model was first developed around the important variables obtained from comprehensive literature review. Figure 1 shows the research model with all hypotheses.

### Instrument Development

The measures in this study were developed and adapted from prior studies (see Table 1), except formal/ informal networks that were specially developed for the current study. To investigate our research questions, participants were asked to express the extent of their agreement or disagreement using a six-point Likert scale, ranging from (1) strongly disagree to (6) strongly agree, except for a WWW acceptance construct. The current study uses six-point rather seven-point scale (Quaddus and Achjari, 2001) because the item of 'neutral' or 'neither agree or disagree' is excluded to avoid central tendency error, which is very prevalent in the Asian culture.

| | **Constructs** | **Adapted from:** |
|---|---|---|
| 1 | Formal Network (FN) | Nambisan and Wang (2000), Govindarajulu and Reithel (1998) |
| 2 | Informal Network (IN) | Nambisan and Wang (2000), Govindarajulu and Reithel (1998) |
| 3 | Self-Efficacy (SE) | Compeau and Higgins (1995), Tan and Teo (2000) |
| 4 | Perceived Usefulness (PU) | Davis (1989) |
| 5 | Perceived Ease of Use (PEOU) | Davis (1989) |
| 6 | WWW Acceptance (Use) | Davis (1989), Moon and Kim (2001) |
| 7 | Perceived Compatibility (PC) | Agarwal and Karahanna (1998), Rogers (1995), Tornatzky and Klein (1982) |

Table 1: Research Constructs and References

### Decentering Process

Table 1 shows that all constructs were adapted and developed from prior studies in a non-Indonesia setting. Therefore, following Brislin (1976; 1993), we used the decentering process that is based on a back-translation technique to maintain the translation equivalence. In doing so, firstly, the questionnaire was translated from English into Bahasa Indonesia by one researcher who is considered as bilingual. During this process, some concepts (e.g. peer) that could not be translated appropriately were considered as *emic*. The words/ concepts that were *emic* were not translated literally. Rather, they were matched with the closest notion in Bahasa Indonesia. As an example, the notion of 'peer' in the context of informal network was translated as similar to 'work mate' in Bahasa Indonesia. The dictionary suggests that it means "*belonging to the same age, grade, or status group*" (Longman, 1986:633), however the literal translation in Bahasa Indonesia is narrower, which is similar to "*belonging to the same age*" (Echols and Shadily, 1988:423). Indeed, peer in the context of the current study it is regarded as belonging to the same status group such as knowledge worker. Therefore, it seems that the appropriate translation for peer is 'work mate' in Bahasa Indonesia. In the next step, the translation was examined and translated back to English by a recognised bilingual who is a native English speaker. This procedure provides additional advantages to the decentering process, taking the questionnaire away from the original language (Brislin, 1976). There were not many concerns as careful examinations of emics have been conducted in the prior step. Thus, after addressing a few concerns the translation was finally considered to be fair.

### Country-specific Characteristics

Our data collection procedure has identified some factors that can be regarded as country-specific. First, the data collection procedure did not entirely rely on the postal service; 105 responses were delivered through mail and 264 responses were collected directly. The reason for using dual methods was primarily based on Fahy's (1998) argument that despite its advantages, the biggest weakness of a mail survey is susceptibility of low response rate that can lead to non-response error. One way to eliminate the risk is to use a contact person in distributing and collecting the responses. Another reason for using both methods is the concern about unreliable postal services in Indonesia.

The second factor is the appropriate time for data collection. The data collection period that occurred from the end of November 2001 until early February 2002 in Indonesia, had only about one and half months effective time. Not much could be done during December 2001, since there was a Muslim holy month Ramadhan, followed by 'Idul Fitri' long holiday,

Christmas holiday, and the end of financial year. Thus, considering all these factors, data collection was then resumed in early January 2002. Another timing concern is the weather condition. During wet season in September to March, heavy rain often causes flood in many areas in Indonesia, which can affect data collection in many ways. The current study has also been affected by flood that had paralysed most Jakarta – the place of all banks' head offices. Most appointments with contact persons to collect the pooled responses had to be rearranged because the researcher could not pick up the responses and the contact persons could not go to office either.

The next crucial issue is to get access to the banks in survey-based field research. In our study, all accesses were obtained through contact persons who held various positions such as board members in the respective banks. These contact persons then appointed the appropriate person in the company to facilitate the research process. Although informal approval from these contact persons had been obtained, the formal procedure was also undertaken. While access had been informally granted by our contacts, to pass through the formal procedure, it is often required to show 'who you are', as a characteristic of high ascription culture (Trompenaars and Hampden-Turner, 1997). Some written recommendation from the institution and other respected organisation are useful in this case.

### Data Collection Procedure and Sample

We went through three stages in the data collection: pre-test, pilot study and questionnaire survey. As suggested by Harpaz (1996), the translated material was pre-tested on target sample to ensure comprehension. The tentative questionnaire was sent to three knowledge workers in Indonesia followed by telephone interview to evaluate the research instrument. This stage resulted in the refined tentative questionnaire that is ready to be tested in the subsequent stage. Pilot study was then conducted in two MBA executive classes in the Gadjah Mada University. This step led to some minor revisions. Next, the main survey followed Amoroso and Cheney's (1991) procedure that use survey-based field study of multiple organisations. In the current study, the survey was conducted in head office of 6 banks as seen in Table 2. The real bank names are disguised to preserve anonymity. However, in Table 2 we present brief information regarding these banks. The selection of these companies was based on the convenience sampling (Cooper and Emory, 1995; Zikmund, 2000), which relied on the willingness of such companies to allow their knowledge workers to participate in the current study.

The questionnaires were distributed via contact persons. The purpose of the study, the instruction and the target sample had been explained to these persons before they distributed the questionnaires through the various channels such as company's internal mailing systems. They were also asked to distribute the questionnaires randomly across all departments. A set of research instruments that contains a cover letter, general instruction, reply-paid envelope and questionnaire was distributed to 600 samples within 6 banks via the contact persons. Respondents were given 10 working days to fill and return the questionnaire. A follow up phone call to these contact persons was also conducted after two weeks. Finally, the total of 369 questionnaires were returned. However, it was found that 9 responses were incomplete. This resulted in 360 usable responses.

| Bank Identification | Status of Ownership | Total Assets in Year 2000 (in million Rupiah) | Technology (as per May 2001) | | |
|---|---|---|---|---|---|
| | | | Number of ATM | Internet Banking | Website |
| A | Private | 24.073.486 | 100 | no | yes |
| B | Private | 22.627.375 | 305 | yes | yes |
| C | State-owned | 246.705.038 | 732 | no | yes |
| D | Private | 37.210.267 | 600 | yes | yes |
| E | State-owned | 117.880.337 | 1.121 | no | yes |
| F | State-owned | 23.949.063 | 95 | no | yes |

Table 2: Brief Data on Respondents' Organisation (Source: Infobank Magazine, June 2001 and July 2001)

The demographic characteristics of the respondents are as follows. In terms of participant gender, 72.9% are male and 27.1% are female. Most of them (61.7%) are in the age group of between 30 and 40. Of the respondents, majority have bachelor degree (68.6%) and followed by master degree that accounted for 23.7%. Most of them (32.5%) are in the hierarchical position of 3 layers below the top position in their organisation. In addition, 28.6% and 27.7% of the participants are in the hierarchical position of 2 and 3 layers above the lowest position, respectively. Of participants, 10.8% have been in the current position for less than 1 year, 32.9% for more than 1 year to 3 years, 26.7% for more than 3 years to 5 years, and 29.5% for more than 5 years. Furthermore, 41.3% of them have been working in the current company for more than 10 years. The majority of respondents have been using the Internet for about 1-3 years (53.6%). Most of the respondents (89.6%) regard the use of WWW in their job is voluntary. Interestingly, although their company has established a homepage, 54.8% of respondents visit the website about once a week or less. Indeed, the office is the most favourite place to use the Internet as indicated by 92.7% of the respondents.

Non-response bias was assessed by comparing the mean of responses returned until the deadline with the mean of responses that came afterwards on the key demographic variables (Armstrong and Overton, 1977). The Mann Whitney U-Test was performed to examine the likelihood of sample bias. The results indicate that there are no significant differences ($\alpha$= 0.05) in the means of a number of relevant characteristics.

### Data Analysis

The collected data were analysed using Partial Least Squares based structural equation modelling (SEM) technique (Barclay *et al*., 1995; Chin, 1998), which is a second-generation multivariate data analysis tool. The computer software used to analyse data was PLS Graph version 3.0. To test the research model, data was divided into two subgroups – sample 1 (S1) and sample 2 (S2) as conducted in the prior studies by Amoroso and Cheney (1991), and Igbaria (1993). Sample 1 represents all cases with odd identification number, while sample 2 consists of all cases with even identification number. Sample 1 was used to test the initial measurement model, while the sample 2 was used to examine the revised model. The measurement properties were examined in terms of item reliability, internal consistency, Average Variance Extracted (AVE) and cross loadings (Barclay *et al*., 1995). The first three properties are known as convergent validity tests (Fornell and Larcker, 1981).

In PLS analysis, we followed three sequential steps as suggested by Igbaria (1993) and Igbaria *et al*. (1995). The first step deals with the initial measurement model in order to assess the item reliability. Next, the initial model was tested in terms of the measurement properties and structural paths. In this stage, non-significant paths as well as the corresponding constructs might be dropped. Finally, the revised model was examined. Resampling procedures such as bootstrapping, which produce *t*-statistics, was used to assess the structural paths (Chin and Newsted, 1999). In addition, the model's predictive power was assessed by measured $R^2$ values for the endogenous variables (Fornell and Larcker, 1981).

## RESULTS

### The Initial Model

The initial model (Figure 1) was evaluated using sample 1. As a result, items PC42 and PC43 were excluded since they loaded weakly to their construct with $\lambda$=0.0227 and $\lambda$=0.0522, respectively. This step led to initial revised model, which then was tested in terms of measurement properties and structural path. The structural evaluation resulted in the deletion of paths from self-efficacy (SE) to WWW acceptance (USE) and SE to perceived usefulness (PU) because the path coefficients were very low ($\gamma$=0.037 and $\gamma$=0.009). In addition, the path from formal network (FN) to SE was not significant either. This reinforced the decision for the exclusion of FN from the initial model because FN also failed to satisfy discriminant validity requirement, as Average Variance Extracted (AVE) value was below 0.5. However, two non-significant paths, informal network (IN) to SE and link from PU to USE, were retained since they are substantive elements in the current research. Hence, the

results of the initial model (Table 3; under Sample 1 column) reveal that all constructs provide satisfactory convergent validity values except formal network that shows somewhat low validity.

| | Loading | | Composite Reliability | | AVE | |
|---|---|---|---|---|---|---|
| **Constructs/ Items** | **Sample 1** | **Sample 2** | **Sample 1** | **Sample 2** | **Sample 1** | **Sample 2** |
| Formal Network | | | 0.816704407 | - | 0.433452 | - |
| FN1 | 0.7098 | - | | | | |
| FN2 | 0.8334 | - | | | | |
| FN3 | 0.5053 | - | | | | |
| FN4 | 0.6344 | - | | | | |
| FN5 | 0.5213 | - | | | | |
| FN6 | 0.6876 | - | | | | |
| Informal Network | | | 0.872889046 | 0.889875 | 0.53893 | 0.575174 |
| IN7 | 0.5663 | 0.6446 | | | | |
| IN8 | 0.7191 | 0.7859 | | | | |
| IN9 | 0.7831 | 0.7785 | | | | |
| IN10 | 0.7790 | 0.8155 | | | | |
| IN11 | 0.6252 | 0.7364 | | | | |
| IN12 | 0.8859 | 0.7775 | | | | |
| Self-Efficacy | | | 0.868298298 | 0.834259 | 0.572996 | 0.506282 |
| SE13 | 0.5712 | 0.5420 | | | | |
| SE14 | 0.8590 | 0.7155 | | | | |
| SE15 | 0.8227 | 0.8313 | | | | |
| SE16 | 0.7674 | 0.7588 | | | | |
| SE17 | 0.7315 | 0.6774 | | | | |
| Perceived of Usefulness | | | 0.954532576 | 0.952057 | 0.777888 | 0.768170 |
| PU18 | 0.8428 | 0.8676 | | | | |
| PU19 | 0.8969 | 0.8732 | | | | |
| PU20 | 0.9091 | 0.8999 | | | | |
| PU21 | 0.9023 | 0.9181 | | | | |
| PU22 | 0.8930 | 0.8744 | | | | |
| PU23 | 0.8453 | 0.8225 | | | | |
| Perceived Ease of Use | | | 0.92733687 | 0.939326 | 0.680644 | 0.721073 |
| PEOU24 | 0.7673 | 0.7907 | | | | |
| PEOU25 | 0.7872 | 0.8232 | | | | |
| PEOU26 | 0.8483 | 0.9095 | | | | |
| PEOU27 | 0.8529 | 0.8681 | | | | |
| PEOU28 | 0.8188 | 0.8584 | | | | |
| PEOU29 | 0.8706 | 0.8402 | | | | |
| WWW Acceptance (USE) | | | 0.905981856 | 0.913881 | 0.763599 | 0.781107 |
| USE30 | 0.9192 | 0.9504 | | | | |
| USE31 | 0.9159 | 0.9254 | | | | |
| USE32 | 0.7791 | 0.7640 | | | | |
| Perceived Compatibility | | | 0.847828936 | 0.887423 | 0.501993 | 0.581824 |
| PC38 | 0.7684 | 0.8675 | | | | |

| Constructs/ Items | Loading | | Composite Reliability | | AVE | |
|---|---|---|---|---|---|---|
| | Sample 1 | Sample 2 | Sample 1 | Sample 2 | Sample 1 | Sample 2 |
| PC39 | 0.8878 | 0.9154 | | | | |
| PC40 | 0.8968 | 0.9146 | | | | |
| PC41 | 0.6945 | 0.7356 | | | | |
| PC44 | 0.4111 | 0.5724 | | | | |
| PC45 | 0.4216 | 0.4418 | | | | |

Table 3: Convergent Validity (Sample 1 and Sample 2)

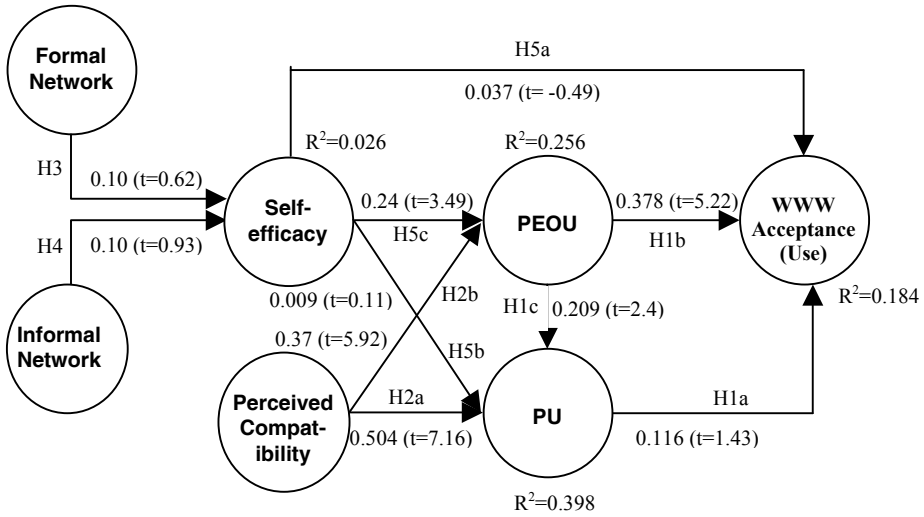


Figure 1: The Initial Model

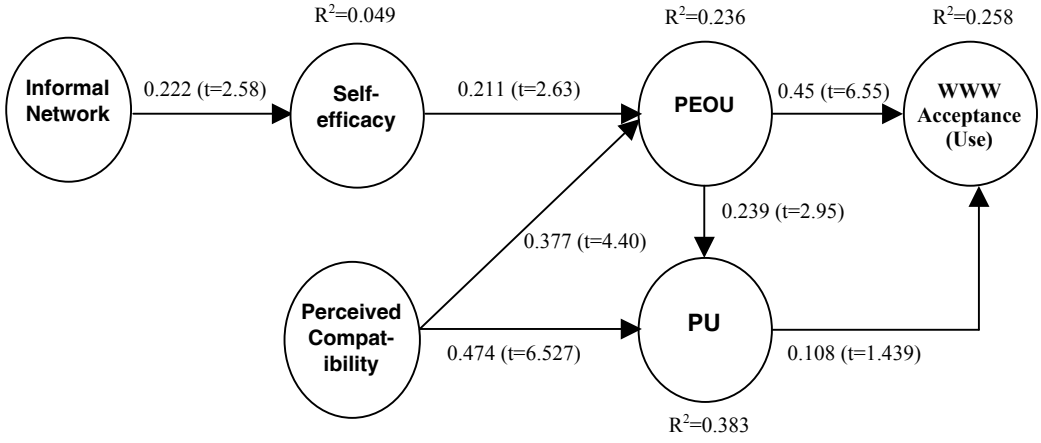


Figure 2: The Revised Model

## Revised Model

Measurement Model

The revised model (Figure 2) was evaluated using S2. The results as shown in table 3 (under Sample 2 column) indicate that all items load significantly to its construct. Therefore, it can be said that all items meet reliability criteria. In terms of composite reliability, all constructs demonstrate very good reliability scores. The validity of the constructs and its items were then examined using AVE. As seen in table 3, each construct shows a value of

0.5 or above, which suggests a valid measure. Finally, discriminant validity test was performed using square root of AVE. Table 4 demonstrates that all diagonal elements, which are the square roots of AVE, are greater than off-diagonal elements. This suggests that all constructs are discriminated adequately. Based on above results, the convergent validity of the measures in the revised model is regarded as satisfactory.

Structural Model

The explanatory power of endogenous constructs reveal that in total, the revised model explains 4.9% of the variance in SE, 38.3% of the variance in PU, 23.6% of the variance in PEOU, and 25.8% of the variance in USE. The somewhat low explanatory power in SE is similar to a study by Compeau and Higgins (1995) that obtained $R^2$ value of 7% in the revised model. Hence, the model is regarded as having adequate explanatory power. To assess the significance of the structural paths, bootstrapping procedure that produces *t*-statistics was undertaken. The results presented in Figure 2 indicate that all path coefficients in the revised model are significant ($p < 0.01$) except the link between perceived usefulness and WWW use ($\gamma$=0.108, *t*-value=1.4392). In summary, the statistical evidences provide no support for hypotheses H1a, H3, H5a, and H5b. However, hypotheses H1b, H1c, H2a, H2b, H4 and H5c, respectively, are confirmed.

## DISCUSSION

In general, the empirical results of the current study provide partial support for the research questions. Among others, the results suggest that informal network has important roles in WWW acceptance through some mediating variables; self-efficacy and perceived ease of use. In other words, the presence of informal network can improve self-efficacy of knowledge workers. In turn, someone with high self-efficacy tend to see the Internet as easy to use, which leads to higher Internet use. This is consistent with Winter *et al*. (1997) findings that suggest significant roles of 'local resident expert' to improve computer literate among end-users. Further, the results also confirm Attewell's (1992) work that highlights the important roles of 'informal computer experts' as feature of staff and operation departments. Thus, the results can be interpreted as that while the availability of formal network such as IT Centre and help desk may be needed, yet people prefer to ask for help to their close network who can be friends, colleagues and peers when they are available. If these people cannot solve the problem, then users may turn into the formal institutions available in their organisation. The practical implication of the findings is that organisations may not only rely on the formal institutions to provide support for their knowledge workers to use WWW. More importantly, organisation may consider appointing 'local resident expert' in certain unit or department to whom users may ask for help easily and freely. Alternatively, to create informal environment for information exchange, organisation may utilise the WWW-based technology such as mailing list and discussion group. With respect to the social presence theory, Karahanna and Straub (1999) maintain that media with low social presence such as e-mail is appropriate for less socio-emotional and non-analytical tasks, such as information exchange and asking questions.

| | **IN** | **SE** | **PC** | **PEOU** | **PU** | **USE** |
|---|---|---|---|---|---|---|
| IN | **0.758402** | | | | | |
| SE | 0.2220 | **0.7115353** | | | | |
| PC | 0.1000 | 0.3090 | **0.7628** | | | |
| PEOU | 0.0320 | 0.3270 | 0.4420 | **0.8492** | | |
| PU | 0.1080 | 0.2810 | 0.5800 | 0.4490 | **0.8765** | |
| USE | -0.1130 | 0.2440 | 0.3640 | 0.4990 | 0.3110 | **0.883803** |

Table 4: Discriminant Validity Measure (Sample 2)

Tung and Quaddus (2002) demonstrate that equivocal results of studies in two different countries, Singapore and Australia can be explained in terms of Hofstede's cultural dimensions. Therefore, while culture can be used as either dependent or independent

variable, it also can be used as a given context that will explain the findings. Likewise, the unexpected results of formal network can be interpreted using cultural perspective. The empirical results indicate that formal network has negligible roles in influencing WWW acceptance. This is somewhat surprising because literature suggest the important roles of formal support such as IT centres, local MIS staff, vendor, consultant and other formal support within and outside the organisation (Attewell, 1992; Govindarajulu and Reithel, 1998; Lee, 1986; Winter *et al*., 1997). Although the source of such results is not clearly identified, from the cultural point of view it can be explained in terms of in-group and out-group distinction (Brislin, 1993; Cushner and Brislin, 1996). Cushner and Brislin (1996) refer in-group member as people within particular context to whom individual feels psychologically close, comfortable and secure. On the other hand, people that are avoided are part of out-group (Cushner and Brislin, 1996). The characteristics of in-group members, among others, are that they can be called upon as needed and they share their experience with each other (Cushner and Brislin, 1996). These in-group characteristics are particularly relevant in this study because they can help to understand why informal network is preferred than the formal ones in this particular context. It is suggested that informal network that belongs to in-group enables users to speak freely and easily when they are needed. Other cultural interpretation for such results is that Indonesia, as many Asian countries, can be classified as to have diffuse culture, which relate to the level of involvement in relationship (Trompenaars and Hampden-Turner, 1997). The characteristic of such cultural dimension is, among others, the likelihood to mix between work and private matters. This can explain why IT users in this particular context prefer to ask for help in individuals not belong to work relationship. Indeed, the IT issues that are supposed to be work-related issues may be solved using interpersonal relationship.

The findings on perceived compatibility suggest that perceived compatibility affects the diffusion of WWW, which confirm the prior work by Agarwal and Karahanna (1998). Therefore, users (knowledge workers) that perceive WWW is compatible with his/ her value, work practice and preferred work style will see it as easy and beneficial, which in turn will use it. Specifically, the results indicate that Indonesian banking sector workers have already seen WWW as being the part of their job. This is an interesting fact since there is an argument that banking sector in Indonesia is considered lagging behind their counterparts in developed country in terms of IT use (Mochtar, 2001). In addition, the psychometric properties assessment has successfully distinguished compatibility and usefulness constructs. In the past, attempts to separate both constructs have often been unsuccessful (Karahanna *et al*., 1999; Moore and Benbasat, 1991).

With regards to international information systems research, the current study has discussed and followed some issues pertinent to conducting research in international arena. Among others, decentering process was undertaken to adapt the research instrument from its original context into Bahasa Indonesia. We regard this as an important procedure since it may impact translation fidelity. This conforms to Sekaran's (2000) view that highlights the importance of maintaining similar meaning by considering certain special issues in translating research instrument. With respect to other issues, our study regards country-specific characteristics such as postal service, time and contact person, as potential factors to influence international research process. We believe that these issues will be very relevant for any IS research in international arena.

## CONCLUDING REMARKS

To sum up, this study investigates roles of formal/ informal network and perceived compatibility in WWW diffusion. It was found that informal network impacts self efficacy which in turn influences the use of WWW via perceived ease of use. Surprisingly, the role of formal network is not found to be significant. Some culture specific explanations are provided for this. Besides, perceived compatibility is also found to be predictor of user's perception. In addition, this study makes an attempt to conduct a valid international IS research where a number of distinctive factors need to be addressed. The paper shows how such a research was conduct in the context of Indonesia by borrowing research instruments from western setting. The research procedure and results are presented in detail.

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