# EXPERT ASSESSMENTS OF CULTURAL EFFECTS ON E-BUSINESS IN DEVELOPING COUNTRIES

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## ABSTRACT

This study investigates experts' assessments of the pertinent factors on certain cultural factors on affecting e-business in developing countries. We design and conduct a survey that empirically solicits information from experts in e-business in Sub-Saharan Africa (SSA) in the first phase (completed and reported here), and in Latin America in the second phase (currently in progress). Our initial results for SSA using PLS analysis show that experts believe that ICT transfer implementation strongly affects both e-business capabilities and value, but that among SSA countries, there are no significant cultural effects of power distance, uncertainty avoidance, or technology culturation. Furthermore, they do not believe that there is any significant interaction between culture and transfer implementation within SSA. This study theoretically and empirically distinguishes between two different dimensions of e-business outcomes: specific capabilities and value derived from e-business. As part of the first study that conducts a quantitative, broad-based survey on factors that contribute toward e-business in the Sub-Saharan Africa and Latin America regions, it gives cause to question the common argument that native culture significantly affects the adoption of ICTs.

# INTRODUCTION

E-commerce is one of the most visible examples of the way in which information and communication technologies (ICT) can contribute to economic growth. It helps countries improve trade efficiency and facilitates the integration of developing countries into the global economy. It allows businesses and entrepreneurs to become more competitive. And it provides jobs, thereby creating wealth.

Kofi A. Annan, Secretary General of the United Nations

This statement by the Secretary General (UNCTAD 2002) points to the paramount importance of electronic business (e-business or e-commerce) diffusion as a major impetus for socioeconomic development in developing countries. E-business—business transactions or processes using the Internet—has the potential to be self-propagating and self-sustaining, the holy grail of development researchers and organizations on their quest for sustainable development. By fostering internal and external trade, e-business might create and attract wealth that could be used to develop structural infrastructure such as roads, telecommunication networks, and dams; and social infrastructure such as hospitals and schools. Hence, focusing on the commercial applications of the Internet in developing countries is a valuable perspective, since such applications potentially would have significant beneficial effects on all other applications of the Internet, such as telemedicine, online education, and electronic government.

There has been a wealth of information systems research that has studied information and communication technologies (ICTs) in developing countries (El Sherif and El Sawy 1988; Jarvenpaa and Leidner 1998). Among many proposed factors, there have been numerous arguments that various cultural beliefs and attitudes play an important role in the successful adoption or transfer of ICTs in developing countries. There has been a considerable amount of research arguing that the beliefs and values that people have ingrained in them by their cultural context significantly affect their thinking and perspectives, and hence their approach to using technology (Straub 1994; Straub 2001). Such arguments have been made concerning Latin America (Travica 2002), the Middle East (Hasan and Ditsa 1999; Straub 2001), and Sub-Saharan Africa (Hasan and Ditsa 1999). A particularly notable stream of research has been an extended study of the effects of policy and culture on information technology (IT) in Arab nations (Straub 2001). Hill et al (1998) and related studies found that various Arab cultural characteristics had significant effects on their acceptance of various ICTs. A few studies, on the contrary, have argued that culture per se is not responsible, but other factors such as the political environment overshadow its effects (Korpela 1996; Powell 2001).

A number of studies have theoretically examined the effects of culture on ICT development in general; however, very few studies have specifically examined the effects of culture on e-business in developing countries. Based on the importance of e-business on developing national infrastructure and the quality of life in the world's poorer countries, we are conducting this present study as part of a larger research program that investigates the pertinent general factors affecting e-business in developing countries. While the focus of the research is primarily on e-business in the Sub-Saharan region, this particular study, based on the theoretical importance of culture in ICT adoption and transfer, focuses on answering the question:

**What cultural factors contribute toward effective e-business outcomes in developing countries?**

# THEORETICAL BACKGROUND FOR E-BUSINESS IN DEVELOPING COUNTRIES

Information systems research has produced many frameworks that examine different dimensions of factors necessary for supporting e-business (for a comprehensive review, see Ngai and Wat 2002). This research covers e-business applications, technological issues, support and implementation, and many other aspects. In the midst of this breadth of research, the Arab Culture and IT (ACIT) project (Straub 2001) has been particularly important, spawning a large stream of research that investigates various aspects of ICT outcomes in developing countries in general, and in Arab nations in particular (Straub 2001).
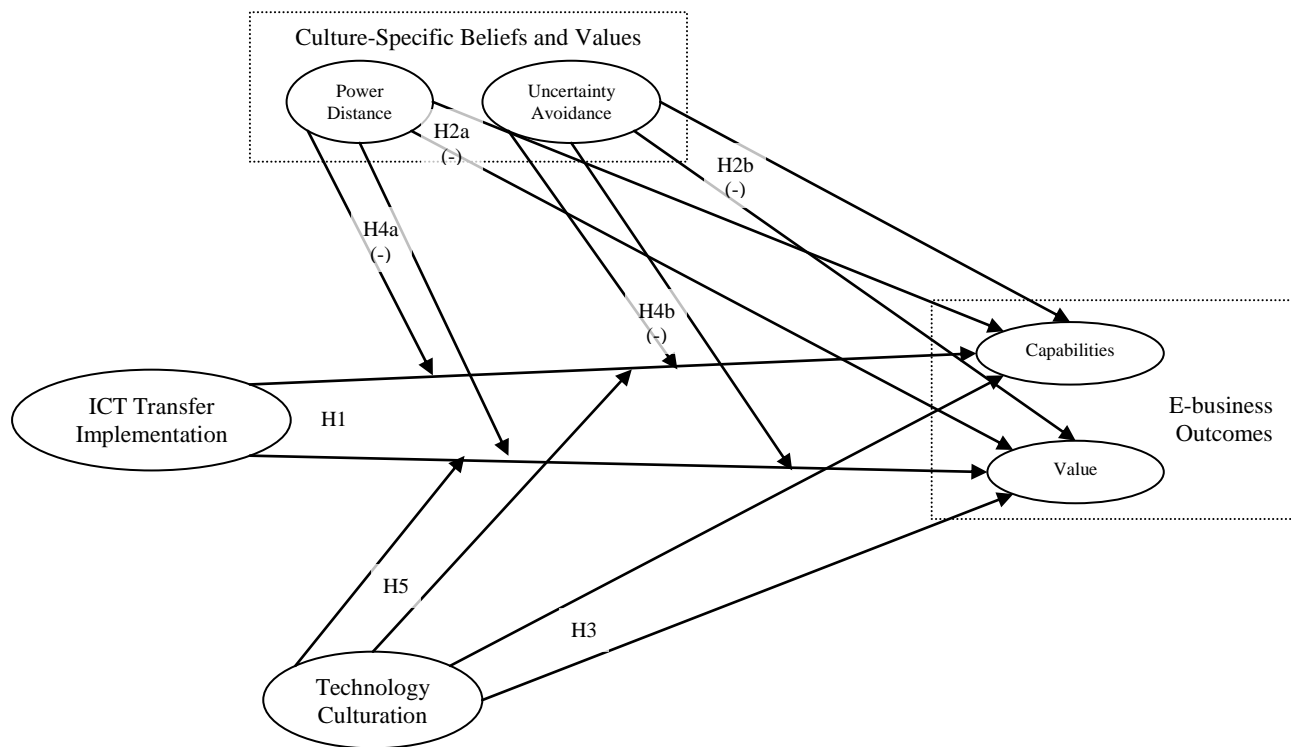


**Figure 1. Cultural model of e-business outcomes**

Based largely on ACIT, as well as research streams of e-business frameworks, ICT diffusion, and ICTs in developing countries, we have developed a general model, illustrated in Figure 1, that explains what pertinent factors affect e-business in developing countries. In this model, the primary endogenous (dependent or predicted) construct is **E-business Outcomes**, indicating the practice of e-business. This construct has two dimensions: **E-Business Capabilities**, the specific business functions that e-business is used for, and **E-Business Value**, consisting of measures of the benefits of using e-business.

The model has three predictor constructs that we postulate directly affect e-business outcomes: ICT Transfer Implementation, Culture-Specific Beliefs and Values, and Technology Culturation. **ICT Transfer Implementation** affects the effectiveness of the process of adopting ICTs in general, and e-business tools and practices in particular. At this level there are two specific culture factors: First, **Culture-Specific Beliefs and Values** specifically includes the effects of **Power Distance** and **Uncertainty Avoidance** on E-business Outcomes. **Technology Culturation** is the influence of technologically-advanced cultures on an individual's attitude to technology. In addition to their direct effects on e-business, we propose that the cultural factors also moderate the effect of ICT Transfer Implementation.

All the factors in the model (see Figure 1) assert a positive influence on the construct they affect, except for Culture-Specific Beliefs and Values. In general, some such factors could be positive, while others might be negative, as we describe below. However, in our research model where we use Power Distance and Uncertainty Avoidance, we propose that both of these effects (and corresponding interactions) are negative.

## E-Business Outcomes: Capabilities and Value

From the literature review, we observed that there are two general aspects to evaluating e-business, particularly from an empirical perspective. First, many studies examine the actual applications and functionality that e-business enables; that is, they emphasize the **Capabilities** that e-business enables, such as providing product information, interactive websites, online transactions, etc (Kardaras and Karakostas 2001; Zhu and Kraemer 2002). One of the challenges in harnessing the potential of e-business has involved understanding how best to measure it in order to maximize its benefits. A second aspect of evaluating e-business involves assessing if it delivers its promised benefits; that is, if it provides **Value** to the businesses that employ it. Value, or the success of e-business, can be measured from many different perspectives. It can be evaluated in terms of increases in sales, profits, or customers. It can be seen from the perspectives of saving costs, increasing process efficiency, saving time, reducing personnel requirements, and so on.

## ICT Transfer Implementation

Our primary interest in the cultural model is to examine how culture affects e-business outcomes in developing countries. However, "culture" does not operate in a vacuum; rather, it operates in the context of trying to implement, maintain, and support systems. Thus, we include ICT Transfer Implementation in our model, as did Loch et al (2000), to provide a base for studying cultural effects.

ICT implementation is one of the oldest streams in information systems research. Over the years, various studies have provided evidence that both the presence of critical success factors in the implementation process and the process of project implementation are important to assure the success of an ICT project. Loch et al (2000) lists the following commonly identified factors: top management support, individual differences, system quality, firm characteristics, and user-developer interactions.

A number of studies have investigated if these factors identified in developed countries also apply to developing countries (Bingi, Leff, Shipchandler and Rao 2000). In general, most of the factors are equally applicable in both contexts. However, Bingi et al (2000) identified several

issues that developing countries have to face that are not quite as important or common in developed countries: human resources, technical concerns, and socio-political challenges. Regarding human resources, ICT workers in developing countries are limited in their opportunities for career advancement. Regarding technical issues, there are concerns about the quality, security, and availability of data. Socio-politically, there are challenges that arise from illiteracy, the language barrier, and vulnerability to foreign control.

Based on the importance of these widely recognized factors, we offer the following hypothesis in our model:

**Hypothesis 1: Effective implementation of ICT transfer projects will (I) increase the capabilities of e-business and (ii) yield valuable e-business outcomes.**

# Culture

A few studies have examined the cultural effects on technology in Sub-Saharan Africa (Hasan and Ditsa 1999; Korpela 1996). Studying the root causes of organizational obstacles to IT diffusion among the Yoruba ethnic group in Nigeria, Korpela (1996) concluded that culture per se had little influence on the effectiveness of ICT in that society. Rather, he argued that a historical political economy that hindered true democracy played far more of a role. In contrast, Hasan and Ditsa (1999), comparing Australian, West African, and Middle Eastern information systems development environments, found that cultural predisposition did play a part in differential results. There are numerous cultural effects that we could test, but for a study of this scope, we can only focus on a few of the most pertinent ones. In the following sections, we examine the specific cultural effects that we will test, explaining why these are particularly relevant in a study of this nature.

## Culture-Specific Beliefs and Values

There is an inherent problem in trying to conceptualize Culture as a monolithic construct. Hofstede (1980) empirically conceptualized culture into distinct sub-constructs, with his four-dimensional scheme of Power Distance, Uncertainty Avoidance, Individualism-Collectivism, and Masculinity-Femininity.

While these dimensions all influence the work context, their effects are not equal. Shore and Venkatachalam (1996 p. 22) observe that only two of these are most pertinent when considering the organizational level of analysis, reflecting "the way decision-making power in organizations is distributed, rules and methods followed, and uncertainty accepted": **Power Distance** is the social distance between authorities and subordinates, indicating how much respect superiors expect and subordinates give; **Uncertainty Avoidance** is the aversion to risk, and indicates how much people prefer stability over risky possible benefits.

A somewhat different approach, with a particular view to how culture influences the use of technology, comes from Straub et al (Straub 2001) in the ACIT project, who divided the Culture construct into two dimensions. First, there is **Culture-Specific Beliefs and Values**, which represents specific beliefs or values that a person might hold because of the influence of their cultural background. The emphasis here is not the cultural background—a multidimensional concept, but the beliefs and values that follow as a result.

In this study we merge the two perspectives by focusing on Hofstede's culture dimensions of Power Distance and Uncertainty Avoidance within the context of Straub et al's (2002b) first dimension of culture, Culture-Specific Beliefs and Values. Hasan and Ditsa (1999)

found that high power distance (as in West Africa and the Middle East) impeded business managers from taking sound advice on technology issues that more qualified subordinates might have. They also found that, since ICT projects can be quite risky, low uncertainty avoidance (as in Australia and West Africa) enabled managers to take on more ICT projects—though this did not guarantee the success of the projects.

Based on these findings, we make the following specific hypotheses regarding Culture-Specific Beliefs and Values:

**Hypothesis 2a: Less power distance between managers and subordinates will (i) increase the capabilities of e-business and (ii) yield valuable e-business outcomes in developing countries.**

**Hypothesis 2b: Less avoidance of uncertainty in business decisions will (i) increase the capabilities of e-business and (ii) yield valuable e-business outcomes in developing countries.**

## Technology Culturation

The second dimension of Culture that Straub et al (Straub 2001) conceptualize is **Technology Culturation**, which represents a person's exposure to a relatively high technology-intense culture. This construct assumes the perspective of a culture lacking certain technologies that receives these technologies from an outside culture. In the context of studies of ICT diffusion in developing countries, this could indicate the degree to which a citizen of a developing country has been exposed to more technologically advanced cultures such as Europe or Japan, whether by traveling to these countries or by exposure to media such as computer magazines and television. In their studies of ICT diffusion in Arab nations, Straub et al (Straub 2001) found that Technology Culturation did indeed provide a consistently positive influence on ICT outcomes, particularly when conceptualized as traveling to such countries.

In light of their findings, we make the following specific hypotheses regarding the effect of Technology Culturation on e-business outcomes:

**Hypothesis 3: Greater exposure to business ICTs from advanced nations will (I) increase the capabilities of e-business and (ii) yield valuable e-business outcomes in Developing Countries.**

## Interaction between Culture and Transfer Implementation

In their studies, Straub et al also proposed that both cultural sub-constructs, Culture-Specific Beliefs and Values and Technology Culturation, might have a moderating effect on ICT Transfer Implementation. In other words, beliefs and values and culturation might affect the effectiveness of ICT Transfer Implementation, in addition to their direct effects on ICT outcomes:

Besides the hypothesized direct link between CULTURE and/or [Technology Culturation] and [Information Technology Transfer], there may well be a moderating effect on transfer implementation factors …. It is conceivable, for example, that Arab sensitivity to authority may strengthen the influence of top management support on successful outcomes. As a further example, training may be far more effective when trainees have been technologically culturated, or previously exposed to similar systems originating abroad. (Straub 2001)

In line with these propositions, we include the following hypotheses in our model:

**Hypothesis 4a: Power distance between managers and subordinates will dampen the effect of better ICT transfer implementation, thus (i) reducing the capabilities of e-business and (ii) reducing the value of e-business outcomes in developing countries.**

**Hypothesis 4b: Uncertainty avoidance in business decisions will dampen the effect of better ICT transfer implementation, thus (i) reducing the capabilities of e-business and (ii) reducing the value of e-business outcomes in developing countries.**

**Hypothesis 5: Exposure to business ICTs from advanced nations will enhance the effect of better ICT transfer implementation, thus (i) further increasing the capabilities of e-business and (ii) further increasing the value of e-business outcomes in developing countries.**

# METHODOLOGY

In order to focus and obtain meaningful results, we restricted the scope of our study in a number of important ways. First, rather than looking at developing countries in general, we have chosen to focus on Latin America and Sub-Saharan Africa. These are some of the regions that have less prior research focus regarding e-business, and we believe are in greatest need of such research. Thus, we are conducting our study in two phases, each examining e-business in one of these two regions.

In order to be more focused in our responses, we restricted the scope of this study to small and medium enterprises (SMEs) in urban centers. We were interested on the effect of e-business on locally owned organizations, and we realize that e-business is insufficiently developed at this time in rural areas.

We administered the questionnaires using World Wide Web, paper, and electronic document versions, and distributed the questionnaires to respondents via World Wide Web, regular postal mail and e-mail, respectively.

Guided by the theoretical understanding we obtained from our literature review, we combed the pertinent literature carefully to identify questionnaire items that are pertinent to our study of e-business in developing countries (Bingi et al 2000; de Vreede, Jones and Mgaya 1999; Hasan and Ditsa 1999; Hofstede 1980). Borrowing from and adapting items used in these studies, we developed multiple-item measures for each item. We pilot-tested and refined the instrument on a subset of our final sample. Details on the full instrument are available at http://chitu.okoli.org/mis/research/dissertation/dissertation.html.

# PHASE 1 RESULTS: SUB-SAHARAN AFRICA

For the first phase of our study, we used two databases of experts in African ICTs. First, we obtained contacts from a database of 1,253 organizations from the African Information Society Initiative (AISI), a project sponsored since 1996 by the United Nations Economic Commission for Africa. Our second African data source was the database of experts provided by the African Research for Information Society Emergence (ARISE), a project sponsored since 2002 by the International Development Research Centre of Canada. The particular focus of this database is on "African professionals, researchers and activists concerned with the social issues involved in building the Information Society in Africa." From this list we obtained the names and e-mail addresses of 196 such experts.

We used the 896 AISI contacts left after conducting the pilot study and all the contact from the ARISE database, totaling 1,092 expert contacts. We received 158 completed responses, giving an effective response rate of 22.0%. After cleaning the data, we were left with 147 usable responses.

Half of the experts (50.3%) were from commercial organizations, with the rest evenly divided (15.9 to 17.2%) among nongovernmental, academic, and governmental organizations. The experts had an average of 6.7 years of experience in e-business regarding Sub-Saharan Africa. They had lived an average of 21.1 years in SSA, and 7.1 years in technologically-advanced countries outside the continent of Africa. The median and mode age group for respondents was from 35-44 years. The median and mode of highest education level attained was a master's degree. 89.0% of respondents were male.

## Testing and Refining the Measurement Model

There are four steps involved in testing and refining the measurement model; that is, the part of the model that ensures that measurement variables correspond to their theoretical constructs (Chin 1998): confirmatory factor analysis, checking for cross-loadings, reliability measures of the constructs, and discriminant validity. Confirmatory factor analysis (CFA) ensured that, in a factor analysis of all the items in the instrument, each item loaded on the construct to which it is theoretically assigned. Next we verified that no items cross-loaded on a construct other than the one for which it is theoretically specified. Then using composite reliability ($r_c$) scores and the average variance extracted (AVE), we confirmed that the remaining constructs were reliable measures of their respective constructs. Finally, we tested for discriminant validity by examining the correlations between the latent factor scores of each construct in the model; we concluded that all constructs in the model were indeed distinct from each other based on testing the square roots of the AVEs.

## Testing the Structural Model and Hypotheses

We used PLS Graph 3.0 to test all these hypotheses, and in this section, we report the PLS results that we obtained while testing the main structural model that directly tests the theorized hypotheses. We used the methodology that Chin (1996) presented for testing interactions using PLS. We normalized each variable in the cultural model (E-Business Capabilities, E-Business Value, Transfer Implementation, Power Distance, Uncertainty Avoidance, and Technology Culturation) by subtracting the mean from each data point and dividing by the standard deviation. Next, we created three new interaction constructs by multiplying the value of each variable in the constructs proposed to interact with each other. Thus, we had three new constructs: TIxCPD with 5 x 3 = 15 variables, TIxCUA with 10 variables, and TIxCTC with 15 variables (TI is Transfer Implementation, CPD is Power Distance, CUA is Uncertainty Avoidance, and CTC is Technology Culturation). We incorporated these interaction constructs into the cultural model and conducted our PLS analysis, interpreting our results as usual.

Table 3 displays $R^2$ for the two endogenous e-business constructs. The exogenous factors explain 22.3% of the variation in E-Business Capabilities and 24.6% of E-Business Value. This is an average explanation of 23.4%. Both $R^2$ values are statistically significant ($p < 0.001$). Table

3 displays the coefficients for all hypothesized paths in the model with their significances (obtained by bootstrapping).

**Table 3. Path coefficients and $R^2$ for cultural model**

| Predictor Constructs | | Predicted Constructs | Path | *t* | p(*t*) |
|---|---|---|---|---|---|
| Transfer Implementation | → | E-biz Capabilities | 0.328** | 3.079 | 0.002 |
| | → | E-biz Value | 0.354*** | 3.736 | 0.000 |
| Power Distance | → | E-biz Capabilities | -0.138 | -1.477 | 0.142 |
| | → | E-biz Value | -0.028 | -0.276 | 0.783 |
| Uncertainty Avoidance | → | E-biz Capabilities | -0.090 | -0.866 | 0.388 |
| | → | E-biz Value | -0.117 | -1.254 | 0.212 |
| Technology Culturation | → | E-biz Capabilities | 0.036 | 0.410 | 0.683 |
| | → | E-biz Value | 0.021 | 0.228 | 0.820 |
| TIxCPD | → | E-biz Capabilities | -0.077 | -0.615 | 0.540 |
| | → | E-biz Value | -0.184 | -1.215 | 0.226 |
| TIxCUA | → | E-biz Capabilities | -0.034 | -0.311 | 0.756 |
| | → | E-biz Value | 0.200 | 1.537 | 0.127 |
| TIxCTC | → | E-biz Capabilities | -0.089 | -0.621 | 0.536 |
| | → | E-biz Value | -0.086 | -0.602 | 0.548 |
| | | | $R^2$ | *F* | p(*F*) |
| | | E-biz Capabilities | 0.223*** | 10.171 | 0.000 |
| | | E-biz Value | 0.246*** | 11.551 | 0.000 |

In addition to testing all the constructs and interactions in the cultural model together, we tested each interaction individually to ensure that the related cultural constructs in one model were not masking the effects of any interactions. That is, we tested three further PLS models: The first had Transfer Implementation (TI), Power Distance (CPD), the TI-PD interaction (TIxCPD), E-Business Capabilities (EBC) and E-Business Value (EBV); the second had TI, Uncertainty Avoidance (CUA), TIxCUA, EBC, and EBV; and the third had TI, Technology Culturation (CTC), TIxCTC, EBC, and EBV. However, as Table 4 shows, none of these interactions was statistically significant. Figure 2 displays the structural path diagram of the cultural model with the coefficients of paths that were statistically significant at the 0.05 level.

**Table 4. Path Coefficients in Three Cultural Interaction Models**

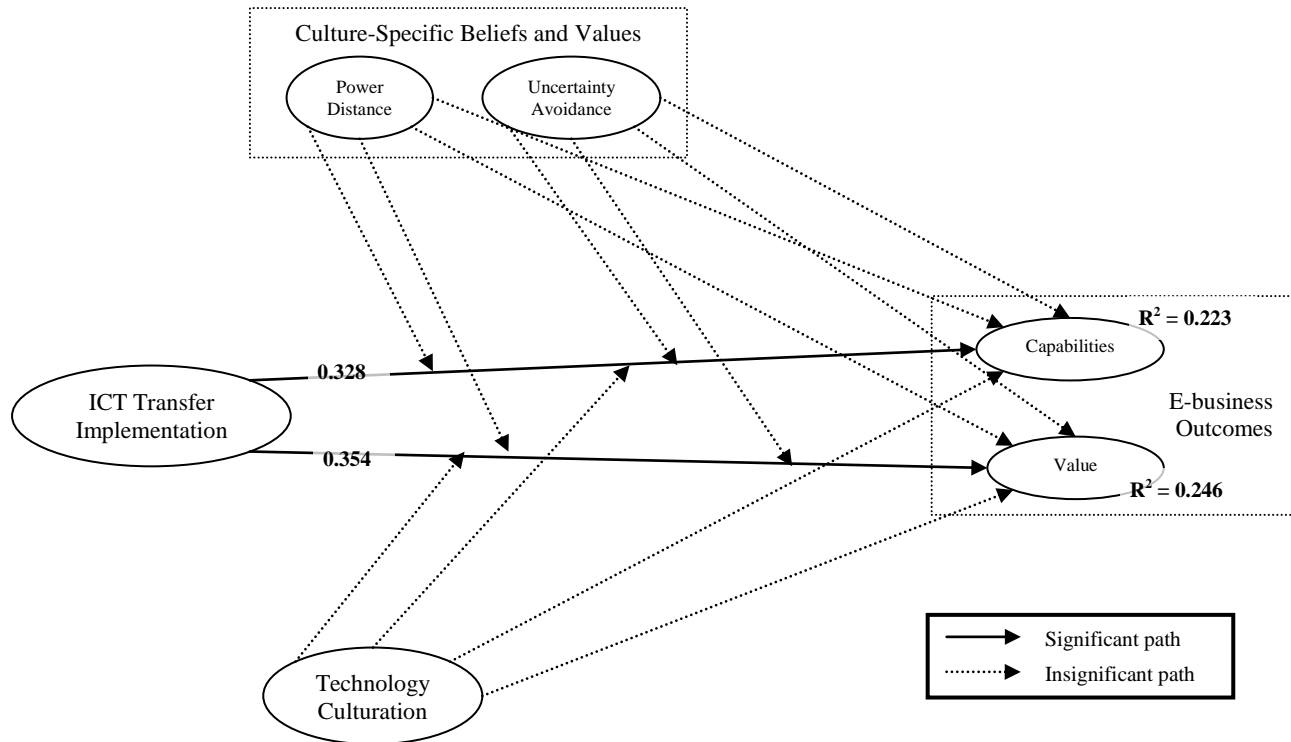| Predictor Constructs | | Predicted Constructs | Path | *T* | p(*t*) |
|---|---|---|---|---|---|
| TIxCPD | → | E-biz Capabilities | -0.015 | 0.933 | 0.352 |
| | → | E-biz Value | -0.104 | 1.013 | 0.313 |
| TIxCUA | → | E-biz Capabilities | -0.093 | 0.909 | 0.365 |
| | → | E-biz Value | 0.104 | 1.019 | 0.310 |
| TIxCTC | → | E-biz Capabilities | 0.116 | 0.980 | 0.329 |
| | → | E-biz Value | 0.145 | 0.339 | 0.735 |

**Figure 2. Cultural model of e-business factors with coefficients of significant path**

In summary, our tests show that experts perceived that well-managed ICT projects (H1) would help improve specific capabilities (path = 0.328) and result in more valuable yields from e-business (path = 0.354). However, the tests did not find support for any of the cultural hypotheses. Whether regarding e-business capabilities or the value of e-business, experts did not believe that power distance (H2a), uncertainty avoidance (H2b), or technology culturation (H3) affected e-business outcomes in any significant way. When we tested the interaction between each cultural factor and transfer implementation (H4a, H4b, and H5), we did not find any statistically significant effects, indicating that the experts saw no relationship whatsoever between the cultural factors we tested and e-business outcomes.

## Discussion of Phase 1 Results

### ICT Transfer Implementation

The study provided strong evidence that experts perceived that well-managed ICT projects would increase the capabilities of e-business in Sub-Saharan Africa, and that this e-business activity would be profitable. This finding is consistent with those from the ICT implementation literature, one of the oldest streams of research in information systems. This indicates that the experts believed that the traditional factors that contribute towards success in ICT projects—top management support, user involvement, project championship, and so on— were also applicable to e-business projects in SSA. This is particularly important in this study, since researchers developed these theories under Western models of ICT development and this

study was conducted in an African context, which a number of studies have shown can be rather different from the Western context (de Vreede, Jones and Mgaya 1999; Hasan and Ditsa 1999).

**Culture**

In light of the strong effects of ICT transfer implementation, it is striking that none of the cultural factors—or interactions—we tested proved to have any statistically significant effect on either e-business capabilities or value. This finding is contrary to that of Hasan and Ditsa (1999), who found that high power distance among West African business managers made them reluctant to solicit technical advice from their qualified subordinates and consequently resulted in project failures. However, their finding that West African managers' propensity to take on risks (that is, low uncertainty avoidance) led to their taking on more ICT projects, but these projects often failed for other reasons. We would not expect that taking on risky projects—especially based on poor judgment—would have a consistent effect on either e-business capabilities or value; so, an insignificant effect is not surprising for this dimension. Perhaps a similar finding is de Vreede et al's (1999) finding that although the high power distance of East African managers did not reduce their use of groupware, it did reduce their faithful use of the democratic decision-making features of the system. Such an effect would not necessarily increase or reduce either e-business capabilities or value.

Regarding technology culturation, Straub et al (Straub 2001) found that Arabs' culturation to the technology of advanced nations, particularly by traveling to these countries, affected their perception of the success of Western-based information systems. However, although e-business is a Western innovation, the experts we surveyed did not believe that technology culturation (operationalized the same way as for Arab nations) had any effect on e-business capabilities or value in SSA.

Although different from Hasan and Ditsa's, our findings are consistent with one significant study from the literature. In an in-depth case study of the impediments to ICT diffusion among the Yoruba ethnic group of Nigeria, Korpela (1996) rejected the hypothesis that culture had any significant effect. His alternative explanation, citing the effects of historical political economy, had more in common with ICT implementation factors than with culture. He recommended that "systems analysis should be extended from the information flow within the end-user organisation to the services provided by the organisation to the civil society" (p. 39), and that African systems development projects should mobilize adequate resources, including management consultancy. Thus, the experts we surveyed concurred that the proper implementation of the e-business project itself is more important than the culture of those implementing it. Although what makes for "proper" implementation might be culturally relative, the items that we used in operationalizing transfer implementation seem to be common across both in SSA and in Western nations.

Qualitative user responses to the survey are available at http://chitu.okoli.org/mis/research/dissertation/dissertation.html.


# OUTLINE OF PHASE 2: LATIN AMERICA

We will similarly survey e-commerce and ICT experts from Latin America (LA). We have identified some appropriate sources, with potentially 150 or more final respondents. The experts in this database include the same categories discussed above, as this organization

collaborates with other NGOs, governments, universities, and other public and private institutions.

Using the instrument developed as a result of our pilot study, we will follow the same procedure of data collection that we used for the SSA phase of the study. We will use the World Wide Web, paper, and electronic document versions and distribute the questionnaires to respondents via e-mail.

We will repeat the four steps of testing and refining the measurement model (confirmatory factor analysis, checking for cross-loadings, reliability measures of the constructs, and discriminant validity) with the LA data, checking for possible differences from the refined instrument for the SSA tests. We will use the same PLS techniques to test the same structural model with interactions. In addition to testing LA separately, we will also test the model using all the data together.

# CONCLUSION

This paper outlines an investigation into experts' assessments of the pertinent factors affecting e-business in Sub-Saharan Africa (phase 1) and Latin America (phase 2). To answer our research questions, we first reviewed the literature related to e-business in developing countries and then developed a cultural model. For empirical insight into our research questions, we designed and conducted the first study that empirically solicited information from business practitioners, government officials, NGO officials, and academics that had expertise related to e-business among urban SMEs in SSA. We used the survey responses to test the research models and to help answer our research questions. We are about to begin data collection for phase 2 on Latin America.

The SSA results give cause to question the common argument that native culture significantly affects the adoption of ICTs (de Vreede, Jones and Mgaya 1999; Hasan and Ditsa 1999; Straub 2001). Most of the literature on ICTs and culture make this argument, and there have been empirical findings to this effect, but there has also been the argument that while culture might color the way ICTs are used, it is not the prime determinant of specific outcomes (Korpela 1996). It is important to note that we cannot and do not make any conjectures about the possible effects of other cultural dimensions that we did not test in this study, such as long term orientation, social collectivity, or valuation of "the good life" (Hofstede's Masculinity/Femininity). However, the dimensions that we tested here—power distance, uncertainty avoidance, and technology culturation—have been clearly shown elsewhere to be relevant dimensions in similar contexts (Shore and Venkatachalam 1996; Straub 2001); they were not randomly selected. By presenting evidence that experts do not believe that these cultural dimensions have a significant effect on e-business outcomes in SSA, we provided quantitative evidence that reproduced Korpela's contrarian conclusion.

The next step is to test the cultural model within specific regions outside of SSA. This study will extend our research to Latin America. It will be very interesting to see what the results would be in this other developing region, whose culture is quite different from that of SSA. If the results are the same, it would provide strong evidence against the common argument that "native culture" impedes technology diffusion. However, if LA experts in e-business indicate that culture *is* a significant factor, then many insights could be obtained by analyzing the specific qualitative comments that the SSA and LA experts give to further understand what might give them

different perspectives on the effects of culture on e-business in these regions. Regardless of the results, the completion of this study promises to provide interesting and valuable results.

# REFERENCES

Bingi, Prasad, Laura G. Leff, Zoher E. Shipchandler and Suresh Rao (2000). Critical IT implementation issues in developed and developing countries. *Information Strategy* (16:2), pp. 25-34.

Chin, Wynne W. (1998). The partial least squares approach for structural equation modeling. *Modern methods for business research*. George A. Marcoulides, ed.: Lawrence Erlbaum Associates, pp. 295-336.

Chin, Wynne W., Barbara L. Marcolin and Peter R. Newsted (1996). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and voice mail emotion/adoption study. *Proceedings of 17th International Conference on Information Systems*. Cleveland, Ohio, December, 1996.

de Vreede, Gert-Jan, Noel Jones and Rabson J. Mgaya (1999). Exploring the application and acceptance of group support systems in Africa. *Journal of Management Information Systems* (15:3), p. 197.

El Sherif, Hisham and Omar A. El Sawy (1988). Issue-based decision support systems for the Egyptian cabinet. *MIS Quarterly* (12:4), pp. 551-569.

Hasan, Helen and George Ditsa (1999). The impact of culture on the adoption of IT: An interpretive study. *Journal of Global Information Management* (7:1), pp. 5-15.

Hill, Carole, Karen D. Loch, Detmar W. Straub and Kamal El-Sheshai (1998). A qualitative assessment of Arab culture and information technology transfer. *Journal of Global Information Management* (6:3), pp. 29-38.

Hofstede, Geert (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills: Sage.

Jarvenpaa, Sirkka L. and Dorothy E. Leidner (1998). An information company in Mexico: Extending the resource-based view of the firm to a developing country context. *Information Systems Research* (9:4), pp. 342-361.

Kardaras, D. and B. Karakostas (2001). An empirical investigation of the management practices and the development of electronic commerce in Mauritius. *International Journal of Information Management* (21:6), pp. 441-455.

Korpela, Mikko (1996). Traditional culture or political economy? On the root causes of organizational obstacles of IT in developing countries. *Information Technology for Development* (7:1), pp. 29-42.

Loch, Karen, Gayle Nelson and Detmar W. Straub (2000). NSF project summary: IT transfer to Egypt: A process model for developing countries. Grant proposal, September 2000. Georgia State University, Atlanta.

Ngai, Eric W. T. and Francis K. T. Wat (2002). A literature review and classification of electronic commerce research. *Information & Management* (39:5), pp. 415-429.

Powell, Mike (2001). Knowledge, culture & the Internet in Africa: A challenge for political economies. *Review of African Political Economy* (28:88), pp. 241-260.

Shore, Barry and A. R. Venkatachalam (1996). Role of national culture in the transfer of information technology. *Journal of Strategic Information Systems* (5), pp. 19-35.

Straub, Detmar W. (1994). The effect of culture on IT diffusion: E-mail and fax in japan and the U.S. *Information Systems Research* (5:1), pp. 23-47.

Straub, Detmar W. (2001). ACIT-APIT. Georgia State University. http://www.acit-apit.com (as of September 2004).

Travica, Bob (2002). Diffusion of electronic commerce in developing countries: The case of Costa Rica. *Journal of Global Information Technology Management* (5:1), pp. 4-24.

UNCTAD (2002). E-commerce and development report 2002. United Nations Conference on Trade and Development, New York.

Zhu, Kevin and Kenneth L. Kraemer (2002). E-commerce metrics for Net-enhanced organizations: Assessing the value e-commerce to firm performance in the manufacturing sector. *Information Systems Research* (13:3), pp. 275-295.