An Empirical Study on the Effect of Attitude Toward Change and Computer Self-Efficacy on ERP Adoption: A Comparison of the Local and Global Packages

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An Empirical Study on the Effect of Attitude toward Change and Computer Self-Efficacy on ERP Adoption: A Comparison of the Local and Global Packages

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ABSTRACT
Despite the promised benefits of Enterprise Resource Planning (ERP) systems, more than two thirds of ERP system projects result in failure. In this study, some plausible reasons for their failure are proposed from the socio-technical systems perspective. This study has two research objectives. First, it introduces and tests a theoretical model which views ERP systems as both an organizational change driver and a sophisticated information system in order to better explain the phenomenon of ERP systems adoption. For this purpose, the proposed model includes attitude toward change and computer self-efficacy, which may affect ERP systems adoption behavior through perceived usefulness for the systems. Second, this paper attempts to shed some light on how the localization differences of ERP systems may affect users’ intention to adopt the ERP systems. The results based on survey data using subjects from two different ERP systems support the proposed research model and identify the moderating effect of the localization differences. Theoretical and practical implications of the study are discussed along with its limitations.

Keywords
ERP systems, Attitude toward change, Computer self-efficacy, Localization differences, IT implementation

1. INTRODUCTION
Enterprise Resource Planning (ERP) systems promise to improve organizational performance and competitiveness by streamlining business processes and eliminating the duplication of effort and data. Despite the promised benefits, however, many companies have been plagued by a high failure rate which is estimated to be between 60 and 90 percent (Ptak and Schragenheim 1999). Some plausible reasons for their failure can be derived from the inherent characteristics of ERP systems which may be interpreted in the context of socio-technical systems.

On one hand, from a social or organizational system perspective, ERP systems are considered to have a change-driving force over the adopting companies, which lead to enterprise-wide organizational changes. Previous studies (ITtoolbox 2004, Jiang et al. 2000, Lapointe and Rivard 2005) have indicated that one of the most critical reasons for the failure of ERP systems adoption is potential user resistance to change. It is widely reported that the sources of ERP systems failures are not limited to technical issues. Rather, there are various causes arising from the interactions among people, task, environment, and technology. Although an ERP system could be developed successfully from the technical point of view, if users are not willing to use it because of their negative attitude toward change, the ERP system would not bring the expected benefits to the company. On the other hand, from a technical system perspective, ERP systems are considered technologically sophisticated information systems (IS), which often require more technical knowledge about the adopting systems compared with the traditional transaction-processing systems. Technical knowledge, which is usually learned through education and training, is likely to be acquired more effectively and efficiently when users’ self-efficacy for using computers and information technologies (IT) is high, rather than when users are reluctant to use them because of the lack of computer self-
efficacy. It is widely argued that computer self-efficacy can influence successful IS adoption by positively influencing individual expectancies about the job performance when using the specific IS for performing the job.

This study has two objectives. First, it introduces and tests a theoretical model which views ERP systems as both an organizational change driver and a sophisticated IS in order to better explain the phenomenon of ERP systems adoption. For this purpose, the proposed model includes attitude toward change and computer self-efficacy, two individual factors from the socio-technical systems perspective, which may affect ERP systems adoption behavior through perceived usefulness for the systems. Second, this paper attempts to shed some light on how the localization differences of ERP systems may affect users’ intention to adopt the ERP systems. ERP systems’ features developed by local vendors tend to be more familiar to domestic or local users by incorporating culture-specific factors into their systems, while those developed by global vendors are likely to be less localized compared with domestic ERP systems because of their orientation toward the global market. The former is more flexible in reflecting culture-specific changing requirements primarily resulting from local business practices into the system and does not usually require any specific IT capability to operate the system, whereas the latter is stricter in changing the standard business processes provided by the system and often requires additional IT knowledge to run the system. Since the effect of attitude toward change and computer self-efficacy on the perceived usefulness for the systems may be related to the degree of localization of ERP systems, the proposed model is tested with subjects from different ERP systems users to identify the localization variations in the context of the local and global ERP systems.

2. THEORETICAL BACKGROUND AND RESEARCH MODEL

We present our research model in Figure 1. In the following paragraphs, we survey the theoretical and conceptual background of the research model, discussing the effect of attitude toward change and computer self-efficacy on perceived usefulness and the variations according to the localization differences between the local and global ERP systems.

![Research Model](image)

Change is a fundamental theme in human life and organizational behavior, which individuals generally resist (Joshi 1991). Attitude toward change refers to the extent to which individuals hold positive views about the need for organizational change, as well as the extent to which they believe that such changes are likely to have positive implications for themselves and the organization (Armenakis et al. 1993). Thus, an individual’s attitude toward change can play an important role in determining whether the individual chooses to support or resist a change (Kirton and Mulligan 1973). Attitude toward change, in general, consists of a person’s affective reactions to change, cognitions about change, and behavioral tendency toward change (Dunham et al. 1989). Consistent with this, and according to Elizur and Guttman (1976), individuals’ or groups’ responses to organizational change are classified into three types. First, affective responses are a greater or lesser feeling of being linked to, satisfied with, or anxious about change. Second, cognitive responses are the opinions one has about the advantages, disadvantages, usefulness, and necessity of the change, and about the knowledge and information required to handle it. Third, behavioral responses are the actions one has already taken or may take in the future for or against the change.

Previous research has attributed many IS failures to user propensity to resist change (Jiang et al. 2000, Joshi 1991, Markus 1983, Robey and Boudreau 1999). Markus (1983) explained resistance to change and implementation difficulties primarily in terms of the conflict for more power among users. Joshi (1991) posited that individuals attempt to evaluate most changes in terms of equity status, and they are likely to resist changes that are unfavorable to them. Organizational resistance to change has been identified as a top critical success factor for ERP adoption (Lapointe and Rivard 2005, Markus and Tanis 2000, Nah...
et al. 2003), with user resistance blamed for many ERP project failures (ITtoolbox 2004, Laughlin 1999). In addition, the absence of an adequate organizational change attitude can result in the failure of an ERP initiative, regardless of how technically competent the organization is (Al-Mashari 2000).

Creating the belief that organizational change is needed implies that there is a performance gap between the current state and some desired end-state (Armenakis et al. 1993). In general, an ERP system as a means of organizational change is introduced into a company to improve organizational effectiveness and thus fill up the performance gap. Organizational members who have favorable perceptions of organizational transformation are likely to proactively participate in any organizational change situations such as an ERP system introduction, and possibly look forward to changes in work patterns while expecting enhanced performance. In addition, when people have a positive attitude toward change, they tend to be more interested in new features of the ERP system and expect more benefits from them. Individuals with such traits are more likely to focus on positive outcomes and pay less attention to negative outcomes when using the ERP system. Thus, this leads to a higher perceived usefulness for the ERP system. In contrast, when people have a negative attitude toward change, they tend to be rather passive to the new features of the ERP system and expect nothing or little benefits from them. Individuals with such traits are more likely to focus on negative outcomes and disregard positive outcomes when using the ERP system, which results in lower perceived usefulness for the ERP system.

The relationship between attitude toward change and perceived usefulness may be moderated by the extent to which ERP systems are localized. In this study, localization is considered in terms of customized processes and practices even though it can be defined from the various perspectives. Users of the ERP system with a high level of localized features tend to be more accustomed to reflecting their changing requirements into the ERP system because they know that the system is flexible in reflecting local business practices; in addition, it may easily accept their unique requirements that may improve their job performance and accommodate their desire toward change. Over time, they may have developed liberal limits for perceived usefulness for the system. Hence, individuals with a high level of positive attitude toward change may have a very high level of perceived usefulness, and individuals with a low level of positive attitude toward change may have a very low level of perceived usefulness. As such, when perceived usefulness varies greatly with attitude toward change, we can posit that the relationship between them is strong, indicating that the result is a strong path coefficient. Users of the ERP system with a low level of localized features are more likely to avoid asking to incorporate their changing requirements into the ERP system because they know that the ERP system does not accept those kinds of requirements that may give a chance to improve their job performance and satisfy their desire toward change, but are usually not the underlying business model (sometimes called best practice). Over time, they may have developed conservative limits for perceived usefulness of the system. Hence, individuals with a high level of positive attitude toward change may not have a very high level of perceived usefulness, and individuals with a low level of positive attitude toward change may not have a very low level of perceived usefulness. As such, if perceived usefulness does not vary greatly with attitude toward change, we can assume that the result is a weak path coefficient. Thus, the level of localization may moderate the translation of attitude toward change into perceived usefulness. Therefore, we hypothesize the following:

**H1: Attitude toward change has a significant effect on perceived usefulness.**

**H1a:** The relationship between attitude toward change and perceived usefulness is stronger in the context of using an ERP system with more-localized features.

Self-efficacy is the belief that one has the capability to perform a particular job and is reflective of the confidence in one’s ability (Bandura 1997). In the context of using computers and IT, computer self-efficacy, therefore, is defined as a judgment of one’s capability to use a computer (Compeau and Higgins 1995). Computer self-efficacy judgment consists of three distinct, but interrelated, dimensions: magnitude, strength, and generalizability (Compeau and Higgins 1995). First, the magnitude of computer self-efficacy reflects the level of capability expected. Second, the strength of computer self-efficacy refers to the level of conviction about the judgment. Third, the generalizability of computer self-efficacy refers to the extent to which the judgment is limited to a particular domain of activity. Computer self-efficacy has been proposed and has accumulated empirical support as an important antecedent of perceived usefulness (Agarwal and Karahanna 2000, Compeau and Higgins 1995). Based on the social cognitive theory (Bandura 1991), it has been argued that computer self-efficacy has a positive influence on both personal and performance-related outcome expectations about the consequences of performing a specific behaviour (Compeau and Higgins 1995). It is because it is often difficult for individuals to separate the anticipated consequences of the behavior from their expectations of performance achievements. Such outcome expectations can be interpreted as the notion of perceived usefulness (Agarwal and Karahanna 2000, Davis 1989, Venkatesh 1999). When individuals believe that they will be able to use computers and IT with great skill, they are more likely to expect beneficial
outcomes from using computers and IT as compared to when they doubt their computer-related capabilities. In other words, computer self-efficacy can be established as an additional important predictor of perceived usefulness.

This translation of computer self-efficacy level into perceived usefulness may be moderated by the level of localization of ERP systems. The ERP system with a low level of localized features is likely to require users to adjust the system in order to reflect their local organizational features, for example, setting parameters in the package, modifying reporting formats, making different user interfaces from provided ones, and creating a new connection with legacy systems. This means that less-localized ERP systems require more technical knowledge, effort, and skill to adapt them to the characteristics of a particular local organization, which in turn might require more technical training and education for the system. In the context of using the less-localized ERP system, users’ self-efficacy about computers and IT is likely to play more important roles in configuring and using the system for their job performance because they are more likely to be exposed to different technical environments from the existing one. Individuals with high levels of computer self-efficacy generalizability would expect to be able to competently use different software packages (Compeau and Higgins 1995), which may allow them to explore different aspects of these software packages and experience more useful features. This implies that they may have developed liberal limits for perceived usefulness for the system over time. Thus, individuals with strong computer self-efficacy may have a very high level of perceived usefulness, and individuals with weak computer self-efficacy may have a very low level of perceived usefulness. As such, since perceived usefulness varies greatly with computer self-efficacy, we can posit that the relationship between them shows a strong path coefficient. The ERP system with a high level of localized features is not likely to require users to adjust the system in order to reflect their local organizational features compared with less-localized ERP systems because the system already reflects the culture-specific features of the local organization. This means that more-localized ERP systems do not necessarily require specific technical knowledge and skill for the system adaptation that leads to technical training and education just for the system. In this context, users’ self-efficacy about computers and IT is less likely to influence their expectancy for job performance as compared to the context of less-localized systems because they feel they do not need any additional technical knowledge for performing their job better with the ERP system. This implies that as time passes, they may have developed conservative limits for perceived usefulness for the system. Thus, individuals with strong computer self-efficacy may not have very a high level of perceived usefulness, and individuals with weak computer self-efficacy may not have a very low level of perceived usefulness. As such, when perceived usefulness does not vary greatly with computer self-efficacy, we can assume that the relationship between them is weak, resulting in a weak path coefficient. Therefore, the relationship between computer self-efficacy and perceived usefulness may vary according to the level of localization. Hence, we hypothesize the following:

**H2: Computer self-efficacy has a significant effect on perceived usefulness.**

**H2a: The relationship between computer self-efficacy and perceived usefulness is stronger in the context of using an ERP system with less-localized features.**

Many previous studies based on the Technology Acceptance Model (e.g., Venkatesh et al. 2003) have indicated that individuals’ behavioral intention to use a new system is influenced by perceived usefulness for the system. The more useful the system is in enabling employees to accomplish their tasks, the more it will be used. Hence, we hypothesize the following:

**H3: Perceived usefulness has a significant effect on intention to adopt an ERP system**

3. RESEARCH DESIGN AND METHODOLOGY

3.1 MEASUREMENT DEVELOPMENT

To test the proposed research model, a field survey methodology was adopted because the approach is strong in terms of generalizability of results. We developed our data collection instrument by adopting existing validated questions wherever possible. All question items were measured with a seven-point Likert-type scale, with anchors ranging from “strongly disagree” to “strongly agree.” Two IS researchers reviewed the instrument and checked its face validity.

The attitude toward change construct was measured using 13 items taken from the instrument developed by Dunham et al. (1989). These items were designed to reflect three types of responses toward change, namely, affective, cognitive, and behavioral tendencies toward change, which consists of three, six, and four items each, respectively. In order to measure the psychometric properties of computer self-efficacy, this research adopted 10 items from the instrument developed by Compeau and Higgins (1995), which has been empirically validated in other studies (Agarwal and Karahanna 2000, Hu et al. 2003). The perceived usefulness construct was measured with six items adopted from the previously validated measurement inventory and then were modified to suit the context of the present research (Davis 1989, Gefen et al. 2003). Two items to
measure intention to adopt an ERP system were based on the suggestions of Davis (1989) and the recommendations of Fishbein and Ajzen (1975).

3.2 DATA COLLECTION PROCEDURE

To assess the proposed hypotheses, in particular, the hypotheses with localization differences, data collection was conducted in two ERP system environments which differ on the level of localization. We selected two ERP vendors in terms of market share, one from local vendors and the other from global vendors, which are recognized as leading companies in each category (i.e., local ERP products and global ERP products). After obtaining promises of cooperation from the two vendors, the research objective was explained to the sales representatives of each vendor who were supposed to distribute and collect questionnaires from the clients. Before distributing the questionnaires, e-mails to each client firm were sent to explain the research objective and to obtain permission to distribute the questionnaires to full-time employees who worked with ERP systems to perform their job. The returned questionnaires were screened for completeness and reliability, and 575 responses (283 for the local vendor and 292 for the global vendor) were found to be complete and usable.

4. ANALYSIS AND RESULTS

This research selected a confirmatory approach using Partial Least Squares (PLS) to carry out data analysis. PLS is superior to traditional statistical methods using exploratory approach (e.g., factor analysis and regression) because it assesses the measurement model within the context of the structural model (Keil et al. 2000). PLS was chosen to examine the proposed model for two reasons. First, it is appropriate for assessing theories in the early stage of development (Fornell and Bookstein 1982). Since this study is an early attempt to establish a theoretical model, PLS can be used to analyze the collected data. Second, PLS has less stringent assumptions in distribution type, interval nature, and level of correlations between constructs (Fornell and Bookstein 1982). This makes PLS more suitable to handle the constructs with the psychometric properties. PLS-Graph 3.0 was used in this study. A confirmatory factor analysis was first conducted to examine the measurement model by assessing the unidimensionality of all items. Then the structural relationships among constructs were examined to test the hypotheses.

4.1 MEASUREMENT MODEL

The strength of the measurement model can be demonstrated through measures of convergent and discriminant validity (Hair et al. 1998). Convergent validity was assessed by three criteria. First, standardized path loadings, which are indicators of the degree of association between the underlying latent factor and each item, should be greater than 0.7 and statistically significant (Gefen et al. 2000). Second, the composite reliability (CR) must be larger than 0.7 (Hair et al. 1998). Third, the average variance extracted (AVE) for each factor should exceed 0.5 (Fornell and Larcker 1981). As depicted in Table 1, the standardized path loadings were all significant (t-value > 2.58) and greater than 0.7, except for SE1 and SE2 from the global vendor data set. Two items (AC7 and AC13) were removed because the standardized path loadings did not satisfy the criterion. The composite reliability values ranged from 0.856 to 0.981, which were all above the recommended level of 0.7 for a reliable construct. The average variance extracted for each factor was between 0.570 and 0.963, which exceeded the acceptable value of 0.5. Hence, the questions in this study established convergent validity.

<table>
<thead>
<tr>
<th>Construct items</th>
<th>Combined data set</th>
<th>Global vendor data set</th>
<th>Local vendor data set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Loading</td>
<td>CR</td>
<td>AVE</td>
</tr>
<tr>
<td>IA</td>
<td>IA1</td>
<td>0.9650</td>
<td>0.964</td>
</tr>
<tr>
<td></td>
<td>IA2</td>
<td>0.9646</td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>PU1</td>
<td>0.8621</td>
<td>0.958</td>
</tr>
<tr>
<td></td>
<td>PU2</td>
<td>0.9224</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PU3</td>
<td>0.9043</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PU4</td>
<td>0.8973</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PU5</td>
<td>0.9001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PU6</td>
<td>0.8512</td>
<td></td>
</tr>
<tr>
<td>ACA</td>
<td>AC1</td>
<td>0.8199</td>
<td>0.899</td>
</tr>
<tr>
<td></td>
<td>AC2</td>
<td>0.9100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC3</td>
<td>0.8643</td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>AC4</td>
<td>0.8591</td>
<td>0.931</td>
</tr>
<tr>
<td></td>
<td>AC5</td>
<td>0.8221</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC6</td>
<td>0.8699</td>
<td></td>
</tr>
</tbody>
</table>
Next, we tested discriminant validity by showing the cross-loadings of all items that measured the dependent and independent variables. All indicators loaded more highly on their own construct than on other constructs. Furthermore, we also assessed discriminant validity by comparing the square root of AVE for each construct with the correlations between that construct and other constructs (Fornell and Larcker 1981). As shown in Table 2, the square root of AVE for each construct exceeded the correlations between that construct and other constructs. Hence, the questions used in this study established discriminant validity.

Table 1. Results of Convergent Validity Testing.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean (SD)</th>
<th>IA</th>
<th>PU</th>
<th>ACA</th>
<th>ACC</th>
<th>ACB</th>
<th>CSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>5.32 (1.12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>5.11 (1.02)</td>
<td>0.703</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACA</td>
<td>5.16 (1.10)</td>
<td>0.411</td>
<td>0.435</td>
<td>0.865</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>5.18 (0.98)</td>
<td>0.530</td>
<td>0.536</td>
<td>0.730</td>
<td>0.855</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACB</td>
<td>4.95 (1.10)</td>
<td>0.295</td>
<td>0.351</td>
<td>0.586</td>
<td>0.574</td>
<td>0.922</td>
<td></td>
</tr>
<tr>
<td>CSE</td>
<td>4.93 (0.96)</td>
<td>0.484</td>
<td>0.413</td>
<td>0.368</td>
<td>0.432</td>
<td>0.351</td>
<td>0.797</td>
</tr>
</tbody>
</table>

Table 2. Results of Discriminant Validity Testing (leading diagonal shows the square root of AVE of each construct.)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean (SD)</th>
<th>IA</th>
<th>PU</th>
<th>ACA</th>
<th>ACC</th>
<th>ACB</th>
<th>CSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>5.60 (1.10)</td>
<td>0.981</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>5.21 (1.01)</td>
<td>0.668</td>
<td>0.885</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACA</td>
<td>5.30 (0.95)</td>
<td>0.242</td>
<td>0.246</td>
<td>0.815</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>5.37 (0.85)</td>
<td>0.384</td>
<td>0.350</td>
<td>0.596</td>
<td>0.814</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACB</td>
<td>5.00 (1.07)</td>
<td>-0.002</td>
<td>0.026</td>
<td>0.421</td>
<td>0.302</td>
<td>0.926</td>
<td></td>
</tr>
<tr>
<td>CSE</td>
<td>5.04 (0.92)</td>
<td>0.464</td>
<td>0.410</td>
<td>0.297</td>
<td>0.372</td>
<td>0.276</td>
<td>0.755</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean (SD)</th>
<th>IA</th>
<th>PU</th>
<th>ACA</th>
<th>ACC</th>
<th>ACB</th>
<th>CSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>5.03 (1.06)</td>
<td>0.943</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>5.00 (1.01)</td>
<td>0.744</td>
<td>0.894</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACA</td>
<td>5.01 (1.22)</td>
<td>0.538</td>
<td>0.589</td>
<td>0.917</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>4.99 (1.08)</td>
<td>0.620</td>
<td>0.682</td>
<td>0.812</td>
<td>0.881</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACB</td>
<td>4.90 (1.13)</td>
<td>0.594</td>
<td>0.665</td>
<td>0.718</td>
<td>0.792</td>
<td>0.921</td>
<td></td>
</tr>
<tr>
<td>CSE</td>
<td>4.81 (0.98)</td>
<td>0.482</td>
<td>0.409</td>
<td>0.413</td>
<td>0.459</td>
<td>0.413</td>
<td>0.853</td>
</tr>
</tbody>
</table>
4.2 STRUCTURAL MODEL

With adequate measurement models, the structural models were examined to test the hypotheses. The PLS results are summarized in Figures 2, 3, and 4. The explanatory power of a structural model was evaluated by looking at the R² value in the dependent constructs. The PLS results indicated that the final dependent construct (intention to adopt an ERP system) had an R² value of 0.494 for the combined data set, 0.446 for the global vendor data set, and 0.553 for the local vendor data set, while the other dependent construct (perceived usefulness) had an R² value of 0.313 for the combined data set, 0.188 for the global vendor data set, and 0.503 for the local vendor data set. The hypothesis test was conducted by examining the signs (positive or negative) and assessing the statistical significance of t-values for the corresponding path estimates that was calculated by a jackknifing technique. The PLS results for the combined data set showed that both attitude toward change and computer self-efficacy were significantly related to perceived usefulness at a significance level of 0.01 (attitude toward change (β = 0.423, t = 8.87) and computer self-efficacy (β = 0.223, t = 3.01)), which supported hypotheses 1 and 2, respectively. Perceived usefulness was also significantly related to intention to adopt an ERP system at a significant level of 0.01 (β = 0.703, t = 24.07), showing support for hypothesis 3.

Hypotheses on localization differences (H1a and H2a) were tested by statistically comparing the corresponding path coefficients in the structural models (Keil et al. 2000). H1a was tested by statistically comparing the path coefficient from attitude toward change to perceived usefulness for the local vendor data set (β = 0.656) with the corresponding path coefficient for the global vendor data set (β = 0.152). The results indicated that the path coefficient from attitude toward change to perceived usefulness for the local vendor data set was significantly stronger than the corresponding path coefficient for the global vendor data set (t = 6.20, p<0.01). As expected, the ERP system with more-localized features revealed a stronger relationship between attitude toward change and perceived usefulness as compared to the ERP system with less-localized features. Thus, H1a was supported. Likewise, H2a was tested by statistically comparing the path coefficient from computer self-efficacy to perceived usefulness for the local vendor data set (β = 0.102) with the corresponding path coefficient for the global vendor data set (β = 0.348). The results indicated that the path coefficient from computer self-efficacy to perceived usefulness for the local vendor data set was significantly weaker than the corresponding path coefficient for the global vendor data set (t = -3.03, p<0.01). As hypothesized, the ERP system with less-localized features revealed a stronger relationship between computer self-efficacy and perceived usefulness as compared to the ERP system with more-localized features. Hence, H2a was supported as well.

![Figure 2. PLS Solution for Combined Data Set](image-url)
5. DISCUSSION AND IMPLICATIONS

This research has explained a good portion of the variance in users’ intention to adopt an ERP system mediated through perceived usefulness for the system by incorporating organizational (i.e., attitude toward change) and technological factors (i.e., computer self-efficacy) into a theoretical model. A previous study reported that attitude toward change affected individuals’ behavior for a specific organizational change through the positive implications for themselves and the organization (Armenakis et al. 1993). Furthermore, a previous study argued that computer self-efficacy was found to play an important role in explaining usage intention through perceived usefulness (Agarwal and Karahanna 2000). The results of this research support the proposed relationships by showing that attitude toward change and computer self-efficacy influenced intention to adopt an ERP system through perceived usefulness. In addition, this research has accounted for how the localization differences of the ERP system may moderate the relationship between attitude toward change/computer self-efficacy and perceived usefulness.
The results further suggest some implications for both academic and practical development. First, the proposed model identifies two distinct but interrelated factors for successful ERP adoption across two domains. Orlikowski (1993) demonstrated that adopting and using a specific IT is not solely dependent on the characteristics of the IT but also on other aspects, such as the organizational or social context. Attitude toward change is an organizational aspect that is more relevant to individuals’ traits in the current organizational and working context regardless of the focal system, while computer self-efficacy is a technological one that is more relevant to the use of the focal system to be adopted by individuals in the organization. These two distinct antecedent constructs are intertwined as found in this research. Recognizing that the nature of IS adoption behavior involves social and technological aspects, we can consider our findings in the framework of the Socio-Technical Systems (STS) theory. The STS theory assumes that an organization or organizational work system can be described as a socio-technical system. Thus, a work system consists of two jointly independent but correlative interacting systems: the social and the technical (Bostrom and Heinen 1977). The theory assumes that the outputs of the work system are the result of the joint interactions between the two systems. Therefore, any intervention like a new IS adoption must deal with both systems in an integrated manner (Bostrom and Heinen 1997, Robey and Sahay 1996). This means that ERP systems adoption should be explained and predicted in terms of the social system and the technical system simultaneously.

Second, this research shows that the strength of socio-technical influences appears to vary depending on the localization differences of the ERP systems. This finding is useful for both managers adopting an ERP system and vendors undertaking its development and implementation. Managers need to take into account such localization differences when they select one among ERP systems with different levels of localization. More-localized systems may be more strongly associated with users’ tendency to ask their changing requirements and may be less susceptible to users’ confidence about computers and IT than less-localized systems. Therefore, if managers want to make a successful story about ERP system adoption, they need to consider the fit between individuals’ characteristics and the nature of the system. This implies that more-localized ERP systems are more appropriate for organizations that are flexible in changing business processes, that need to easily reflect ambiguous or equivocal situations (i.e., easily allowing employees’ new requirements for their job and local business practices), and that have little experiences on sophisticated IT infrastructure. Meanwhile, less-localized ERP systems are more suitable for organizations that are strict in changing business processes, that find difficulty in reflecting ambiguous or equivocal situations (i.e., not allowing to change best practice business models provided by the system), and that have much experiences on sophisticated IT infrastructure. Similar with this, a previous study suggested that the misfit issue of global ERP systems may be worse in Asia since the best-practice business models underlying most ERP systems reflect so-called global standard procedures primarily following European or U.S. industry practices (Soh et al. 2000). However, procedures in Asian organizations are likely to be different, having evolved in a different cultural, economic, political, and regulatory context (Soh et al. 2000).

Since the implications of any study must be considered in the context of its limitations, we need to be cautious when generalizing the results of this research for several reasons. First, the results obtained using subjects from only two different ERP systems may be different from those obtained using subjects from multiple vendors. Although we selected two ERP systems recognized as market leaders in each local and global product category, these choices may not be appropriate to represent each type of vendors. Second, the assumption that a local ERP system has more-localized features than a global ERP system may not be proper because the degree of localization can be determined by the efforts and policies of each ERP system vendor. Although we use the rationale that global vendors generally have a global market strategy which make them more difficult to localize their systems, this does weaken the research model and can pose generalizability difficulties.

6. CONCLUSION

This research makes some contributions to IS adoption literature, in particular, ERP systems adoption literature. First, it proposes a theoretical model to account for ERP systems adoption through perceived usefulness for the system by introducing two perceptual factors, an organizational factor (attitude toward change) and a technological factor (computer self-efficacy). The empirical analysis indicates that the proposed research model has shown a good explanatory power. Second, this research illustrates how localization differences of ERP systems can moderate the relationship between two proposed factors and perceived usefulness. The results indicate that users with a more-localized ERP system developed by a local vendor are more sensitive to the link between attitude toward change and perceived usefulness, while users with a less-localized ERP system developed by a global vendor are more sensitive to the link between computer self-efficacy and perceived usefulness. Considering that a common problem when adopting an ERP system has been the issue of misfits (Soh et al. 2000), the current study adds the localization differences aspect to the existing literature on ERP systems adoption. Acknowledging that more than two thirds of ERP system projects result in failure, and ERP systems continue to grow with promising potential benefits, the results of this study thus have value for IS researchers in terms of theoretical advancement as well as for ERP systems practitioners in terms of practical development, while several avenues for future research remain.
REFERENCE


Kwahk

ERP Adoption Comparison of the Local and Global Packages


