A STRUCTURAL EQUATION MODELLING OF ERP IMPLEMENTATION IN JAMAICA AND USA

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ABSTRACT

This study focuses on several issues surrounding current Enterprise Resources Planning (ERP) implementation status in Jamaica and USA. Two hundred and five Jamaican managers and two hundred twenty-two American managers were surveyed. Our Structural Equation Modelling (SEM) findings supported the possibility that market pressure and organization culture may have impact on the complexity of ERP systems as well as levels of ERP implementation effectiveness. The correlation analysis also reveals significant relations between market pressure and culture on organizational successes, as well as end user computing satisfaction. This study is exploratory in nature since it was only our first attempt to get an initial feel of whether the constructs involved could be related and how they operated in the Jamaican and American environment. More studies are needed to identify the more important constructs. We found no significant difference between Jamaica and USA on all remained variables in our study. Future research may identify more explanatory variables for ERP Success.

INTRODUCTION

ERP AND IMPLEMENTATION – REPORTED EXPERIENCES

The primary objective of having an ERP system is to help the firm integrate the organization as a whole, from the supplier's evaluation to customer invoicing effectively and efficiently. ERP has evolved rapidly from modest beginnings during the 1970's, originating with discussion at IBM of integrating organizational planning and financial systems and the startup of SAP AG during that period to the reported current position of SAP as a global software giant with over 6 billion of global revenue in 2013. In fact, use of ERP system has been extended to non-business uses. For example, Maczk, et al. (2012) reported that ranchers were found using ERP for resource monitoring for improvement of viability and sustainability of family ranches in Wyoming. The rate of changeover to ERP and in turn to ERP II has been so swift that early adopters have been faced with systems which became obsolete almost as soon as they are developed. Also notable has been the recognition that while organizations have made enormous investments in ERP, the systems are gaining "… a reputation for high costs, overruns, and failure to deliver" (Williams, Beatty and 2006; Lotta and Olli-Pekka, 2008; Scarbrough et al., 2008). "Very expensive to purchase, even more costly to customize," "require major change in the company and its processes," and "involves an ongoing process for implementation, which may never be completed" are some disadvantages listed in Heizer and Render (2016).

Somers et al. (2003) have pointed to the need to measure end-user computing success in

evaluating whether ERP implementations are successful. Moreover, these researchers report validation of an earlier End User Computing Satisfaction (EUCS) instrument initially developed by Doll and Torkzadeh (1988) for use in MIS evaluation. They report that in the ERP environment, EUCS includes five factors: content, accuracy, format, ease of use, and timeliness, all consistent with the earlier research. Saraf et al. (2013) as well as Huang and Handfield, (2015), on the other hand, have suggested that the amount of knowledge stock a company maintains within the ERP system will result in a higher level of assimilation of knowledge.

Several authors (Saraf et al., 2013) suggest that a major factor distinguishing less successful ERP adoptions from more successful ones may include lack of milestones throughout the process, lack of attention by top management, and poorly designed cross-functional implementation teams. They have also found that successful organizations, as defined as meeting budget and/or time targets, are characterized by extensive preparation *prior to* the implementation and by higher levels of authority, accountability, and communication during the implementation (i.e., empowerment during the process). In addition, their research also pointed to a third factor, the issue of customization. From their perspective, the key is in the up-front analysis, moving to best practice – and presumably higher-quality – business systems before ERP adoption, and thus avoiding the need to customize. It can be argued that, therefore, high quality, effective systems need to be in place before ERP adoption (see also Beatty & Williams, 2006). Hald and Mouritsen (2014) discuss the enabling and constraining effects of ERP systems in their research while Ivert and Jonsson (2014) introduce a similar system called Advanced Planning and Scheduling (APS) to improve operational effectiveness. Fok et al. (2004) indicate the need for organizations to implement ERP in a comprehensive manner, where a full array of features, subsystems, and components are implemented, rather than attempting to implement limited features. Studies have examined the sequencing of TQM implementation and ERP implementation and findings generally suggest that an effective TQM implementation prior to ERP implementation increases likelihood of success (Li et al., 2008; Schniederjans and Kim, 2003).

Recent research has suggested that the extensiveness of ERP systems, in the sense that the systems are used throughout the organization and are tightly integrated may be important in ERP success (Grabski et al., 2011; Tsai, et al., 2012; Xu, 2011). This is further supported by Sssidharan et al. (2012) through their study using social network structure on enterprise systems.

Schniederjans and Kim (2003) have noted that the use of business reengineering, establishing a total quality management culture have all shown to be important factors to successful implementation of ERP. Al-Mashari and Al-Mudimigh (2003) show that "SAP R/3 has been widely implemented to create value-oriented business processes that enable high level of integration, improve communication within internal and external business networks …" Jones and Price (2004) proposed that knowledge sharing in ERP implementation requires the end-users to understand how their tasks fit into the overall process, and understand how their process fits with other organizational processes. Additionally, Pflughoeft, al el. (2003) have pointed to the importance of what they refer to as the organizational context in determining web use and benefits, and report validation of an instrument to measure two key context variables: Market Pressure and Scope of Operations. Clegg and Wan (2013), in their research, provide some guidelines for practitioners to deliver better strategical and operational competitive advantage through effective implementation of ERP systems.

Russell and Taylor (2013) have pointed out that ERP vendors and their customers have learned from earlier debacles. Facing the huge pressure from the market, ERP vendors have made swift progress. A later version of ERP (ERP II) offerings sport stand-alone modules and open

architecture. With the newer ERP, companies can install only the modules they want, and can choose a collection of modules from different vendors (the best –of breed approach), which may provide a better match with organizational needs. Beheshti and Beheshti (2010) pointed out that management commitment is required for employees to fully understand ERP implementation which in turn becomes instrumental in the determination of ERP success. Gottschalk (2007) recommended that team culture within organization is also important for ERP's smooth implementation.

ORGANIZATIONAL CULTURE, QUALITY MANAGEMENT (QM), MARKET PRESSURE, AND ERP RELATIONSHIPS

Earlier research has suggested that Organizational Culture and QM Maturity has impacts upon a number of the subsystems comprising an organization. The quality movement has consistently, from Deming (1986) to current advocates, focused upon the customer and giving superb customer service and attention to related groups within the organization as internal customers (Hammer, 2001; Hart, 1995; Prahalad and Hamel, 1990; Powell et al., 2013; Rigby et al., 2002). In line with these ideas and earlier findings (Fok et al., 2001; Fok et al., 2002), use of high quality IS in concert with mature QM programs should lead those in organizations to report that the organization's culture (as opposed to *national* culture) is supportive of the quality movement, for example, the environment is empowering and participative. Finally, increased emphasis upon quality throughout the organization and its systems should lead to perceptions that the organization is performing in qualitatively better ways. When changes are made, of interest to this research, as organizations face more market pressures, become more QM mature, and develop positive Organizational Culture, we expect consistent changes in ERP experiences and ERP outcomes. Figure 1 shows our conceptual model.

In addition, the literature on adoption of information technology (Gatignon and Robertson, 1989; Premkumar and Ramamurthy, 1995) state that Market Pressure as important environmental conditions that influence the adoption of new technologies. Competitors' adoption and use of a new technology, such as ERP, encourages other firms to adopt similar technology in order not to lose their competitive positions. Furthermore, the theory of network externalities suggests that a bandwagon effect is created when there are more users of the new technologies which in turn encourage even more to use the new technologies. Hence, as the number of competitors that use ERP grows, pressure mounts on the firm to get on the bandwagon to stay competitive.

RESEARCH FOCUS

In our study, we believe that Organizational Context, such as the Market Pressures that organizations face when implementing ERP, their QM Maturity, and the Organizational Culture will affect the complexity of the ERP systems and the implementation experience among firms in Jamaica and USA. Additionally, the ERP systems complexity will be related to the outcomes of ERP in terms of End User Computing Success and Organizational Success. Finally, the ERP implementation experience will have impact on End User Computing Success and Organizational Success.

Research Question 1: *Organizational Context, such as Market Pressure, QM Maturity, and Organizational Culture, will affect perceptions End User Computing Satisfaction.*

Research Question 2: *Organizational Context, such as Market Pressure, QM Maturity, and Organizational Culture, will affect perceptions of Organizational Success.*

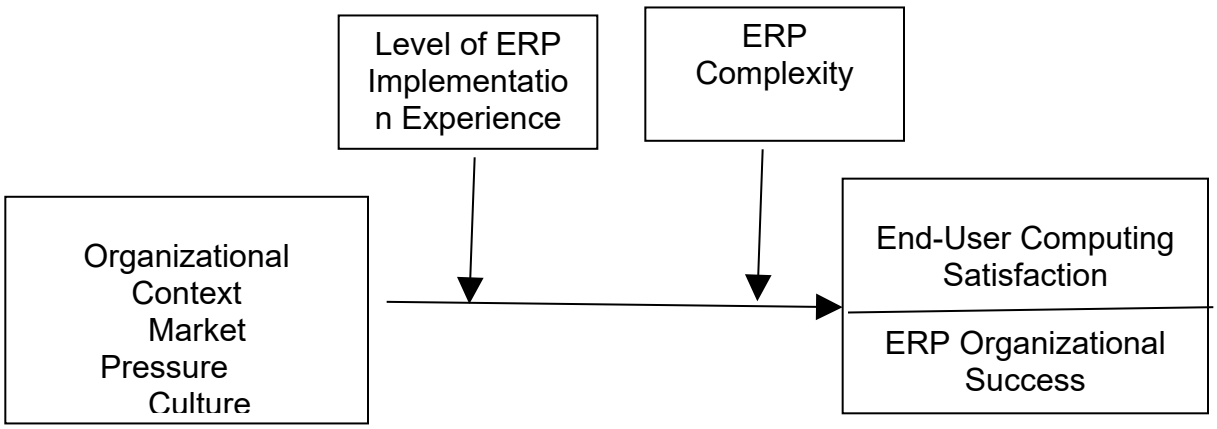
Research Question 3: *ERP Implementation Experience will moderate the relationship between Organizational Context (Market Pressure, QM Maturity, and Organizational Culture) and End User Computing Satisfaction.*

Research Question 4: *ERP Complexity will moderate the relationship between Organizational Context (Market Pressure, QM Maturity, and Organizational Culture) and End User Computing Satisfaction.*

Research Question 5: *ERP Implementation Experience will moderate the relationship between Organizational Context (Market Pressure, QM Maturity, and Organizational Culture) and Organizational Success*

Research Question 6: *ERP Complexity will moderate the relationship between Organizational Context (Market Pressure, QM Maturity, and Organizational Culture) and Organizational Success.*

Figure 1. Research Model



METHOD

Our sample included 205 managers from Jamaica and 222 from USA. On average, Jamaican manager (age mean=35) were younger than American managers (age mean=41), who had roughly 19 years' work experience and 11 years managerial experience. About 60% of

surveyed companied had more than 500 employees. This study involved a wide variety of companies from different industries. Manufacturing and financial services industries took 35% of the whole sample. Appendix 1 shows our ERP survey.

RESEARCH VARIABLES

Organizational Context - Market Pressure

The literature on adoption of information technology, especially those focusing on improving connectivity among companies, have shown that Market Pressure is an important environmental factor that influences the adoption of inter-organizational systems (Pflughoeft et al., 2003). To measure Market Pressure leading to the use of ERP from key external stakeholders, three questions are adopted from Pflughoeft et al. (2003). The 3-question measure covers the extent of pressure from competitors, customers, and suppliers on the firm to use ERP. The questions use a 6-point Likert scale – from 0 for "none" to 5 for "very great". Pflughoeft et al. (2003) reported a reliability index (Cronbach's Alpha) of 0.73. In this study the reliability index was 0.744. Exploratory factor analysis produced a single factor solution.

Organizational Context – Organizational Culture

Based on previous research (Fok et al., 2000; Fok, et al., 2001), we measured the Organizational Culture construct with a series of paired opposite items which asked whether the organization's climate should be described as open vs. closed; soft vs. tough; and the like. Exploratory factor analysis showed two factors of our measurements. However, we only kept factor 1, because factor 2 was not reliable. Factor 1 included: open vs. closed; team oriented vs. individualistic; participative vs. directive; quality oriented vs. quality lacking; innovation promoting vs. innovation lacking; proactive vs. reactive. The reliability of culture was 0.867.

Organizational Context - QM Maturity

In this study, QM Maturity refers, in a qualitative sense, to the degree of QM implementation in an organization. We suggest, and previous research has shown (Ahire et al, 1996; Flynn et al, 1994; Fok et al., 2000; Fok et al., 2001; Patti et al, 2001; Saraph et al, 1989) that it can be measured by examining the perceived use of QM programs. These ideas assume that if an organization has more completely followed the QM philosophy, QM programs should be used throughout the organization and in various functional areas, rather than in isolation. Moreover, if "quality is indeed everyone's job," where QM is more fully in place, employees should be aware of the various QM tools and techniques which are in use. If an organization, on the other hand, has very little or no experience with QM, the opposite is expected. In earlier research (Fok, et al., 2000; Fok et al., 2001) we began the process of developing a measure of QM Maturity. The current instrument we developed dealt with perceived program *use* and asked respondents whether seven programs are in use in the organization, with a range from "none" to "very high." In this study, consistent with earlier research, the QM Maturity instrument was used to gauge QM Maturity. We conducted a factor analysis to identify the underlying dimensionality. The result indicated a single

factor without "Six Sigma (Green Belt) Training" or "Black Belt Training." The reliability of this five-item factor is 0.807.

ERP Complexity

Based on the previous research (Thong, 1999), ERP complexity is represented by the extent of ERP system implemented. This is measured by the number of ERP modules implemented and the number of ERP vendors involved in the ERP implementation process.

ERP Implementation Experience

The literature has emphasized the importance of user training and computing experience on system success (Ang and Soh, 1997; Sethi and King, 1998). In this study, we ask the respondents how many weeks of training they received internally and externally and how many years of ERP experience do they have.

End-User Computing Satisfaction (EUCS)

In this study, ERP success is measured by the instrument developed by Doll and Torkzadeh (1989). This 12-item survey instrument is a synthesis of the Ives and Olson (1984) measure of user information satisfaction (UIS). The UIS instrument is a widely used, validated, and generalizable measure of IS success in computing environment (Doll and Xia, 1997; Gelderman, 1998). The Somers et al. (2003) study examined the structure, as well as reliability and validity, of the EUCS instrument posited by Doll and Torkzadeh (1989) in the ERP environment. The findings confirmed that the EUCS instrument maintained its psychometric stability when applied to the users of ERP systems.

EUCS requires subjective self-reports of end-user satisfaction in five areas: content, accuracy, format, timeliness, ease of use of a computer application. The first four areas measure system usefulness while ease of use evaluates the user friendliness of the system. Factor Analysis has a 2-factor solution explaining 64% of the variance. However, only one factor passed reliability test and contributed to a good model fit. The remained factor contains items measuring content, accuracy, format, and timeliness of ERP systems. This factor had a reliability index (Cronbach's Alpha) of 0.89.

ERP Organizational Success

ERP organizational success was measured by how effective ERP has been in accomplishing: lowering cost, improving customer service, competitive positions, etc. Exploratory factor analysis indicated that two factors. After confirmatory factor analysis, only one factor left for organizational success. In our study, organizational success is measured by the degree of ERP

on improving customer service, competitive position, communication with suppliers and customer and increasing sales, planning and controlling. This factor had reliability index of 0.848.

RESULTS

Our research questions examined the ERP implementation experiences of the companies in Jamaica and USA, and the impacts of such experiences on ERP systems success. The tests of models were conducted using Structural Equation Modelling. We failed to find QM Maturity is a good predictor of EUCS and Organizational Success. Figure 2 provides the full structural model with Market Pressure and Culture as predictors. We found a good fit between the data and the model (GFI = 0.918, $\chi^2/df = 2.337$, RMSEA =0.056) for all the data. When we ran multiple group analyses, we found that the model fits the data well for all four samples (GFI = 0.880, $\chi^2/df = 1.832$, RMSEA =.044), although the parameter estimates for paths vary in the different country samples, as one would expect. Appendix 2 shows the parameter estimates for overall sample and for each individual country. Table 1 shows the correlation results of remained variables. Our survey applied different scales for different variables. Thus, it is not very useful to report the mean and standard deviation here. There was no significant difference between Jamaica and USA on any variables in Table 1.

Research Questions 1 and 2 held that organizational context, such as the amount of market pressure faced by organizations, the QM Maturity, and the organizational culture, would be related to End User Computing Satisfaction and Organizational Success. However, QM Maturity was excluded from this study because of the confirmatory factor analysis result. In Table 1, we found that Culture was significantly correlated to End User Computing Satisfaction (r=.248***) and Organizational Success (r=.250***). Market Pressure was significantly correlated with Organizational Success (r=.426***) but not End User Computing Satisfaction. Therefore, Research Question 2 was fully supported. Research Question 1 was partially supported.

Figure 2. Structural Equation Model

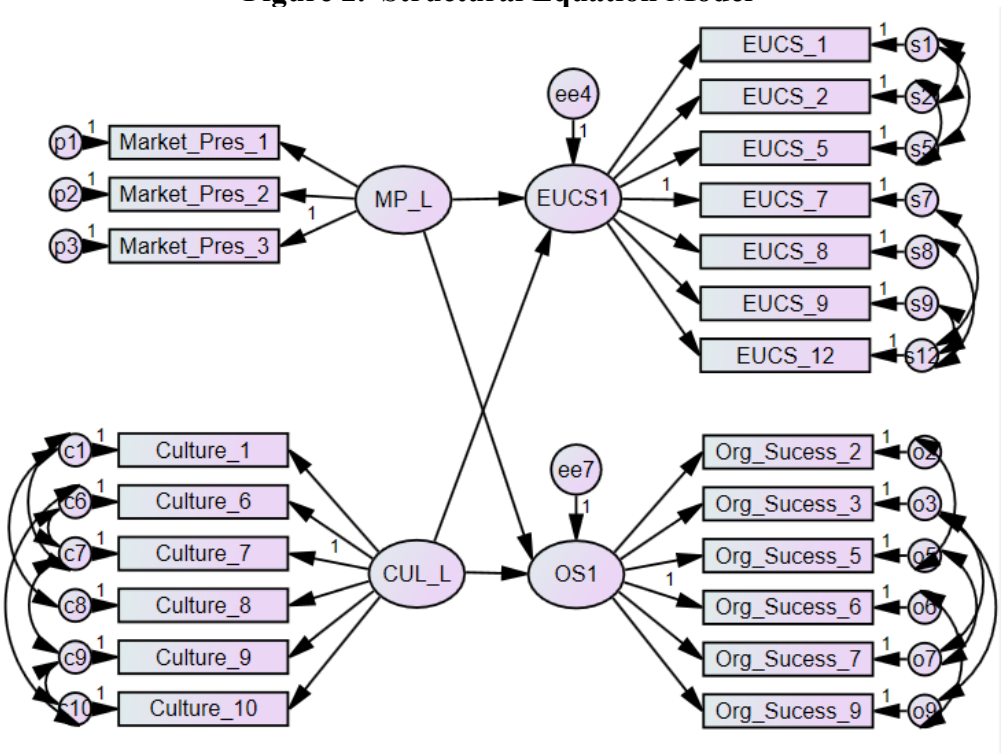


Table 1
Correlation Table

	Variable List	α	n	1	2	3	4	5	6	7
1	Complex_Vendor_NUMB	--	1	--						
2	Complex_Module_NUMB	--	1	.116*	--					
3	Implement_Exp_Yr	--	1	.139**	.194***	--				
4	Implement_Exp_TWk	--	1	-.013	.036	.046	--			
5	Market_Pres	.744	3	.056	.147**	.048	.127**	--		
6	CUL	.867	6	-.052	.041	.029	.074	.051	--	
7	EUCS	.890	7	-.003	.052	.073	.083	.090	.248***	--
8	Org_Sucess	.848	6	.102*	.172***	.027	.138**	.426***	.250***	.422***

*Notes. N = 427; *p<.05 **p< .01, ***p< .001.*

For Research Question 3-6, Appendix 3 shows all the potential moderation tests of this study. We only found the significant moderation role of Vendor Number (See Figure 3). Table 2 shows the conditional effect of Culture to Organizational Success. A high level vendor number will negatively moderate the Culture – Organizational Success relationship. We found partially moderation effect of Vendor Number in USA sample. Thus, Research Question 6 was partially supported in USA data.

Figure 3. Moderation Effect of Vendor Number on Relationship CUL-Org Success USA Sample (N=222)

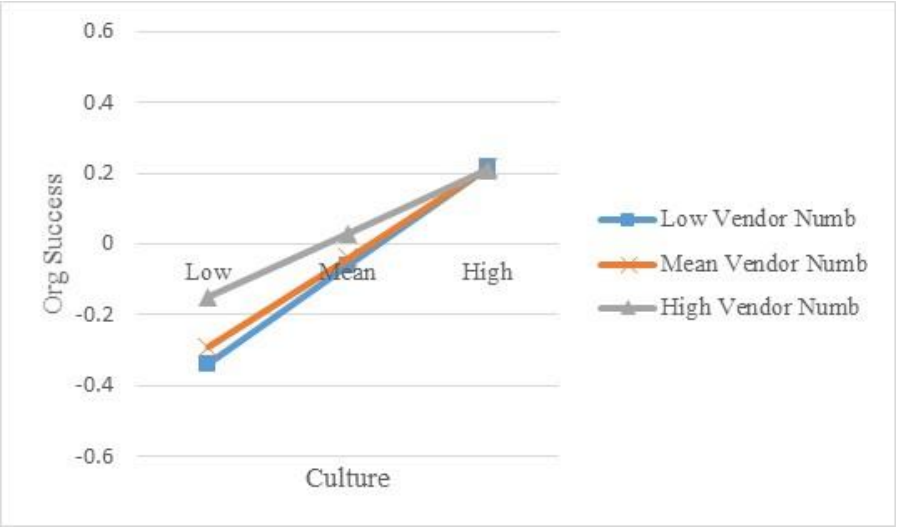


Table 2
Conditional effect of Culture on Org Success at values of the moderators

Moderator Level	Std β
Overall	.298***
Low	.340***
Mean	.310***
High	.221**

*Notes. *p< .05, **p< .01, ***p< .001.*

DISCUSSION AND CONCLUSIONS

In this paper, we have reported the results of exploratory and confirmatory research into a series of proposed relationships between organizational context and the implementation of an important system for enhancing organizational competitiveness: Enterprise Resource Planning (ERP) system. We first considered what kind of impact that the factors that we describe as *organizational context,* have on the complexity of ERP systems as well as reported levels of ERP implementation effectiveness. The context variables that we considered, in this study are: market

pressure, organizational culture, and QM Maturity. Finally, we considered whether these variables would influence our outcome measures: End User Computing Satisfaction and ERP Organizational Success.

The results from this study offer supports for some of the relationships we have suggested. It is suggested that there are significant relationships between Organizational Contexts and End User Computing Satisfaction and Organizational Success. The correlation analysis also shows the significant relationships between Market Pressure and ERP Complexity Module Number, Market Pressure and ERP Implementation Training Week. Our results showed no evidence of the relationships between Culture and ERP Complexity and ERP Implementation. From our perspective, what is notable is that for American sample, a level Vendor Number would negatively moderate the relationship between Culture and Organizational Success. This result may imply the potential ways to improve companies' ERP effectiveness. With sufficient vendors, an organization needs to keep its culture: open, team oriented, participative, quality oriented, innovation promoting, and proactive.

In considering our findings, we recognize that this research is, in fact, exploratory, although confirmatory analysis was applied. It is important to emphasize the exploratory nature of this paper in light of some of the correlations, although statistically significant, are not exceptionally strong. In effect, we asked a sample of managers for their perceptions and beliefs about the constructs, asking, for example, how extensively the managers believed that the programs were used, how well the organization was performing, and what the culture was like. We understand that reliance on respondent perceptions in any setting can potentially introduce single source measurement bias. As a next step, it will be important to attempt to confirm our findings with more independent and observable measures. Thus, this study should be regarded simply as exploratory work which suggests that it may be worthwhile to examine our proposed relationships in a more sophisticated manner.

Our findings are potential victims of all the threats to the validity that apply to cross sectional survey research collecting self-reported data, and in particular common method variance which may be due to some respondents providing what they believed to be socially desirable answers (Podsakoff et al., 2003). Further studies may include some objective index like sales, unqualified products rates, customer satisfaction, etc.

For all remained variables, we found no statistically significant difference between Jamaica and USA. For future research, it will be interesting to keep track the ERP development for these two countries and includes some objective performance to evaluate ERP effectiveness. More explanatory variables may need to be included as independent variables to our study to identify the key predictors of ERP Success.

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Appendix 1 ERP (Enterprise Resource Planning) Implementation Survey

If your organization has adopted module(s) of Enterprise Resource Planning (ERP) system within the last five years, please continue with this survey.

1. Who is your ERP vendor? (Check all)

____ PeopleSoft	____ Baan
____ SAP	____ MAPICS
____ J. D. Edwards	____ JBA International
____ Oracle	____ Other

2. How long ago did your organization first begin to implement ERP? ____ years

3. On average, how many weeks of ERP training do users receive? ____ weeks

4. Check all of the ERP modules/functions adopted by your organization:

___ Financial/Accounting	___ Internal Operations/Production
___ Receiving	___ Customer Order Management
___ Human Resources Management	___ Purchasing
___ Inventory	___ Shipping/Distribution
___ Business to Business Commerce	___ Plant Maintenance
___ Quality Management	___ Other (list) _____

5. Scope of your organization's ERP:

____ Local ____ Regional ____ National ____ Global

6.

The extent of pressure faced by the company to use ERP from the following sources:	None	Very Little				Very Great
a) Competitors' use	0	1	2	3	4	5
b) Customers' expectation	0	1	2	3	4	5
c) Suppliers' expectation	0	1	2	3	4	5

7.

Based on your experience, comment on the user satisfaction with your ERP system:	Almost Never				Almost Always
a) Does ERP provide precise information the users need?	1	2	3	4	5
b) Does ERP provide sufficient information?	1	2	3	4	5
c) Is the information clear?	1	2	3	4	5
d) Does ERP provide reports that seem to be just about exactly what the users need?	1	2	3	4	5
e) Do the users get the information they need in time?	1	2	3	4	5
f) Is the output presented in a useful format?	1	2	3	4	5
g) Does ERP provide up-to-date information?	1	2	3	4	5
h) Does the information content meet the users' needs?	1	2	3	4	5
i) Are the users satisfied with the accuracy of the ERP system?	1	2	3	4	5
j) Is the ERP system user friendly?	1	2	3	4	5
k) Is the ERP system easy to use?	1	2	3	4	5
l) Is the ERP system accurate?	1	2	3	4	5

8.

Comment on how effective ERP has been in accomplishing the following:	Low Effectiveness				High Effectiveness
a) Lowering costs	1	2	3	4	5
b) Improving customer service	1	2	3	4	5
c) Improving competitive position	1	2	3	4	5
d) Increasing internal communication	1	2	3	4	5
e) Increasing communication with suppliers	1	2	3	4	5

f) Increasing communication with customers	1	2	3	4	5
g) Increasing sales	1	2	3	4	5
h) Increasing planning and controlling	1	2	3	4	5
i) Supporting customer relationship management	1	2	3	4	5
j) Improving the quality of products/services	1	2	3	4	5
k) Improving productivity	1	2	3	4	5
l) Integrating multiple sites and business units	1	2	3	4	5
m) Improving business processes	1	2	3	4	5
n) Integrating information	1	2	3	4	5

9. Tell us about the **current** climate in your organization. I feel that the climate in my organization is: (Circle the number on each scale)

a) Open	3------2------1------0------1------2------3	Closed
b) Tough	3------2------1------0------1------2------3	Soft
c) Competitive	3------2------1------0------1------2------3	Collaborative
d) Formal	3------2------1------0------1------2------3	Informal
e) Confrontational	3------2------1------0------1------2------3	Cooperative
f) Team oriented	3------2------1------0------1------2------3	Individualistic
g) Participative	3------2------1------0------1------2------3	Directive
h) Quality oriented	3------2------1------0------1------2------3	Quality lacking
i) Innovation promoting	3------2------1------0------1------2------3	Innovation lacking
j) Proactive	3------2------1------0------1------2------3	Reactive

10. Give us your general reaction to your organization:

	Strongly Agree				Strongly Disagree
a) My company is performing well.	1	2	3	4	5
b) The morale in my company is high	1	2	3	4	5
c) My company is productive.	1	2	3	4	5
d) My overall job satisfaction is high.	1	2	3	4	5
e) My co-workers are happy.	1	2	3	4	5
f) My company has good relationships with our customers.	1	2	3	4	5
g) The customers are satisfied with our products/services.	1	2	3	4	5
h) My company uses an appropriate level of technology.	1	2	3	4	5
i) I am satisfied with the use of technology in my company.	1	2	3	4	5
j) I have confidence in the technology being used in my company.	1	2	3	4	5
k) Technology is successful in improving service quality.	1	2	3	4	5

11. Indicate the levels of use of the following quality programs in your organization:

	None	Very Low				Very High
a) Quality Circles	0	1	2	3	4	5
b) Statistical process control	0	1	2	3	4	5
c) Employee suggestions channels	0	1	2	3	4	5
d) Employee quality training programs	0	1	2	3	4	5
e) Acceptance sampling	0	1	2	3	4	5
f) Six Sigma (Green Belt) Training	0	1	2	3	4	5
g) Black Belt Training	0	1	2	3	4	5

GENERAL BACKGROUND INFORMATION

1. Gender: _____ Male _____ Female

2. Your Age: _____ years

3. Number of years of working experience: _____ years

4. Number of years of managerial experience: _____ years

5. Industry of your organization:
   ____ Manufacturing ____ Financial Services ____ Retail
   ____ Utilities ____ High Technology ____ Education
   ____ Health Care ____ Government ____ Other

6. The company's markets are: (Check all)
   ____ Regional ____ National ____ International

7. What is the approximate number of employees in your organization?
   ____ Over 500 ____ 251 – 500
   ____ 51 – 250 ____ Less than 50

8. What is the approximate annual revenue (in US$) of your organization?
   ____ Over $1,000 Million ____ $501 to $1,000 Million
   ____ $251 to $500 Million ____ $101 to $250 Million
   ____ $51 to $100 Million ____ $25 to $50 Million
   ____ Less than $25 Million ____ Unknown

Name of company (will be kept confidential): _____

Brief description of products/services: _____

Appendix 2 Parameter Estimates

Overall			Unstd. β	Std. β	S.E.	C.R.	P
EUCS1	<---	CUL_L	0.33	0.317	0.062	5.313	***
OS1	<---	CUL_L	0.306	0.285	0.059	5.218	***
OS1	<---	MP_L	0.487	0.541	0.059	8.188	***
EUCS1	<---	MP_L	0.136	0.156	0.05	2.713	0.007
Market_Pres_3	<---	MP_L	1	0.783			
Market_Pres_2	<---	MP_L	0.927	0.725	0.08	11.574	***
Market_Pres_1	<---	MP_L	0.76	0.595	0.074	10.329	***
Culture_7	<---	CUL_L	1	0.655			
Culture_6	<---	CUL_L	1.046	0.684	0.079	13.307	***
Culture_1	<---	CUL_L	1.059	0.693	0.087	12.186	***
Culture_8	<---	CUL_L	1.196	0.782	0.099	12.022	***
Culture_9	<---	CUL_L	1.142	0.747	0.095	11.992	***
Culture_10	<---	CUL_L	1.097	0.718	0.095	11.499	***
EUCS_7	<---	EUCS1	1	0.683			
EUCS_8	<---	EUCS1	1.068	0.73	0.082	13.065	***
EUCS_9	<---	EUCS1	1.1	0.752	0.082	13.388	***
EUCS_5	<---	EUCS1	1.095	0.748	0.085	12.873	***
EUCS_2	<---	EUCS1	1.05	0.717	0.085	12.395	***
EUCS_1	<---	EUCS1	1.034	0.707	0.085	12.23	***
EUCS_12	<---	EUCS1	1.005	0.687	0.075	13.36	***
Org_Sucess_6	<---	OS1	1	0.706			
Org_Sucess_7	<---	OS1	0.986	0.695	0.084	11.711	***
Org_Sucess_9	<---	OS1	0.989	0.698	0.073	13.587	***
Org_Sucess_5	<---	OS1	0.897	0.633	0.082	10.997	***
Org_Sucess_3	<---	OS1	1.058	0.746	0.084	12.624	***
Org_Sucess_2	<---	OS1	0.915	0.646	0.08	11.448	***

*Notes. N = 427; *p<.05 **p< .01, ***p< .001.*

Jamaica			Unstd. β	Std. β	S.E.	C.R.	P
EUCS1	<---	CUL_L	0.283	0.308	0.08	3.564	***
OS1	<---	CUL_L	0.113	0.109	0.075	1.514	0.13
OS1	<---	MP_L	0.499	0.603	0.08	6.204	***
EUCS1	<---	MP_L	0.052	0.071	0.06	0.869	0.385
Market_Pres_3	<---	MP_L	1	0.837			
Market_Pres_2	<---	MP_L	0.933	0.768	0.102	9.174	***
Market_Pres_1	<---	MP_L	0.671	0.545	0.094	7.106	***
Culture_7	<---	CUL_L	1	0.688			
Culture_6	<---	CUL_L	0.959	0.651	0.1	9.568	***
Culture_1	<---	CUL_L	1.219	0.831	0.132	9.235	***
Culture_8	<---	CUL_L	1.009	0.743	0.127	7.955	***
Culture_9	<---	CUL_L	0.948	0.669	0.114	8.305	***
Culture_10	<---	CUL_L	1.009	0.694	0.123	8.176	***
EUCS_7	<---	EUCS1	1	0.656			
EUCS_8	<---	EUCS1	1.11	0.731	0.135	8.221	***
EUCS_9	<---	EUCS1	1.03	0.707	0.128	8.041	***
EUCS_5	<---	EUCS1	1.04	0.677	0.136	7.644	***
EUCS_2	<---	EUCS1	0.82	0.589	0.12	6.815	***
EUCS_1	<---	EUCS1	0.868	0.602	0.125	6.941	***
EUCS_12	<---	EUCS1	1.033	0.668	0.133	7.765	***
Org_Sucess_6	<---	OS1	1	0.69			
Org_Sucess_7	<---	OS1	0.945	0.681	0.123	7.652	***
Org_Sucess_9	<---	OS1	0.884	0.609	0.108	8.171	***
Org_Sucess_5	<---	OS1	1.011	0.694	0.13	7.753	***
Org_Sucess_3	<---	OS1	1.006	0.681	0.127	7.924	***
Org_Sucess_2	<---	OS1	0.875	0.632	0.119	7.372	***

*Notes. N = 205; *p<.05 **p< .01, ***p< .001.*

USA			Unstd. β	Std. β	S.E.	C.R.	P
EUCS1	<---	CUL_L	0.389	0.334	0.095	4.097	***
OS1	<---	CUL_L	0.408	0.36	0.088	4.625	***
OS1	<---	MP_L	0.489	0.494	0.087	5.612	***
EUCS1	<---	MP_L	0.219	0.215	0.081	2.689	0.007
Market_Pres_3	<---	MP_L	1	0.744			
Market_Pres_2	<---	MP_L	0.897	0.671	0.116	7.74	***
Market_Pres_1	<---	MP_L	0.889	0.679	0.114	7.786	***
Culture_7	<---	CUL_L	1	0.627			
Culture_6	<---	CUL_L	1.123	0.708	0.119	9.427	***
Culture_1	<---	CUL_L	0.969	0.611	0.12	8.054	***
Culture_8	<---	CUL_L	1.367	0.82	0.156	8.782	***
Culture_9	<---	CUL_L	1.274	0.783	0.15	8.47	***
Culture_10	<---	CUL_L	1.157	0.726	0.142	8.166	***
EUCS_7	<---	EUCS1	1	0.711			
EUCS_8	<---	EUCS1	1.021	0.73	0.101	10.122	***
EUCS_9	<---	EUCS1	1.101	0.764	0.104	10.571	***
EUCS_5	<---	EUCS1	1.126	0.804	0.107	10.554	***
EUCS_2	<---	EUCS1	1.157	0.783	0.113	10.275	***
EUCS_1	<---	EUCS1	1.103	0.759	0.111	9.971	***
EUCS_12	<---	EUCS1	0.981	0.707	0.089	11.035	***
Org_Sucess_6	<---	OS1	1	0.732			
Org_Sucess_7	<---	OS1	0.999	0.706	0.109	9.126	***
Org_Sucess_9	<---	OS1	1.062	0.778	0.094	11.243	***
Org_Sucess_5	<---	OS1	0.78	0.586	0.098	7.939	***
Org_Sucess_3	<---	OS1	1.091	0.812	0.106	10.327	***
Org_Sucess_2	<---	OS1	0.935	0.659	0.104	9.025	***

*Notes. N = 222; *p<.05 **p< .01, ***p< .001.*

Appendix 3 Moderation Test

Independent Variable: Market Pressure
Dependent Variable: Organizational Success

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
Market_Pres	.471***	.471***	.381***	.366***
Vendor_NUMB	.111	.111	.054	.082
MP_Vendor		-.002		-.050
R^2	.235***	.235***	.152***	.153***
ΔR^2		.000		.002

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
Market_Pres	.439***	.449***	.379***	.389***
Module_NUMB	.191**	.190**	.056	.056
MP_Modul		-.068		.084
R^2	.258***	.263***	.152***	.159***
ΔR^2		.004		.007

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
Market_Pres	.474***	.467***	.383***	.379***
ERP_Exp_Implement_Yr	-.040	-.043	.048	.045
MP_Imp_Yr		-.068		-.083
R^2	.224***	.229***	.151***	.158***
ΔR^2		.005		.007

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
Market_Pres	.467***	.467***	.367***	.370***
ERP_Exp_Implement_TWk	.058	.056	.109	.105
MP_Imp_Yr		.008		.053
R^2	.226***	.226***	.161***	.163***
ΔR^2		.000		.003

* Model 1: Independent variables and dependent variable. Model 2: Independent variables, moderator and dependent variable.

Independent Variable: Culture
Dependent Variable: End User Computation Satisfaction

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2

CUL	.264***	.256***	.238***	.246***
Vendor_NUMB	-.025	-.019	.026	.014
CUL_Vendor		.101		-.064
R^2	.071***	.081***	.057**	.061**
ΔR^2		.010		.004

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
CUL	.264***	.268***	.235***	.235***
Module_NUMB	.042	.032	.041	.040
CUL_Modul		.058		.044
R^2	.072***	.075**	.058**	.060**
ΔR^2		.003		.002

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
CUL	.265***	.263***	.232***	.237***
ERP_Exp_Implement_Yr	.098	.096	.035	.033
CUL_Imp_Yr		-.028		.029
R^2	.075***	.077**	.061**	.064**
ΔR^2		.002		.003

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
CUL	.265***	.263***	.232***	.237***
ERP_Exp_Implement_TWk	.098	.096	.035	.033
CUL_Imp_Yr		-.028		.029
R^2	.080***	.081***	.057**	.058**
ΔR^2		.001		.001

* Model 1: Independent variables and dependent variable. Model 2: Independent variables, moderator and dependent variable.

Independent Variable: Culture
Dependent Variable: Organizational Success

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
CUL	.189**	.180**	.305***	.321***
Vendor_NUMB	.123	.130	.109	.084
CUL_Vendor		.111		-.137*
R^2	.049**	.061**	.100***	.118***
ΔR^2		.012		.018*

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
CUL	.176**	.182**	.294***	.294***
Module_NUMB	.261***	.247***	.091	.090
CUL_Modul		.078		.051
R^2	.102***	.108***	.097***	.099***
ΔR^2		.006		.003

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
CUL	.185**	.163*	.295***	.293***
ERP_Exp_Implement_Yr	-.022	-.023	.054	.057
CUL_Imp_Yr		-.135		-.018
R^2	.035*	.052*	.092***	.092***
ΔR^2		.018		.000

IVs	Jamaica		USA	
	Model 1	Model 2	Model 1	Model 2
CUL	.184**	.183**	.279***	.274***
ERP_Exp_Implement_TWk	.097	.095	.134*	.137*
CUL_Imp_Yr		-.018		-.030
R^2	.043*	.044*	.106***	.107***
ΔR^2		.000		.001

* Model 1: Independent variables and dependent variable. Model 2: Independent variables, moderator and dependent variable.