

5-2008

# Challenges, Success and Utilization of Enterprise Systems: A Comparative Study of Canadian and American Large Corporations

Uma Kumar

*Sprott School of Business, Carleton University, Uma\_Kumar@Carleton.ca*

Bahar Movahedi

*Sprott School of Business, Carleton University, mbahar@connect.carleton.ca*

Kayvan Lavassani

*Sprott School of Business, Carleton University, Kayvan@Lavassani.net*

Vinod Kumar

*Sprott School of Business, Carleton University, vinod\_kumar@carleton.ca*

Follow this and additional works at: <http://aisel.aisnet.org/confirm2008>

---

## Recommended Citation

Kumar, Uma; Movahedi, Bahar; Lavassani, Kayvan; and Kumar, Vinod, "Challenges, Success and Utilization of Enterprise Systems: A Comparative Study of Canadian and American Large Corporations" (2008). *CONF-IRM 2008 Proceedings*. 15.  
<http://aisel.aisnet.org/confirm2008/15>

This material is brought to you by the International Conference on Information Resources Management (CONF-IRM) at AIS Electronic Library (AISeL). It has been accepted for inclusion in CONF-IRM 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# **21F. Challenges, Success and Utilization of Enterprise Systems: A Comparative Study of Canadian and American Large Corporations**

Uma Kumar  
Sprott School of Business, Carleton  
University  
[Uma\\_Kumar@Carleton.ca](mailto:Uma_Kumar@Carleton.ca)

Bahar Movahedi  
Sprott School of Business, Carleton  
University  
[mbahar@connect.carleton.ca](mailto:mbahar@connect.carleton.ca)

Kayvan Lavassani  
Sprott School of Business, Carleton  
University  
[Kayvan@Lavassani.net](mailto:Kayvan@Lavassani.net)

Vinod Kumar  
Sprott School of Business, Carleton  
University  
[Vinod\\_Kumar@Carleton.ca](mailto:Vinod_Kumar@Carleton.ca)

## ***Abstract***

This study proposes measurement systems for assessing the success of implementation, challenges of implementation and success of utilization of enterprise systems. The proposed measurement systems are used empirically to assess the level of success and challenges of a sample of 2500 Canadian and American large corporations in the implementation of enterprise systems. Based on the findings of the study, a comparative analysis of the Canadian and American corporation is presented. The findings show that US firms are more successful in following their ES implementation master plan, in implementation of ES, and face fewer challenges. However, we did not find a significant difference between Canadian and US firms in success of utilization of ES.

## ***Keywords***

Success, Challenges, Utilization, Enterprise System

## **1. Introduction**

The application of information technology tools in the integration of today's organizations is an inevitable fact. The Enterprise Systems (ES) that use multiple software and hardware modules are used to integrate processes and data in organizations. ES is an integrated, customized, and packaged modular-based system that includes compatible software and hardware and handles the majority of systems requirements in any or all of the functional areas of a firm. These areas include –but are not limited to– marketing, finance, human resources, and manufacturing. Based on this definition, almost every medium- and large-sized organization has at least several ES modules, such as a company-wide, accounting software package; a marketing software package; or a manufacturing software package. ES provides us with numerous promising functions – such as integration and automation of business processes, promoting common practices, sharing data across the organization, and providing real-time access to the information (Shari and Seddon, 2007; Fox, 2003; and Nah and Lau, 2001).

There is no doubt about the value that ES provides to any organization, however, the inability of some firms to successfully implement and utilize ES to increase organizational outcomes has been a source of concern for both practitioners and academia. The evidence of ES implementation failures go back to the late 1990s (Hayes, 2007; Hendricks, 2007; Davenport, 1998). In response to this, scholars in this field initiated a trend during the last one and a half

decade to investigate the critical factors leading to successful ES implementation (Mihailescu et al., 2007; Huigang et al., 2007; Brown and Vessey, 1999; Holland and Light, 1999; Nah *et al.*, 2001; Nah, Zuckweiler, and Lau, 2003; Lee and Gosain, 2005; and Vathanophas, 2007). A vast number of studies done in regards to the success factors of ES are oriented towards case studies, and, as a result, they cannot be easily generalized; moreover the findings are usually limited to a specific area (Choi at al., 2007; Tchokogue *et al.*, 2005).

Therefore, in order to create a more global perspective, we designed a research study to explore different dimensions of ES implementation in North American companies. The present study examines large corporations in Canada and the US. It addresses the following subjects: the difference in the ES implementation, the level of success in implementing ES, the level and types of challenges that exist in implementing ES, and the degree of success in utilizing ES. For the purpose of this study we have developed four measures to help in assessing the implementation practice, the success of ES implementation, the challenges of ES implementation, and the success of ES utilization. The following section of this study presents the measures we developed that are based on our review of literature. The third section will discuss data collection and our analysis of the data gathered. The final section will present our discussion and analysis of the findings.

For better understanding the subject of this study, it is important to highlight the difference between the ES and the Enterprise Resource Planning (ERP) systems. The ERP system traditionally refers to a system that handles all activities of the firm from accounting and finance to managing human resources and customer relations (King and Burgess, 2006). While almost every company in developed countries uses one or several of these ERP modules, not many organizations have integrated all their operations under a global ERP system. Similarly, the evidence from the literature shows that, although many organizations are using some modules of an ERP system, they do not see themselves to be equipped with ERP (Keil and Tiwana, 2006; Rikhardsson, 2006; and Choi at al., 2007). Therefore, to circumvent this confusion we used the term ES implementation for the purpose of this study rather than the term ERP implementation which implies to the implementation of all ERP modules.

## **2. ES Implementation Practice**

Our first research goal in this study is to understand if the ES implementation is different in the US and Canada and, if so, what aspects are different. We asked the respondents in our survey to assess their ES implementation practice from four dimensions: 1. If they have a clear and well-communicated master plan for implementing ES (Variable 1); 2. If they have followed the master plan during the process of ES implementation (Variable 2); 3. If they have implemented the ES within the planned timeline (Variable 3); and 4. If they have implemented the ES within the planned budget (Variable 4). The respondents were then asked to indicate the extent to which they agree or disagree with each dimension of ES implementation based on their experiences in ES implementation. We used a 5-point Likert scale, and developed a score for assessing the ES implementation practice, which we named the ES Implementation Practice Score (ESIPS). The ESIPS can be a number between 1 and 5, with the higher number indicating that ES implementation has been relatively more successful with regards to the proposed master plan of the organization.

### **2.1 Success of ES implementation**

Based on the review of the literature on the success factors of ES implementation, we developed a measurement system using 19 indicators. Each indicator measures one

dimension of success in ES implementation. It is important to note that this measurement system does not deal with the effects of ES on the outcomes of utilization; rather it basically concerns the appropriate operation of the ES as it replaces the old system and promotes new processes. For each of the 19 factors the respondents were asked to indicate – based on their experience with ES implementation in their organization – the extent to which they agree or disagree with the presented success factor. We then developed the ES implementation success score (ESISS) with a numeric value between 1 and 5. A high ESSIS indicates a high level of success in implementing ES. Table 1 presents the list of factors that is used to measure the level of ES success in organizations.

Use of project management practices that effectively support the ES implementation	Readily shared information for decision making within the company	Redesigning processes in conjunction with the ES implementation	Providing opportunities for continuous learning about ES functionality in the organization	Existence of ambivalence on how organization manages IT investments
Training most employees to understand and use end-to-end business processes using the ES	Enough attention to people-based factors that would support the successful use of the deployed processes	Enhanced access to organization's, suppliers', and customers' information post deployment of ES	Existence of systems to support, encourage, and reward teamwork and team development	Allocation of sufficient time by the organization for the implementation of ES
Existence of uncertainty among the employees about their involvement and role in the change process due to ES implementation	Provision of clear vision and well-defined roles by management in order to eliminate resistance to change	Paying enough by the management attention to restructuring reward and incentive systems subsequent to ES implementation	Enough attention has been paid by the management to understand and apply industry best practices for managing the deployment of ES infrastructure	

**Table 1:** Measures of ESSIS

## 2.2 Challenges of ES implementation

For measuring the challenges of ES implementation, we developed an index named Challenges of ES Implementation Score (CESIS). This measure is constructed based on 13 items, with each of them measuring a different dimension of the challenges of ES implementation. The list of measures developed, based on the literature review, is presented in Table 2. The respondents were asked to indicate their degree of agreement or disagreement with the existence of each challenge on a 5-point Likert scale. CESIS, which represents the average score of all challenges, is a number between 1 and 5. A higher CESIS indicates a higher level of challenges in ES implementation in the organization. The data gathered from this section strongly support the comprehensiveness of our proposed list of challenges, as the respondents hardly identified any other significant challenge than the ones used in the questionnaire.

## 2.3 Success of ES utilization

To measure the success of utilization (outcomes gained) of ES, we also developed a list of factors based on our review of literature. For each item the respondents were asked to state their agreement or disagreement with the achievement of each success factor (outcome) resulting from ES implementation. The average score of these items is our Score of Success

of Utilization of ES (SSUES). SSUES is a number between 1 and 5. A higher SSUES shows a higher level of success in terms of outcomes of utilization of ES. The measures of SSUES are presented in Table 3.

In-house resource constraints	High costs of ES implementation	Lack of a clear vision for the use of ES	Lack of commitment from top leadership	High turnover of key project persons
ES adoption decisions have not been viewed in terms of their strategic importance by top management	Significant knowledge gap between implementers and users of ES	Significant resistance from staff during ES implementation	Existence of significant resistance from managers	Difficulties in estimating ES project requirements
Lack of sufficient training organized to provide employees with skills to use and maintain ES	The organization not making the right strategic choices needed to configure the systems and processes while implementing ES		The chosen ES is inconsistent with organizational processes and does not complement organizational processes and policies	

**Table 2: Measures of CESIS**

Employees have more autonomy in decision making that is directly related to their work	Employees have more collaboration with other employees in performing their tasks	Access to higher quality data and information about customers and suppliers	Access to a more up-to-date and flexible technical infrastructure post ES deployment	Ability of the company to better pursue new business opportunities
Creation of new sources of revenue resulting from deployment of ES	Work has become easier	The jobs are more satisfying for the employees	Major positive changes in the jobs and roles of individuals	Clear financial benefits resulting from deployment of ES
More flexibility and responsiveness in delivering products and services across the organization		Clear cost savings result from deployment of ES	The implemented ES helps the company to reach and serve more customers than it previously did	

**Table 3: Measures of SSUES**

### 3. Data Collection

#### 3.1 Data Collection

To collect data, 2,500 vice-presidents, directors, and managers of large US and Canadian corporations were contacted. The respondents were asked to respond to the survey if they have been involved in the implementation of ES in their organizations. The response rate was 9.1 percent (275 usable responses). The data was collected using 2,500 mailed surveys and 500 individualized emails. 48 percent of the respondents were Canadian firms and 52 percent were US firms. 3.5 percent of the firms were Canadian-American firms. On average, each company had 4.5 Modules of ES. The average for Canadian firms was 5.1 and for US firms it was 4.2. Finance and accounting modules, human resources modules, and supply chain management modules were among the most popular modules. By contrast, manufacturing,

marketing, and project management modules were relatively less popular. Close to 30 percent of the firms indicated that they have some other ES modules that were specially designed for some specific functions. However, we could categorize each of those ES into one of our seven proposed ES modules.

### 3.2 The difference in the ES implementation between Canadian and US large corporations

To explore this aspect of the study we asked the respondents about four dimensions of ES implementation – as described in the section 2 – in order to measure the ESIPS. We asked the firms about the existence of a clear and well-communicated master plan for ES implementation (Var. 1). Close to 70 percent of the firms agreed or strongly agreed that they had a clear and well-communicated master plan for ES implementation, while less than 4 percent of the respondents indicated that they did not have such a clear and well-communicated master plan for implementing ES. Regarding the ES implementation procedure (Var. 2), 71 percent of the firms reported that their ES implementation practice was done as planned, while only 8 percent reported that ES implementation did not follow the master plan. Although 47 percent of the ES implementation across our sample of North American large firms were within the planned timeline (Var. 3), 48 percent of respondent disagreed or strongly disagreed when they were asked if their ES implementation was within the planned budget (Var. 4). The overall ESIPS for all firms (US and Canadian) is 3.48.

For each of the four measures of ESIPS we ran a comparative analysis. The summary of this comparative analysis is presented in Table 4.

For ESIPS and most of its measures we found that there is a significant difference between the two countries. Furthermore, all of the scores are equal or above the median (3), which indicates that both Canadian and US firms are relatively successful in implementing ES within the framework of the master plan. However, it is important to note that Var. 3 and Var. 4, gained the least scores, which indicates that the firms have relatively more difficulty in implementing the ES within the planned timeline and budget.

Region	Var. 1	p-value	Var. 2	p-value	Var. 3	p-value	Var. 4	p-value	ESIPS	p-value
North America	3.85		3.74		3.18		3.15		3.48	
Canada	3.62	0.000	3.37	0.000	3	0.000	3.06	0.07	3.26	0.000
United States	3.80		3.85		3.15		3		3.73	

**Table 4:** Comparative analysis of ESIPS

### 3.3 The level of success in implementing ES by Canadian and US large corporations

The analysis of the 14 success indicators of ES implementation showed that almost all of the indicators have an average score of more than 3. The only exception was for the “attention to restructuring reward and incentive systems subsequent to ES implementation,” with the overall score of 2.7. In general, 48 percent of the firms have indicated that they were

successful in implementing ES (with an ESISS of 3 to 4), while 22 percent have indicated that they were very successful (with an ESISS of more than 4). By contrast, 30 percent of the firms have indicated that they were not successful in implementing ES (with an ESISS of less than 3). The overall ESISS score for North American firms in our sample was above 3 (3.4), which indicates overall success in implementing ES. However, while US firms achieved an overall ESISS of 3.6, the score for Canadian firms was around 3.1, which indicates that Canadian firms are relatively less successful in implementing ES. However, since this score is still above the median (3) for Canadian firms, we cannot claim a significant difference between the level of success achieved between Canadian and US firms. The t-test of the measures of success of ES implementation indicate that the level of success of Canadian firms in implementation of ES was significantly different from the level of success of US firms in ES implementation (see Table 5).

<b>Region</b>	<b>ESISS</b> <i>p-value</i>	<b>CESIS</b> <i>p-value</i>	<b>SSUES</b> <i>p-value</i>
Canada	0.000	0.000	0.55
United States			

**Table 5:** Comparative analysis of ESISS, CESIS and SSUES

Furthermore, the average score of each of the indicators for Canadian and US firms revealed the differences between the scores. The top six success indicators in which Canadian firms are behind US firms are discussed in the following paragraph.

First, Canadian firms do not allocate sufficient time for ES implementation. This score for Canadian firms was the lowest score among all success indicators with a 2.81 score (on the 1-5 scale). The second low indicator for Canadian firms is that they are relatively more ambivalent on how their organization manages IT investments. Third, Canadian firms pay less attention to understanding and applying industry best practises to manage and deploy ES infrastructure, while US firms are significantly more successful on this aspect (with an score of 3.73). Fourth, In Canadian firms, the level of information sharing among different levels of organization for decision-making is relatively lower than among US firms. Although this score for Canadian firms is still above 3 (3.1), US firms are significantly more successful in information sharing (with a score of 3.7). A fifth significant issue that we observed in our analysis of data was the high level of uncertainty among the Canadian employees about their involvement and role in the change process during ES implementation (score of 2.8). This score for US firms is also relatively low but still above the 3 (3.3). And a sixth success indicator in which Canadian firms were behind U.S. firms was that Canadian firms had a significant problem regarding the attention to people-based factors that would support the successful use of the ES (with a low score of 2.88). Another interesting finding in the analysis of success factors showed that both Canadian and US firms were significantly unsuccessful in restructuring reward and incentive systems subsequent to ES implementation. Both countries had the score of less than 3 for restructuring reward and incentive systems.

### **3.4 The level and types of challenges in implementing ES for large Canadian and US corporations**

Based on data analyses of large North American firms, three of the factors for measurement of challenges received a score of more than 4 (but less than 5). Therefore, we interpret them as very significant challenges, while the other ten measures were found to be significant from their score of more than 3 but less than 4. The three most significant challenges, in the order

of their importance, were found to be: resource constraints, high implementation cost, and a knowledge gap between ES implementers and users of ES. The overall CESIS of North American firms in our sample was 2.67, which indicates that the firms in general do not face serious challenges in ES implementation. The t-test of the measures of challenges of ES implementation indicate that Canadian firms significantly more challenges in implementation of ES in comparison to the US firms (see Table 5).

The comparative analysis of the data gathered shows that the Canadian firms had experienced more challenges in implementing their ES (with an average CESIS of 2.8) in comparison to US firms (with an average CESIS of 2.5). However, since the CESIS for both categories of the firms was less than 3, we can argue that none of the two groups faced serious challenges in implementing ES.

Canadian*	US*
In house resource constraints	In house resource constraints
High implementation costs	High implementation costs
Knowledge gap between implementers and users of ES	Knowledge gap between implementers and users of ES
Resistance from managers while implementing ES	
Estimation of ES project requirements	

\*The challenges are presented in the order of importance from top to bottom.

**Table 6:** Major Challenges of ES implementation for Canadian and US firms

A more precise look at the measures of CESIS reveals that among the US firms, only three measures of CESIS were found to be above 3, while for Canadian firms five measures of CESIS were above 3. The interesting point is that those types of challenges that gained the score of 3 and above for the US firms were exactly the same kinds of challenges that gained the score of 3 and above for Canadian firms; however, the score for Canadian firms was relatively higher. The only challenge indicator in which Canadian firms scored less in comparison with the US firms was the availability of training to employees for the use and maintenance of ES. Table 6 presents the list of major challenges US and Canadian firms faced pre, during, and post ES implementation.

### 3.5 Success of utilization of ES among Canadian and US firms

With overall SSUES of 3.54, the North American firms were found to be successful in utilizing the ES. The firms indicated that they had experienced clear financial benefits from deployment of ES. This was not surprising; however, we were interested to know if the financial benefits were resulted from cost saving or from the creation of new revenue sources. In assessing the outcomes, we asked the firms about both of these variables (cost-saving and increase in revenue). The results indicate that financial benefits resulting from the utilization of ES comes from both cost-saving and an increase in revenue. However, the cost-saving (with a score of 3.77) is relatively more than new sources of revenue (with a score of 3.1). The t-test of the measures of success of utilization of ES indicate that the level of success of Canadian firms and US firms in ES utilization was not significantly different (see Table 5). The comparative analysis of the SSUES reveals that Canadian firms are slightly (but not significantly, according to the t-test) more successful in utilization of ES. The SSUES of Canadian firms is 3.6, while this score for US firms is 3.44. Among the top four measures of success for US firms are having access to more up-to-date and flexible technical infrastructure (score: 3.9) and positive major changes in the jobs and roles of employees



(score: 3.63). Also in the top four are clear cost savings (score: 3.6) and better pursuit of business opportunities (score: 3.6). Among the top four measures of success for Canadian firms are the firms were able to reach and serve more customers than previously (score: 4.2) and they were more flexible and responsive in delivering products and services (score: 4.1). Also in the top four, they achieved both significant cost savings (score: 3.9) and financial benefits (score: 3.8).

## 4. Conclusion

This study explores the implementation of ES in large North American corporations. The close percentage of Canadian and US firms that participated in the survey provided a good opportunity for us to perform a comparative analysis of the data gathered. The comparative analysis shows that there exist some differences between Canadian and US firms in our sample, in both the success and challenges of ES implementation and in the utilization of ES. In general, the findings indicate that US firms in our sample are more successful in following their ES implementation master plan, in implementation of ES, and face fewer challenges. However, the level of success of utilization of ES was not found to be different among Canadian and US firms. In regards to the ES utilization, US firms were relatively less successful in creating new sources of revenue with the utilization of ES, and they were relatively less successful than Canadian firms in utilizing ES to increase the provision of products and service. US firms were also less successful in using the ES to increase the level of flexibility in their operations. The data collected in this empirical study will be used in future studies to conduct more appropriate statistical analysis such as structural equation modeling. The findings of this study cannot be easily generalized to all Canadian or US firms. Future studies can be done to help the generalization of the findings.

## References

- Andre Tchokogue, Celine Bareil, and Claude R. Duguay (2005). "Key lessons from the implementation of an ERP at Pratt and Whitney Canada." *Int. J. Production Economics* 95 (2005) 151–163.
- Bingi, P., Sharma, M.K., and Godla, J.K. (1999), "Critical issues affecting an ERP implementation," *Information Systems Management*, Vol. 16 No. 3, pp. 7-14.
- Choi, J.; Ashokkumar, S.; Sircar, S. (2007). An approach to estimating work effort for enterprise systems software projects, *Enterprise Information Systems*, Vol. 1, No. 1, pp. 69-87.
- Chwen Sheu, Bongsug Chae, and C.-L.Chen-Lung Yang (2004) "National differences and ERP implementation: issues and challenges." *Omega*, Volume 32, Issue 5, October 2004, Pages 361-371.
- Davenport, T.H. (1998), "Putting the enterprise into the enterprise system," *Harvard Business Review*, pp. 121-31.
- Ekanayaka, Y., Currie, W.L., Seltsikas, P. (2002), "Delivering enterprise resource planning through application service providers", *Journal of Logistics and Information Management*, Vol. 15 No.3, pp.192-203.
- Fox, P. (2003), "The art of ERP done right", *Computerworld*," Vol. 37 No. 20, pp. 22-3.
- Greenbaum, T.L. (2000), *Moderating Focus Groups. A Practical Guide for Group Facilitation*, Sage, London.
- Hayes, Scott (2007). Providing Enterprise Systems, *Practical Accountant*, Vol. 40, No. 2, pp. SR11-SR11.

- Hendricks, Kevin B.; Singhal, Vinod R.; Stratman, Jeff K (2007). [The impact of enterprise systems on corporate performance: A study of ERP, SCM, and CRM system implementations](#), *Journal of Operations Management*, Vol. 25, No. 1, pp. 65-82.
- Holland, C.P. and Light, B. (1999), "A critical success factors model for ERP implementation," *IEEE Software*, May/June, pp. 30-5.
- Huang, A., Yen, D.C., Chou, D.C., and Xu, Y. (2003), "Corporate applications integration: challenges, opportunities, and implementation strategies," *Journal of Business and Management*, Vol. 9 No. 2, pp. 137-50.
- Huigang Liang; Saraf, Nilesh; Qing Hu; Yajiong Xue (2007). Assimilation of Enterprise Systems: The Effect of institutional pressures and the mediating role of top management, *MIS Quarterly*, Vol. 31, No. 1, pp. 59-87.
- Keil, Mark; Tiwana, Amrit (2006). Relative importance of evaluation criteria for enterprise systems: a conjoint study, *Information Systems Journal*, Vol. 16, No. 3, pp. 237-262.
- King, Stephen F.; Burgess, Thomas F (2006). Beyond critical success factors: A dynamic model of enterprise system innovation, *International Journal of Information Management*, Vol. 26, No. 1, pp. 59-69.
- Mihailescu, Daniela; Carlsson, Sven A.; Mihailescu, Marius (2007). Evaluating Enterprise Systems Implementation Methodologies in Action: Focusing Formalised and Situational Aspects, *Electronic Journal of Information Systems Evaluation*, Vol. 10, No. 1, pp. 83-90.
- Nah Fiona Fui-Hoon and Lau Janet Lee-Shang (2001). "Critical factors for successful implementation of enterprise systems." *Business Process Management Journal*, Vol. 7 No. 3, 2001, pp. 285-296.
- Nah, F., Zuckweiler, K.M., and Lau, J.L. (2003), "ERP implementation: chief information officers' perceptions of critical success factors," *International Journal of Human Computer Interaction*, Vol. 16 No. 1, pp. 5-22.
- Rikhardsson, Pall; Kræmmergaard, Pernille (2006). Identifying the impacts of enterprise system implementation and use: Examples from Denmark, *International Journal of Accounting Information Systems*, Vol. 7, No. 1, pp. 36-49.
- Shari Shang; Peter B. Seddon (2007). Managing process deficiencies with enterprise systems, *Business Process Management Journal*, Vol. 13, No. 3, pp. 405-416.
- Sheu, C., Chae, B. & Yang, C.L. (2004). National differences and ERP implementation: Issues and challenges, *Omega*, 32(5), 361-371.
- Vathanophas, Vichita (2007) "Business process approach towards an inter-organizational enterprise system," *Business Process Management Journal*, Vol. 13 No. 3, 2007 pp. 433-450.
- Yamaya Ekanayaka, Wendy L., Currie and Phil Seltsikas (2002) *Logistics Information Management*, Volume 15 Number 3 2002 pp. 192-203.
- Yongbeom Kim, Zoonky Lee, and Sanjay Gosain (2005) "Impediments to successful ERP implementation process." *Business Process Management Journal*, Vol. 11 No. 2, 2005. pp. 158-170.