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**Social-psycho Issues of Enterprise Information System Usage
among Government Outsource Vendors Comprising Malaysian
Small-Medium Enterprises**

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Social-psycho Issues of Enterprise Information System Usage among Government Outsource Vendors Comprising Malaysian Small-Medium Enterprises

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Abstract

This paper describes the socio-psychological issues that hinder the holistic usage of ERP system among sampled Malaysian SME's that were the vendors through government outsourced projects. Five hundred questionnaires were sent to the pre-identified SMEs in Selangor through e-mail, 251 questionnaires were returned and only 110 were taken for data analysis, representing 44% of the response rate. The study found that the perceived benefits and social influence have positive significant relationship with the ERP system usage. The social influence has the strongest effect towards the ERP system usage among SMEs in Selangor. The system complexity does not influence the relationship between socio-psychological factors and ERP system usage among SMEs in Selangor. This study provides insight for the management of SMEs and the service providers on the factors influencing the ERP system usage. It contributes to the breadth of knowledge of the ERP system in SMEs from the perspective of a developing nation since the SMEs play an important role in the nation's economy.

Keywords

Enterprise resource planning, system usage, small-medium enterprises, socio-psychological factors, outsource, contracts

INTRODUCTION

Adopting and adapting to new technologies are no longer options but a requirement. No matter in the private or public sectors, organizations must continue to change its processes to stay relevant and productive. There is no exception to this matter, particularly relevant small and medium-size enterprises (SMEs) that supplies their expertise to the outsourcers. With regards to Malaysia or any other nations, SMEs should, through their own initiative and visionary goals, find their own path towards continuous progress by utilizing on strategies that alleviate them to access new markets, customer base and revenue increment so as to improve productivity and product quality (Saleh et al. 2006) (Gonzalez et al. 2013). A common solution to this is through the ubiquitous tool called information and communication technology (ICT). With ICT, customized systems can be planned, analyzed, designed and implemented depending on the needs and strategic goals of the organization (Arshad et al. 2007). A popular theory on ICT is that of management information systems (MIS), where other offshoots began to sprout, for example, enterprise information system (Ågerfalk et al. 2008). Over the years, enterprise

information systems (EIS) were adopted to improve organization performance. Some of the common examples of EIS applications are Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relation Management (CRM), Knowledge Management System (KMS), and Product Life Cycle Management (Saleh et al. 2006). With EIS, private sectors are the fore-runners in system usage. This is important as EIS is a common outsource project by the government agencies. By being the EIS experts, relevant SMEs stand a chance to win the tendered project but the staff must also be well-versed with the system usage.

Nevertheless, usage of the ERP system is common among small and medium enterprises (SME) in the developed nations with the realization that the implementation of the ERP system has proven to add value to their enterprises (Asri 2006). Within the context of Malaysia, most SMEs have not fully embraced ERP system as the enabler for organizational success (Radam et al. 2008) (Kotelnikov 2007) although the government has allocated huge budgets for the SMEs to do so. The emergence of ERP system in the past decade has still not been widely adopted by the Malaysian SMEs because of the high cost and complex implementation of the system (Goni et al. 2011). The Malaysian government has recognized and acknowledged the importance of ERP to the SMEs success as stated in the Small Medium Industries Development Plan (SMIDP 2001-2005) (Shahawai et al. 2009). Yet, usage of the ERP system in Malaysian SMEs is not encouraging (Shahawai et al. 2009). So far, most of the information about the ERP system implementation and usage is based on the studies done in large manufacturing organizations with limited studies done on the socio-psychological factors toward the ERP system implementation (Shahawai et al. 2009) (Supramaniam et al. 2009) (Radam et al. 2008). Thus, this study addresses the relationship between the socio-psychological factors and the ERP system usage among SMEs in Selangor.

LITERATURE REVIEW

A. Malaysian Small and Medium Enterprises (SMEs)

The Malaysian government is very committed and concerned for the development of SMEs after realizing the role of SMEs in the economic growth (Eric et al. 2011). The support from the government is also needed by the SMEs to face the volatile economic condition such as globalization, liberalization, deregulation and competition which has resulted in new opportunities and greater market access for Malaysian SMEs. The government's commitment to the SMEs development can be seen in 10th Malaysian Plan (10MP) and Malaysian Industrial Master Plan (IMP) where various policies and strategies have been formulated and developed (Eric et al. 2011) (Hendricks et al. 2007). The Malaysian government has planned and developed several programs to support development and sustain the growth momentum of SMEs. This is reflected in the national development agenda such as the Ninth Malaysian Plan (9MP: 2006-2010), Second Industrial Master Plan (IMP: 1996-2005) and Third Industrial Master Plan (IMP3: 2006-2015) the Tenth Malaysian Plan (Tenth Malaysian Plan 2011-2015) and 2012 Budget. Financial assistance schemes such as "Grant for ICT Application" for local firms (Ahmed et al. 2006) were also provided to assist the firms to purchase software including ERP system as a motivating factor as well as to participate in the technological changes, thus strengthening their competitiveness in the global market (Yusuf et al. 2004) (Goni et al. 2011). Nevertheless, a percentage of Malaysia's annual budget has consistently been allocated for SMEs. In the 2012 Budget, the Prime Minister reiterated the important role of SMEs in the nation's economy, hence, the allocation of RM100 million to revitalize their business through the use of ICT (Yusuf et al. 2004).

B. Concept of Enterprise Resource Planning (ERP) System

The earliest computerized information system was Material Requirement Planning (MRP) in the 1970s. The main focus of manufacturing systems at that time was on the inventory and MRP was designed to deal with the inventory issue (Almahdi 2010). The MRP system has been extended from material planning and control systems to a company-wide system that enables the planning and controlling of the organization's resources, subsequently known as Manufacturing Resource Planning II (MRPII) (Goni et al. 2011). The MRPII integrates manufacturing with other functional areas like shop floor and distribution management activities. ERP system is defined as a computerized system package that integrates all the information and functions of all the departments within the organization into one system so that the information can be shared and used by the other departments like human resource management, customer relationship management (CRM), manufacturing resource planning (MRP), supply chain management (SCM), and financial resource management (FRM) as shown in Figure 1. Anyhow, an

ERP system is defined as software that integrates all important functions within the company into a single system to fulfill the needs of the different departments (Almahdi 2010). It means that every department can share information and communicate with each other easily because the ERP system integrates them into a single computer system (Asri 2006). The ERP system is a tool to streamline the business processes throughout the organization across the departments (Benroider et al. 2005). The integration of all data and information across all the departments or functional units in the organization can improve the decision making process because the information is up-to-date (Benroider et al. 2005).



Figure 1: Components of ERP System (Source: (Almahdi 2010))

C. Previous Studies on Enterprises Resources Planning (ERP) System

There were studies done in Malaysia related to other ERP system usage in Malaysian SMEs, where several issues arise such as lack of ICT training and development (Yusuf et al. 2004) (Damodaran 2008), lack of communication (Prime Minister's Office 2010; Tan et al. 2008) and misfit problem (SMEECorp. 2013; Supramaniam et al. 2009). Some studies that were conducted in Malaysia focused on the barriers of the ERP system implementation (Shahawai et al. 2009) and critical success factors for the ERP system implementation (Eric et al. 2011; Shih 2006). The aim of this study is to extend the previous studies by determining and evaluating the factors of ERP system implementation and usage among SMEs (government vendors/ manufacturing sector) in Selangor, Malaysia

D. Socio-psychological Factors

There are five socio-psychological factors namely the perceived usefulness, perceived ease of use, rewards, perceived benefits and social influence as the independent variable. In the TAM model, there are two shared beliefs; perceived usefulness (PU) and perceived ease of use (PEOU) that influence the intention of the users to utilize the systems which ultimately will affect systems usage. The original TAM model indicated that these shared beliefs significantly influence system usage either directly or indirectly (Alam et al. 2007; Almahdi 2010; Chang et al. 2008; Shahawai et al. 2009; Wailgum 2007). Blackwell and Charles (2006) claimed that there is a significant positive relationship between perceived usefulness and ERP system usage by examining the students' readiness for change and behavioral intention in ERP implementation. The ERP systems usage is significant when the users perceived it as easy to use and requires no effort. The third variable, reward is also another contributing factor that influences the ERP system usage in the organization. Intrinsic and extrinsic rewards to the employees will compensate their efforts to use the ERP system.

The fourth variable is perceived benefits. Genoulaz and Millet (2005) and Yen (2010) emphasized that the company may perceive the benefits of using ERP systems in term of costs, operational and relationship with external customers, for instance improve the interaction with customers and suppliers. The manufacturers perceive the ERP system as the essential software to operate the business (Soh et al. 2000; Yen et al. 2010). Social influence is the fifth independent variable. Chang *et al.* (2008) found that social influence is the most significant factor affecting the ERP system usage, thus, top management should understand the operation of the ERP system before implementing it in the organization in order to improve the business performance (Ahmed et al. 2006; Supramaniam et al. 2009).

METHODOLOGY

The sampling frame of this study were SMEs in manufacturing sectors (including agro-based) and manufacturing related services sectors in Selangor that are registered under Small and Medium Industries Development Corporation (SMIDEC) in Selangor. There are 2271 SMEs in the manufacturing companies (including agro-based) and manufacturing related services concentrated in Selangor (SMEECorp 2010). In addition, these SMEs been government outsourcers, that is, vendors to any government outsourced projects.

The respondents for this study are officers at the top management level such as company owners, directors or managers and they are responsible for handling the ERP system (Alam et al. 2007; Supramaniam et al. 2009). Furthermore, these units of analysis oversee the entire operations of their firm and are in a better position to understand the current operations and future trends of their organizations (Tan et al. 2008).

The instrument used to collect primary data is a survey form or questionnaire. Through the list given by the SME Corp, the instrument were email to the 500 SMEs where 251 responses were returned. However, only 110 (44%) were complete and analyzed while the rest were discarded. Consequently, multiple regression analysis was carried out to evaluate the effect of the socio-psychological factors toward ERP system usage. As noted in StatSoft (2013), the “general purpose of multiple regression is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable”.

FINDINGS AND DISCUSSION

Table 1 presents the result of the regression analysis on four independent variables of socio-psychological factors toward ERP system usage. It was found that two out of four socio-psychological factors are significantly correlated to the ERP system usage. Perceived benefits and social influence were found to have significant effect with ERP system usage with p-value of 0.00 respectively. The social influence has the greatest influence ($\beta=0.41$) followed by perceived benefits ($\beta=0.33$).

Table 1 : Effect of Socio-psychological Factors toward ERP System Usage

Construct Variables	ERP System Usage		t value	Sig.
	b value	Standardize β		
Perceived Usefulness	.06	.07	0.83	.41
Rewards	-.04	-.05	-0.56	.58
Perceived Benefits	.46	.33	3.69	.00
Social Influence	.28	.41	4.51	.00
R	.47			
R-squared	.22			
Adjusted R-squared	.19			
F	7.48			
Sig F	.00			

Furthermore, hierarchical regression analysis was carried out to test the moderator effect (system complexity) on the socio-psychological factors and ERP system usage (Davis et al. 1989). The interaction between the socio-psychological factors (independent variables) and the system complexity (moderating variable) is shown in Table 2.

Table 2: Hierarchical regression analysis of socio psychological factors

Construct Variables	ERP System Usage		t value	Sig
	b value	Standardize β		
Independent Variables				
Perceived Usefulness	-.06	-.08	-0.68	.50
Perceived Benefits	.47	.34	3.71	.00
Rewards	-.04	-.05	-0.54	.59
Social Influence	.27	.40	2.79	.01
Moderator				
Complexity	-.07	-.12	-1.09	.28
Interaction with Complexity				
Perceived Usefulness x Complexity	.10	.18	1.61	.11
Perceived Benefits x Complexity	-.14	-.10	-0.97	.35
Rewards x Complexity	-.03	-.04	-0.45	.65
Social Influence x Complexity	-.01	-.02	-0.14	.89
R-squared	.26			
Adjusted R-squared	.19			
F	3.90			
Sig F change	.00			
Durbin-Watson	2.04			

The results from Table 2 indicated that there is no moderating effect of system complexity on socio-psychological factors (perceived usefulness, rewards, perceived benefits and social influence) towards ERP system usage. The outputs from perceived usefulness with the interaction of system complexity in influencing the ERP system usage were $\beta=0.18$, $t=1.61$, $p>0.05$; perceived benefits with the interaction of complexity in influencing the ERP system usage were $\beta=-0.10$, $t=-0.97$, $p>0.05$; reward with the interaction of complexity in influencing the ERP system usage, $\beta=-0.04$, $t=-0.45$, $p>0.05$; and social influence with the interaction of complexity in influencing the ERP system usage were $\beta=-0.02$, $t=-0.14$, $p>0.05$; these results showed that the four factors did not significantly influence the ERP system usage because the significant value, p , is greater than 0.05.

The findings have the following implications for the ERP system usage model. Out of four socio-psychological factors considered, perceived benefits and social influence were found to be statistically significant for ERP system usage among SMEs in Selangor. The findings confirmed that there is significant positive relationship between perceived benefits and ERP system usage ($r=0.23$, $p<.05$). This shows that the higher the perceived benefits, the higher the ERP system usage thus, confirming similar outcomes from the study done by Shih and Huang (2009; 2006) and Shih and Huang (2009; 2006) stated that the perceived benefits have strong and positive effects on the ERP system usage resulting in lower operational costs (e.g: maintenance and administration costs) hence, the ripple effect from this is that users were found to have adapted to the changes to the business environment, improved the quality of business operations and reduced the information redundancy across the different departments. The same results were also observed by Powell et al (2013) and da Silveira et al (2013).

Doubtlessly, the manufacturing industry will continue to contribute to the growth of the country's economy, subsequently, this study found that the SMEs which have implemented and used the ERP system incur lower operational costs which are indirectly related to a significant return on investment (ROI) (Raymond et al. 2007; Soto-Acosta et al. 2013; Supramaniam et al. 2009). Moreover, the ERP system usage creates a competitive advantage in terms of new product development and delivery performance to overcome the uncertainties that affect new product development (Powell et al. 2013; Raymond et al. 2007).

Similarly, the perceived benefits also influenced the ERP system usage among SMEs in Selangor as evidenced from studies done by Hasan et al (2011), Supramaniam & Kuppasamy (2009), Shih(2006), Blackwell & Charles (2006) and, Gyampah and Salam (2004). The benefits gained from the ERP system usage increases the quality of business (Kamhawi 2008) thus, increasing the return of the investment of their organization, reduce data and information redundancy across the departments in the organization (Benroider et al. 2005; Blackwell et al. 2006; da Silveira et al. 2013; Gonzalez et al. 2013; Hasan et al. 2011; Shih 2006). Also, social influence has significant positive relationship with the ERP system usage ($r=0.35$, $p<.05$) as likened in studies by Chang *et al.* (2008) and

Gumussoy *et al.* (2007) where the former variable significantly affects the ERP system usage. The social factors do not only include the top management directive but peer pressure in embracing new technology (Genoulaz *et al.* 2005; Park *et al.* 2007). It was found that peer support is important to motivate the employees to use the ERP system.

Furthermore, this study found that none of the socio-psychological and moderating factors influenced system usage. Technological complexity actually refers to the ERP system operation. In contrast, Hasan *et al.* (2011) found that system complexity significantly moderates the socio-psychological factors and ERP system usage. The explanation to the different findings may be due to the fact that the system complexity is tested as a moderator variable in an environment where ERP usage is mandatory but in this case, the study concentrated on non-mandatory ERP system usage in the organization. To continue, perceived usefulness is not significantly related to ERP system usage in SMEs but system usefulness is positively acknowledged as employees are able to complete their tasks quickly and accurately.

RECOMMENDATION AND CONCLUSION

Some of the recommendations derived from the outcome of this study are that the management should be concerned about the direct system users when introducing and implementing a new system such as the ERP system because full utilization will change their business operations and other affected daily routines. The strong and committed leadership and support from the top management is required for the successful ERP system implementation (Supramaniam & Kuppusamy 2009; Hasan *et al.* 2011). The finding of this study found that the social influence is the most influential factor towards the ERP system usage among SMEs in Selangor and the concept of social influence includes the expectation and pressure from the various parties and colleagues of the ERP system user (Hasan *et al.* 2011).

Second, change of management techniques is important because the employees need to change their mindset to adapt with the implementation of ERP system. The changes involve positive encouragement and other motivational factors. According to Kamhawi (2008), the close coordination amongst the different parties and departments within the companies is required to encourage the ERP system usage. Distinct communication from top management to the users would eliminate confusions especially if user guidelines and organizational goals are clearly defined.

Third, staggered training can increase the self-confidence and assure positive attitudes toward system usage (Kamhawi 2008). Sufficient training and adequate courses can encourage the employees to embrace a new system with minor resistance. This suggestion was repeatedly highlighted from feedbacks received from the respondents.

FUTURE RESEARCH DIRECTIONS

This study focuses on small-medium enterprises (SMEs) located in the state of Selangor because of the state's strategic location where most of the manufacturing-based SMEs are densely placed within the Klang Valley. However, the industrialized zones in Malaysia are not limited within the state of Selangor, thus future research can extend the scope throughout other states in Malaysia such as Johor, Melaka, Negeri Sembilan, etc. As a result, the wider scope may expand the findings of the ERP system usage among SMEs in Selangor. Secondly, the SMEs chosen have been involved in government outsourced projects thus, this constraint should be applicable for new research projects as the numbers are much larger than the study's sample size. Thirdly, this study only focused on socio psychological factors, however, other behavioral issues should be investigated. Lastly, the ERP system is used across other industries such as utilities, properties, telecommunication services, financial services, construction, plantations, mining, petroleum, and government agencies. As such, these sectors could provide novel insights on ERP and other system usage. Moreover, these sectors and agencies also undertake rapid development and mandates ERP system implementation in their business operation in order to vie in the competitive market.

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