Usage of Enterprise Information System (EIS) among SMEs in the East Coast of Malaysia: A Preliminary Study

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Usage of Enterprise Information System (EIS) among SMEs in the East Coast of Malaysia: A Preliminary Study

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Abstract—The 2012 Budget announced by the Prime Minister of Malaysia indicated that small and medium enterprises (SMEs) continue to play an important role in the nation’s economy and are therefore, given sufficient allocation to sustain the various small enterprises. ICT usage has never been more emphasized than now, therefore the objective of this paper is to assess the SME’s use of enterprise information system (EIS) of companies in the Kelantan and Terengganu, Malaysia. The findings from the preliminary study showed that only three out of 20 companies (or 15%) are into full ICT usage. The implication from non-usage of ICT in the globalized world will negatively impact the SMEs ability to compete at both the local and international level, hence, internal management and organizational matters, particularly leadership and resilience must be enhanced, else these SMEs will not succeed in their endeavors.

Keywords—ICT; EIS; ERP; SME, system usage; Malaysia

I. INTRODUCTION

One of the information and communication technology (ICT) tools for small and medium enterprises (SMEs) to increase their effectiveness and competitiveness in global market is the enterprise resource planning (ERP) system [1]. Specifically, ERP is a sub-system of EIS, a customized application which ensures an efficient and effective information flow for any organization. To be exact, EIS is defined as “business model in the organization consists of various types of businesses, business processes, organization, information systems and information mining, which circulate across the enterprise” [2]. Some of the common examples of EIS applications are ERP, Supply Chain Management (SCM), Customer Relation Management (CRM), Knowledge Management System (KMS) and Product Life Cycle Management [2].

SMEs play a significant role in the economic development of the country and are considered the backbone of industrial development in Malaysia [3][4][5]. Besides, Malaysian SMEs also contributed 31 percent to growth domestic product (GDP) [4]. Similarly, the economic sustenance of other developed countries like Japan, Korea, Germany, China, Taiwan and others are dependent on SME activities [5]. Nonetheless, the role of SMEs in the economic growth of Malaysia can be determined by looking at their contribution in the three main sectors which are manufacturing, services and agriculture [4]. Furthermore, the SMEs accounted for a significant percentage in the total amount of businesses in Malaysia’s economic sectors [1].

II. BACKGROUND OF STUDY

A percentage of Malaysia’s annual budget has consistently been allocated for SMEs. This included the recent 2012 Budget where the Prime Minister reiterates the important role of SMEs to the nation’s economy. Also, the 2012 Budget RM100 million has been allocated for SMEs to revitalize their business through the use of ICT (J. Timbuong & G. Goh, 2011, Budget 2012 offering SME a boost, The Star TechCentral, Oct. 10). Within the ICT context, the ERP system is defined as a computer program that integrates the important functions within the company into a single system to fulfill the needs of the different departments [6]. It means that every department can share the information and communicate with each other easily because the ERP integrates them into a single computer system [6]. Hence, this is an opportunity for the SMEs to improve their businesses as many large companies have invested in the ERP implementation in order to remain competitive and relevant in the face of globalization [1].

Generally, the ERP system is perceived as a complex project management process because it involves resources like money, time and employees. However, several studies demonstrated positive effects of socio psychological factors on the technology adoption success [7][8][9] and ERP implementation such as top management support, and involvement and effective project management [10][11][12][13][14]. Leaning on these evidences, the socio psychological factors are operationalized in this study because they involve the employees’ perceptions, attitude and belief on system usage [15]. This means that the employees are directly involved with the technological changes.

The research theory on socio-psychological factors is based on Triandis’s [...] (1980) socio-psychological framework. This theory suggests that there are six factors that influence and individual to perform the intention and behavior towards the tasks [16] such as the effects of performing that behavior, social factors, perceived consequences, habit of
performing similar tasks, facilitating conditions and intention [8]. Originally, this model was only used for sociology research, but eventually, it has been used in other disciplines including information system research. With that, the aim of this paper is to showcase the findings of a preliminary study on EIS usage of twenty SMEs located in the east coast state of Kelantan, Malaysia.

III. LITERATURE REVIEW

The Malaysian government is very committed and concerned with the development of SMEs after realizing the role of SMEs in the economic growth [17]. The support from the government is needed by the SMEs to face globalization i liberalization, deregulation and competition that resulted new the form of opportunities and greater market access. The government’s commitment to the SMEs development can be seen in the 10th Malaysian Plan (10MP) and the Malaysian Industrial Master Plan (IMP) where various policies and strategies have been formulated and developed [18].

The effect from economic crisis in 1997-1998 has shown government that they cannot be over dependent to foreign direct investment (FDI) to stimulate the economic development. During the crisis, many of foreign investors left their investment in our country and relocated it to more profitable countries especially those that offer cheaper labor costs. Thus, SMEs have been expected to encourage the expansion of Malaysia economy. It is crucial for the government to formulate policies, evaluate and monitor the contribution to the economy and performance of SMEs [17].

Besides, SMEs in Malaysia have been defined according to size, turnover and activity. In Malaysia, the definitions of SMEs are divided into two broad categories[3]:

i. Manufacturing, manufacturing-related services agro-based industries where the number of full-time employees not exceeding 150 and annual sales turnover not exceeding RM25 million.

ii. Services, primary agriculture and Information and Communication Technology (ICT) where the number of full-time employees not exceeding 50 and annual sales turnover not exceeding RM5 million.

A. ERP System

The term ERP system also known as an enterprise system is software system consisting modules for supporting functional areas like manufacturing, sales, marketing, distribution, accounting, financial, human resource management, services and maintenance, project management, and inventory management. The design of the ERP system facilitates the integration of modules and provides flow of information between all functions within the organizations transparently. ERP system allows the organizations to implement one integrated system by replacing their incompatible legacy information systems [19]. The researcher quotes various definitions from the previous literatures to further explain the concept of ERP systems.

ERP system integrates all the resource planning for the organizations to cover functional areas like engineering, finance, human resources and project management. ERP is a computerised system that integrates a number of areas and activities into one accounting information system. Therefore, ERP integrates all the units and functions throughout the organization into a single system so that the employees can make decision by referring to all the business operation [20].

ERP system refers to a system that integrates all the functional areas or departments within the organization [15][21]. Besides, ERP is used to manage their resources [22] and enable the firm to achieve integrated supply chain in dealing with the changing market requirements [23].

The definitions of ERP system are discussed differently from technical view to holistic business perspective, however the definitions do not contain major differences. Therefore, the researcher defines the ERP system as a software package that integrates all the information and functions of all the departments in the organization into one system so that the information can be shared and used by the other departments.

B. ERP system Usage

[15] studied the key factors that determine the ERP system usage by using Triandis model. There are three main factors which are organizational, individual and technological which affected the ERP system usage. Differ from the study done by [24], the authors advocated the ERP usage was measured by using intensity and frequency of ERP use. There were three items were used to measure the intensity and frequency of ERP use which are “I use ERP system very intensively (many hours per day, at work”, “I use the ERP system very frequently many times per day, at work” and “Overall, I use the ERP system a lot”. The rating was 5-point scale ranging form strongly disagree (1) to strongly agree (5).

In addition, the actual ERP system use can also be measured by usage volume and frequency [25][26]. The usage volume refers to the number of hours per week a respondent reports using the ERP system while the usage frequency refers to the number of usage time reported per week. In the other words, the usage frequency refers to the amount of hour for ERP usage in a week [26]. There are different ways to measure the usage frequency between both scholars are Davis et al used the frequency of use per week (times) while Shih used the hours per week.

C. Factors of ERP system Usage

Perceived Usefulness (PU): Many literatures discussed the direct and indirect effect of PU and ERP system usage. In the
TAM model, there are two shared beliefs (PU and ease of use) that influence the intention the users to use the systems as well as affect the systems usage. The original TAM model indicated that these shared beliefs significantly influence system usage either directly or indirectly [27][28][29][30].

In addition, the PU had significant effect on the ERP system usage. The finding showed that the employees used the ERP system because they believed the system was useful for them especially in improving their job performance, thus led to the ERP system usage among the employees [31]. Nonetheless, the PU was not supported having direct effect on actual usage [27]. In addition, the usefulness had no significant effect to the ERP system usage. Although the users knew that the ERP system was useful but had negative attitude towards using it. So, it is very important for the parties that related with the ERP system implementation to convince the users about the usefulness of the ERP system in performing their jobs [29].

**Perceived Ease of Use (PEOU):** PEOU was positively and significantly benefited the ERP system usage. It showed that PEOU influenced the ERP system usage because when the users think or believe that the system is easy to use this then leads to the positive attitude towards ERP usage which could in turn to greater ERP usage. The finding clearly explained that the perception that ERP system is easy to use led to the positive attitude towards using it and thus led to the greater use [29]. Hence, the role of the top management is very important to ensure that the users or employees have positive perception towards the ERP system which is easy to use.

In contrast, the PEOU had no significant effect with the actual usage [32][27] but the PEOU had significant and positive effect on the use of ERP system [27].

**Social Influence:** [13] studied on the factors that affect the users’ intention to use the ERP systems. The finding indicated that the social influence is the stronger predictor to the individual’s intention to use that system where $\beta=0.508$ with the $p=0.000$. The social influence is defined as the individual’s acceptance and usage of the ERP systems may be influenced by the opinion of the important person in that organizations. Thus, the social influence might affect the person’s perception towards the ERP systems usage.

**Perceived Benefits:** According to [34], the ERP systems usage can improve productivity, reduce inventory, new improvement processes and customer responsiveness. It shows that the effect of the ERP system usage in the organizations can benefit them in various ways. The organizations may experience a lot of benefits from the successful ERP systems implementation and the impact from the successful implementation can be used as the measurement for the ERP usage.

[35] emphasized that the company may perceive the benefits of using ERP systems. The benefits can be seen in term of costs, operational and relationship with external customers, for instance suppliers. The authors asserted that the benefits of ERP systems usage has improved the interaction with customers and suppliers. Besides, the ERP usage also reduces the information redundancy, work in real-time and all the data from the departments in the organization are combined in one system. Therefore, the reduction of direct cost like IT cost which is one of the main objectives of the ERP system implementation and usage in the organizations.

IV. **RESEARCH METHODOLOGY**

This research is a cross sectional study because the data is gathered for a particular time only in order to answer the research questions. This research lies under the quantitative method of data collection because the researcher uses the questionnaires to collect the data and the SPSS software for the data analysis.

This study only focused on the SMEs in the manufacturing sector in East Coast which is Kelantan. The lists of the companies were obtained from SME Corp based on the predetermined strata which is manufacturing sector. Out of twenty questionnaires, only three are usable for the pilot study. Before the actual data collection, the questionnaire was pilot tested with three users for the content validity and instrument reliability.

A. **Sampling Technique**

In this paper, the researcher uses stratified random sampling and purposive sampling. So, the researcher determined the specific criteria of SMEs in Kelantan to represent the respondents for this study. In this study, the researcher only focuses the manufacturing (including agro-based) as the subject matter of this study. It is because the manufacturing companies usually use the ERP system to operate their business [15][27]. Therefore, the research uses the stratified random sampling in order to identify the companies in the sample to be selected as respondents for this study. After that, the purposive sampling takes place in choosing the respondents for this study whereby is using the judgment sampling. The suggested respondents for this study are top management of the companies like owner or manager because they responsible in handling the ERP [11][36][37]. So, the researcher chooses the user of the ERP system as the respondent as well as to answer the questionnaire. However, the problem of generalization will be the limitation of this study.

B. **Measurement**

In order to identify the socio psychological factors, a total of thirty-six questions were asked. The respondents were asked to indicate their extent on each factor which is important in the ERP usage. The five-point Likert scale was used for all the items measure. The scales range from 1 to 5, the high
score responses to the questions indicate the respondents most agree with the statement and lower scores indicate less or total disagreement. The scale ranges from 1 to 5 which strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5).

The questionnaire divided into three sections. Section A refers to the demographic characteristics of the respondents, business information and information about ERP system. The demographic characteristics were gender, age, education qualification, age of business, type of business, experience in role and time spent using the ERP system. The questionnaires were adapted from [37]. Moreover, questions in Section B were designed to examine the ERP usage which is dependent variable. The questions were adapted from the [15]. Then, questions in Section C was designed to identify the factors that influence the ERP usage. The questions were adapted from the previous literature related to the factors examined in this study.

V. FINDINGS

This section will discuss about the findings of the preliminary study. The preliminary study or pilot study is a trial run done in a preparation for a larger study. Besides, the pilot study is also known as feasible study to gain the information in order to determine the feasibility of the larger study. The pilot study is the pre-testing the instruments of a specific study before the actual data collection began [38]. Hence, the researcher conducts the pilot study before running the actual survey in order to determine the reliability of the questionnaire and the questions asked can be understand by the respondents. The respondents for the pilot study have the similar characteristics to the respondents for the actual study.

A. Reliability Analysis

The reliability of the questionnaire can be analyzed by using the Cronbach’s alpha. The Cronbach’s alpha is needed to determine the reliability of the measure for the study variable. The Cronbach’s alpha reliability coefficient values are ranging from 0 to 1 which is the nearest value to 1 is the most reliable [39].

Besides, the Cronbach’s Alpha is reliability coefficient that points out the all the items in the questionnaire are positively correlated one another. It can be interpreted as a correlation coefficient that ranges in values from 0 to 1. The closer Cronbach’s Alpha is to 1, the higher the internal consistency reliability. The acceptable Cronbach’s Alpha reliability coefficient is 0.6 and reliability over 0.8 is considered good [39][40]. It is important to ensure that the questions asked in the questionnaire are reliable and easy to understand by the respondents.

However, the overall Cronbach’s Alpha for this study is only 0.487. It showed that the alpha value for this study did not fulfill the requirement of [39] and [40]. The alpha value is low due to the small number of respondents which is only three. Besides, the value of alpha depends on the number of items on the scale. It means that the number of items increase, the alpha value also increase [41].

B. Demographic Profile

<table>
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<tr>
<th>TABLE I: PROFILE OF RESPONDENTS</th>
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<tbody>
<tr>
<td>Items</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
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<tr>
<td>Education level</td>
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<tr>
<td>Diploma</td>
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<td>Degree</td>
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<td>Position</td>
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<tr>
<td>Engineer</td>
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<tr>
<td>HR Executive</td>
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<tr>
<td>Supervisor</td>
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<td>Average Age</td>
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<tr>
<td>Average Experience</td>
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</table>

From the table I above, providing the information about the sample of the subjects surveyed. A total of 20 questionnaires were distributed to the SMEs in manufacturing companies, and 3 usable questionnaires were finally collected. Thus, the response rate of this study is 15%. Table I indicates the count of gender who answered the questionnaire were 100% males and the users’ participation of this survey are Engineer, Human Resource Executive and Supervisor indicate 33.3% respectively. Besides, the education level of the employees can be classified into five categories, where they were from SPM/STPM, certificate, diploma, bachelor degree and master degree. Thus, from this surveyed, 33.3% was from diploma and 66.7% from bachelor degree level. Then the majority of the respondents’ age and years of experience are 39 year-old and 8 years of working experience.

<table>
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<tr>
<th>TABLE II. PROFILE OF COMPANIES</th>
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<tbody>
<tr>
<td>Items</td>
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<tr>
<td>Main Product</td>
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<tr>
<td>Electric components</td>
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<tr>
<td>Motor Vehicle Parts</td>
</tr>
<tr>
<td>Wood Product</td>
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<tr>
<td>Average Total Employees</td>
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<tr>
<td>Average Age of Business</td>
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<tr>
<td>Average of Experience(ERP)</td>
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<td>Annual Sales Turnover</td>
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Table II above shows lists of companies’ profile. From the table, the main product produced by teach of the companies is electronic components, motor vehicle parts and wood products which indicated 33.3% respectively. The majority of respondents’ number of employees and age of business are 97 and 11 years of business operation. Moreover, the average of experience in using ERP system among the respondents is 8 years and the annual sales turnover of the companies are between RM10m and RM25m.

VI. DISCUSSION AND CONCLUSION

From the findings, the usage of ERP system is not fully implemented in SMEs in Kelantan. The SMEs refers to the manufacturing sectors only. Since, this paper only concerns on the preliminary study not the actual study, the findings only discussed on the descriptive analysis whereby the analysis of demographic profile of the companies and respondents. The further analysis will be proceed after the actual data collection due to the number of respondents is greater than this primary study. Normally, the medium and large-sized companies adopt and use the ERP system because the adoption of ERP system incur high cost and probably the small and micro company unable to adapt the system due to the financial problem. The finding also showed that all the respondents are from medium-sized companies because the annual sales turnover between RM10m and RM25m [3].

Furthermore, the adoption and usage of ERP system especially is important for the SMEs due to the business environment changes rapidly and they need to improve their business to compete globally. The management of the companies should think the ways to increase their business performance so that they can survive in the global market. The management should see the adoption and usage of the ERP system in positive side for example lowering the operation cost, reduce redundancy and improve the effectiveness and efficiency of business operation.

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