A Study of Issues Affecting The Success of the ERP System in Indonesian Smes

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ABSTRACT

In Indonesia many small and medium enterprises (SMEs) implement enterprise resource planning (ERP) systems to integrate organisational processes. Following a successful ERP system implementation, the SMEs are expected to improve their performance. This improvement is important due to the fact that most SMEs in Indonesia have a low level of performance. The performance reflects a SMEs' capability to implement the right business strategy, the ability to capitalise on organisational resources, and to utilise information technology effectively with ERP systems implementation. This study investigates the success of implementing ERP systems in Indonesian SMEs. Data collection was based on a survey of 160 Indonesian SMEs. The sample was comprised of SMEs who are users of ERP Systems. The data was analysed empirically with Smart PLS Software. The features identified in this paper constitute hypothesis testing that conveys a relationship between business strategy and organisational resources. With a focus on SMEs performance through the implementation of the ERP systems.

Keywords

Business Strategy, ERP System Success, Organisational   Resources, SMEs Performance

Introduction

Indonesia's small-medium sized enterprises (SMEs) are made up of a variety of industry groups, such as independent owned and run, and multinational corporations working across multiple industries (Tambunan, 2012). Data released by the Indonesian Central Bureau of Statistics (BPS, 2016), shows that SMEs are an essential part of economic growth, and their contribution to job creation is vitally important to the strength of the economy. There are three indicators which show that the existence of SMEs in Indonesia plays an important economic role. The total number of SMEs in 2011 reached 53.2 million units, which makes up 99.99% of the total number of business units in Indonesia. Most of the labour force is comprised of people working in SMEs and comprises up to 74% of the existing Indonesian workforce. Furthermore, the contribution of SMEs towards GDP amounted to 63.11%, excluding oil and gas. Exports amounted to 14.20% (BPS, 2016). The study states that the main problems identified in SMEs in Indonesia are caused by the failure to implement the right business strategy (Suliyanto, 2009; Ariawan, 2017; Mudiantono, 2013), a lack of resources (Mudiantono, 2013; Hapsari, 2009; Sya'diyah & Mudiantono, 2015) and low utilisation of IT to implement an ERP system (Saputro et al., 2010; Falgenti & Pahlevi, 2013).

Successful implementation of ERP systems is necessary to improve the performance of SMEs in Indonesia. According to Dixit and Prakash (2011), the results of ERP systems have attracted the attention of SMEs, academics, researchers, and policymakers. Many organisations have recently attempted to implement the ERP system (Ruivo et al., 2013; Dantes & Hasibuan, 2015; Venkatraman, & Fahd, 2016). One of the issues in Indonesian SMEs is that the adoption of information and communication technology (ICT) among SMEs is still very low, about 4% of all SMEs in Indonesia and less than 20% that have implemented the ERP System (Saputro et al., 2010). This study is partly motivated by failure of SMEs to harness information technology to implement ERP systems. Also, this study investigates the performance of ERP systems beyond the implementation phase (Gable et al., 2003; Ifinedo, 2007). Additionally, it is inspired by the inherent need to increase our understanding of the relevant aspects of ERP system success. Furthermore, the success of ERP systems affect the organisation's performance(Shang & Wu, 2005).

Business strategy is determined by the goals of the organisation It is a competitive domain and requires a commitment of adequate resources to achieve and maintain a competitive advantage (Croteau & Bergeron, 2001). Organisations sometimes change business strategies to adapt to their unique business environment (Miles &Snow, 2003). The SMEs' capability to implement the right business strategy will affect the success of the ERP system (Raymond & Bergeron, 2008) and lead to an improvement of SMEs performance (Kalkan et al., 2011).

Organisational resources are defined as the resources owned by the organisation (Shang & Wu, 2005), which include: IT Resources (Broadbent & Weill, 1997), Human-IT-Resources (Holland & Light, 1999; (Bharadwaj, 2000) and Complementary Organisational Resources (Melville, Kraemer, & Gurbaxani, 2004; Barney, 1991). Organisational resources could affect the success of the ERP systems ability to achieve a competitive advantage and performance improvement (Melville & Gurbaxani, 2004; Wernerfelt, 1984). Previous studies indicate that a lack in resources can impact on the success of the ERP system (Ardiana et al., 2010; Ismail et al., 2012; Winarno, 2012). Organisational traits, such as the support of top management

play a significant role in the improvement of organisational performance (Shang &Wu, 2005).

Problem Formulation

Evidence suggests that the use of new technology by SMEs can lead to a higher growth and profits. The issues raised in this study include how to investigate the low performance of SMEs, and how the use of ERP can improve performance in these areas.

Objectives and Benefits

The objective of this paper is: (1) identify the main variables and issue that impact the success of ERP system. (2) analyse the variables and issues that reveal SMEs' performance through the success of ERP system.

This study highlights specific issues that affect the success of ERP systems in Indonesian SMEs. The success of Indonesian SMEs is affected by the use of effective market strategy and a clear array of organizational capitals, which are proven to be the two critical issues.

The original purpose of this study is to identify issues affecting the success of ERP Systems in Indonesian SMEs. Furthermore, it examines the impact of ERP System success on Indonesian SMEs Performance. Consequently, the performance of SMEs are based on the success of ERP systems, which is a novel contribution of this research.

Literature Review

The basic construction for this study is based on the following four foundational structures which are: SMEs performance, ERP System success, business strategy, and organisational resources.

SMEs Performance

In organisational theory, as revealed by research expert Frederick W. Taylor in 1960, the application of scientific methodology to the study, analysis and problem-solving organisation are a set of mechanisms used to make the organisation more efficient. According to Richard et al. (2002), the concept of organisational theory performance is one of the most important in construction management research. According to a study conducted by Suliyanto (2009), for SMEs it is more suitable to use the approach of sales growth and profitability when measuring organisational performance. Generally, small enterprises are less open in their financial statements. It is often difficult to interpret their finance-related business. Therefore, the performance of Indonesian SMEs is measured by looking at success rates based on aspects of sales growth and profitability (Suliyanto, 2009; Ariawan et al., 2017).

ERP System Success

The function of this research is to define the Enterprise Resource Planning (ERP) System, and to provide analysis of the success of the ERP System. Gable et al. (2003) stated that ERP system success is based on four factors: (1) information quality, (2) system quality, (3) individual

impact, and (4) organisational impact which is determined by related dimensions of the multidimensional phenomenon called enterprise system success.

Business Strategy

One of the key concepts in strategic management and organisational theory
(Chandler, 1962) is the concept of fit (Snow & Hrebiniak, 1980) and is seen as the corner stone of the organisation's strategic development. Fit is an elaborated typology of business strategy commonly known as the Miles and Snow Typology Model (Miles & Snow, 1978; 1984; 2003). Four types of business strategies identified based on the work of Miles and Snow are the prospector of business strategy, analyser, defender, and reactor (Miles et al., 1978; Croteau & Bergeron, 2001; Ingram et al., 2016).

Organisational Resource

Huang (2010) stated that researchers use the Resource-Based View (RBV) as a theoretical foundation because it emphasises the nature of how IT-based resources can be effectively deployed to sustain strategic alignment (i.e., IS-business alignment). Its relationship to RBV Theory has been the subject of many other studies (Wernerfelt, 1984). The success of ERP system is determined on the organisational resources, and this is crucial. Those resources support ERP system success through three main facets: (1) IT Resources, (2) Human-IT-Resources; and (3) Complementary Resources. Top management can contribute to organisational resources by developing an understanding of the capabilities and limitations of the ERP system, establishing reasonable goals, exhibiting a strong commitment to the ERP system, and communicating the business strategy to all employees (Shang &Wu, 2005).

Research Model

The research model (Figure 1) attempts to answer the following: 1) Does business strategy affect the ERP system success in Indonesian SMEs? 2) Does organisational resource affect the ERP system success? 3) Do business strategy and organisational resource significantly affect the success of ERP? 4) Does business strategy affect SMEs performance? 5) Do organisational resources determine a SMEs performance? 6) Does business strategy and organisational resource significantly affect the efficiency of Indonesian SMEs?

Figure 1. Research Model
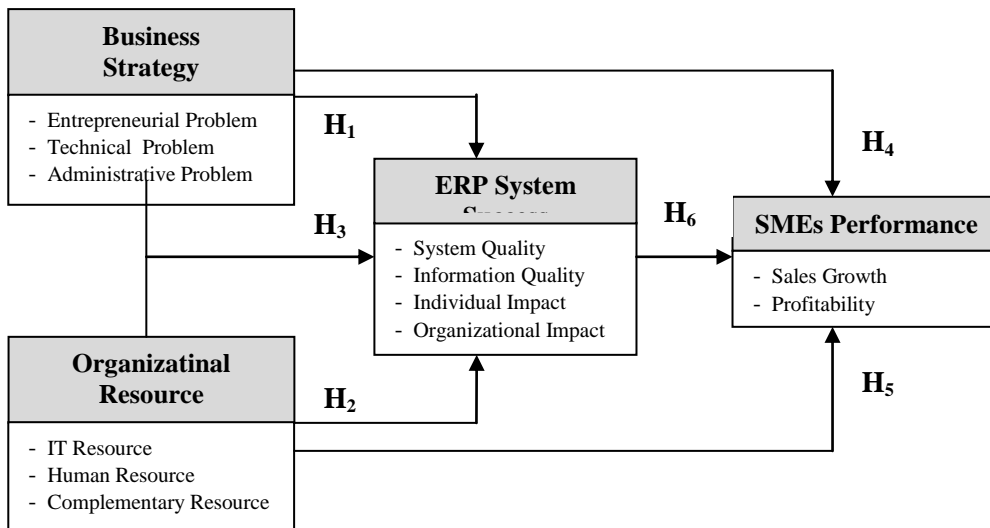
Hypothesis Development

This research model focuses on three hypotheses. The development of these theories was to try addressing the questions raised in this research. Several previous studies (Croteau & Bergeron, 2001; Hassabelnaby & Vonderembse, 2011) show that market plan and the performance of ERP system are strongly associated. Therefore, the following can be said:

H_1:   Business strategy significantly affect the success of ERP System.

The second hypothesis shows how the strengths of organisational capital affects the performance of ERP system. These organisational resources include technological and human resources. (Ismail et al., 2012; Mir et al.,2014). The following can be said of organisational resources:

H_2: Organisational Resource significantly affect the success of ERP System.

Recent research demonstrated how the correlation between corporate plan and organizational capital facilitate the effectiveness of the ERP system (Aladwani, 2001; Gibbons et al., 2008). The following can be said of business strategy:

H_3: Both business strategy and organisational resources simultaneously affect the success of ERP System.

The previous research showed how the performance and the four business strategies resulted to a favourable correlation (Raymond & Bergeron, 2008; Kalkan et al., 2011; Ingram et al., 2016). Therefore, the following hypothesis can be said of strategy:

H_4:   Business strategy significantly affect the performance of SMEs.

Organisational resources that are owned by SMEs have an impact on organisational performance (Ismail et al., 2012)

and contribute significantly to improvement (Becker & Gerhart, 2015). Therefore, the following can be said:

H_5: Organisational Resource significantly affect the performance of SMEs.

The effectiveness of ERP systems also influences the performance of the organisations (Haddara, 2013; Lecic & Kupucinac, 2013; Almgren & Bach, 2014). The following can be said of ERP success:

H_6: Business strategy and organisational resources present in ERP Systems significantly affect the performance of SMEs.

Research Methodology

Sample and Data Collection

Data concerning companies included in the sample were obtained via the web sites of the leading ERP system providers that operate in Indonesia. Convenience sampling technique is used for this study, as there are few SMEs who have implemented ERP systems in their businesses. There were 160 prospective SMEs samples obtained through convenience sampling. Of these 160 prospective SMEs contacted 115 usable responses were received (15 observations with missing data cannot be analysed). 40 percent of the 100 sampled SMEs use the prospector strategy, 25 percent the analyser strategy, 20 percent the defender strategy, and 15 percent use the reactor strategy.

The 40 valid samples analysed are from Indonesian SMEs who are using the prospector business strategy. This sample includes 25 manufacturers and service providers, who are located in Jakarta and 15 and surrounding cities including Tangerang, Bekasi, and Bogor. Each of the 40 SMEs who have implemented ERP systems are medium-sized enterprises. According to previous research conducted

by Hill (1998) using a sample size of between 30 and 500 is effective when conducting research.   A previous study conducted by Hartono (2011) stated that 43% of Indonesian SMEs adopted the prospector business strategy.

Data Analysis

The five-point Likert scale was used for the measurement of all variables (1 "strongly disagree" to 5 "strongly agree"). In total 115 questionnaires were returned, and after applying the necessary controls, 40 were used for data analysis (data analysis was conducted with the use of the statistical packages SPSS 14.0 and Smart PLS).

The instrument that was used in the present study was tested for both its content and construct validity.The control for the construct validity was conducted in two steps. Each of the four research variables was evaluated for its validity and reliability to test its appropriateness for the research model.

Results And Discussions

Analyse the results of research

First, the Average Variance Extracted (AVE) was defined to determine the measurement for the validity and reliability.

Table 1 Results of Validity and Reliability

Constructs	Average Variance Extracted	Cronbach's Alpha	Composite Reliability	rho_A
Business Strategy	0.632	0.812	0.832	0.870
Organisational Resources	0.561	0.756	0,787	0.742
ERP System Success	0.531	0.710	0.730	0.742
SMEs Performance	0.781	0.844	0.869	0.942

All indicators had a loading factor greater than 0.50 (Table 1), which suggests they are valid for measuring their constructs. In measuring reliability, the research calculated a Cronbach's Alpha and Composite Reliability greater than 0.7, which showed that all variables met the reliability requirements. After the measurement model had established the levels of validity and reliability, the model was executed using bootstrapping in Smart-PLS. (Ringle et al., 2015).

Discussing the results of hypothesis testing.

All hypothesis test results are presented in Table 2.

H_1, identifies the correlation between business strategy and ERP system success. As shown in Table 2, the measurements included a coefficient value beta of 0.194 and a T-statistics value of 4.349, which indicates that prospector business strategy has a significant effect on ERP system success in Indonesian SMEs. These findings support those of previous studies.

H_2 demonstrated that organizational capabilities have a substantial effect on the performance of the ERP system (beta value coefficient of 0.186 and t-statistical value of 2.410). These findings support those of previous studies (Ismail, 2012; Mir et al., 2014).

Table 2 Results of Measurement Model

Variables	Original Sample	T statistic	P Values
ERP System →SME Performance *(direct effect)*	0.321	6.045	0.000
Business Strategy→ SMEs Performance	0.131	2.521	0.004
Business Strategy→ ERP System	0.194	4.349	0.000
Business Strategy→ ERP System→ SMEs Performance *(indirect effect)*	0.212	4.160	0.000
Organisational Resources → SMEs Performance	0.186	2.410	0.004
Organisational Resources → ERP System	0.128	3.503	0.001
Organisational Resources→ ERP System→ SMEs Performance *(indirect effect)*	0.204	3.841	0.001

H_3, the performance of ERP system is affected by the business plan and organisational capitals, which is shown by the coefficient beta value of 0.212 and T-statistic of 4.160. Business strategy and organisational resources have a simultaneous relationship that influences the success of the ERP system. These two areas have a significant impact on ERP System Success. This analysis revealed that business strategy and organisational resources are the main issues that affect the success of the ERP System.

H_4, predicts the relationship between business strategy and SMEs performance.   As shown in Table 2, the measurements included a coefficient beta value of 0.131 and a T-statistics value of 2.521. Thus, indicating prospector business strategy has a significant effect on SMEs performance. These findings support those of previous studies (Croteau & Bergeron, 2001; Kalkan et al., 2011; Ingram et al., 2016).

H_5, test results state that organisational resource has a significant impact on SMEs performance (value coefficient beta of 0.186 and a T-statistics of 2.410). These findings

support those of previous studies (Ismail, 2012; Becker & Gerhart, 2015).

H₆, to address the final research question, this study used data shown in Table 2. The value of t-statistics was calculated based on direct and indirect effect values. The value of the indirect effects of business strategy and SMEs performance through ERP System Success is 4.349 x 6.045 = 26.29, and the total value obtained is 28.81, where the value is greater than 1.96. The analysis indicates that business strategy has a significant impact on SMEs Performance mediated by ERP System Success.

Secondly, the value of the indirect effect of organisational resource and SMEs performance through ERP System Success is 3.503 x 6.045 = 21.18, and the total value obtained is 23.59, where the value is greater than 1.96. The analysis also indicates that organisational resources have a significant impact on SMEs performance and is linked to successful ERP systems. It is evident that business strategy and organisational resources are two factors that prove to be very important in successful ERP Systems, and subsequently have a significant impact on SME Performance.

Results referring to the objectives of the study

Business strategies usually tend to consider the implementation of information technology as a means to improve the performance of their organisations (Croteau & Bergeron, 2001). Based on the survey results that identify the majority of Indonesian SMEs use a prospector strategy.

On average, 40% of Indonesian SMEs use this type of business strategy (Hartono, 2011). The prospector strategy is regarded as innovative, especially in the development of information systems and technology. (Bergeron, 2008). Organisational resources have the potential to provide a competitive advantage through information technology, which ultimately leads to increased organisational performance (Ismail, 2015). Top management support is one of the complementary organisational resources that influences the implementation of ERP systems in Indonesian SMEs (Mudiantono, 2013; Hapsari, 2009; Sya'diyah & Mudiantono, 2015).

The results of this research show that business strategies and organisational resources have a significant impact on the success of the ERP system (see H₁ and H₂). Other results (H₃) show that these two factors are also strongly correlated in the support and success of the ERP system. Both are areas in which difficulties often arise in the implementation of ERP systems. The results that refer to hypothesis (H₄) analysis show that Indonesian SMEs with prospector business strategies have a significant impact on the performance of Indonesian SMEs. Also in H₅, organisational resources have a significant impact on the performance of Indonesian SMEs. The indirect effect analysis (H₆) also indicates that business strategy or organisational resource has a significant impact on SMEs Performance mediated by ERP System Success.

Both prospector business strategy and top management support are features of organisational resources that affect the success of the ERP System.

Theoretical Implication

Theoretically, the ERP system success approach refers to the success model of information systems. Therefore, the success of the ERP system is vital in aiding decision making processes in modern organisations that have a high dependency on information technology. Research that uses Miles and Snow Typology provides additional insights into creating a suitable strategy is used by Indonesian SMEs. The ERP system success depends on the implementation of the system to achieve organisational goals.

Managerial Implications

The managerial aspects of this research provide valuable insights for SME practitioners and ERP system service providers, and to those who have vested interests in SME`s in Indonesia. SME managers must carefully consider the implementation of the prospector business strategy, and the commitment of top management support. They alone can determine the success of the ERP system. On the other hand, ERP system service providers must create ERP System module packages that are suitable for the requirements of Indonesian SMEs.

Limitations

This paper has certain limitations: Firstly, there are some method-related elements of the study that may limit the empirical findings because the sample size is small. Secondly, this study only analyses SMEs that use the prospector business strategy. Lastly, the questionnaire approach is not entirely free from the subjectivity of the respondent.

Conclusions

In summary, the main findings of this study show that business strategy and organisational resources are two main variables that affect the success of the ERP System and improve SMEs performance. Business strategy and organisational resources show a weak correlation to the success of ERP System. Based on this fact, those factors must be considered seriously if SMEs are to implement the ERP System and improve performance.

In term of the future research, this study could be expanded by investigating other issues in Indonesian SMEs, such as the financial constraints (Beck et al., 2005; Kira, 2013) that influence success and performance. Finally, conducting the study more accurately by taking into account the employee figures of SMEs as a control variable of performance (John & Adebayo, 2013; Dut, 2015).

Acknowledgment

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