Adoption of Information Technology for Improving The Small Medium Enterprises Performance in Indonesia

Mercurius Broto Legowo[1], Harjanto Prabowo[2], Ford Lumban Gaol[3], Muhammad Hamsal[4]

[1]Perbanas Institute, Faculty of Information Technology, Jl. Perbanas, Karet Kuningan, Setiabudi, Jakarta 12940, Indonesia

[2,3,4]Bina Nusantara University, School of Business Information System, Jl. K.H. Syahdan No.9, Kemanggisan, Palmerah, Jakarta 11480, Indonesia

Email:[1]mercurius@perbanas.id,[2]harprabowo@binus.edu,[3] fgaol@binus.edu, [4]mhamsal@binus.edu

ABSTRACT

In Indonesia, Small Medium Enterprises (SMEs) are the backbone of the economy and are today faced with global competitio. However, there are still many SMEs in Indonesia that have problems with the performance of their organisations. Information Technology (IT) adoption is one of the efforts that is needed to improve the performance of SMEs in Indonesia. The purpose of this research is to understand the effect of IT adoption such as ERP implementation and the use of Payment Gateway in improving the performance of Indonesian SMEs. Data collection was based on surveys of 100 Indonesian SMEs. Quantitative approaches were used in this study and data were analysed using the smartPLS software. This study also uses the size of SME employees as a control variable for SMEs performance. The results of this research indicates that the adoption of IT through the success of the ERP system has a significant impact on SMEs performance, but IT Adoption through the utilisation of payment gateway has failed to moderate the performance of SMEs.The results may contribute to SMEs managers to consider the factors identified in this research before adopting the IT to improve their SMEs performance.

Introduction

Small Medium Enterprises (SMEs) are the essential part of economic growth (Bruque and Moyano, 2007; Zeng et al., 2010). Hence, their contribution to job creation and economic growth is significant for the country (BPS, 2016). In Indonesia, SMEs are the backbone of the economy and are today faced with global competition. Therefore, it becomes an imperative for them to look for means of responding to the dynamic markets. ERP systems have become the most common IT strategy for most large companies. Indonesian SMEs are moving towards ERP systems' implementation and use of payment gateway as a new technology in finance.

The key issue faced from the previous study, on the crucial element that affects SMEs, is how those in Indonesia use a minimum amount of IT and are not used in adapting to new and advanced technologies (Varga, 2017; Teja, 2017; Saputro et al., 2010; Falgenti & Pahlevi, 2013). However, with the adoption of IT, it is expected that Indonesian Small and Medium Enterprises (SMEs) will improve their business performance.

Organisational performance in the SMEs sector is currently still showing many deficiencies and limitations. According to a study conducted by Suliyanto (2009), it was stated that SMEs are more suitable to use for the approach of sales growth and profitability in organisation performance measurement. Generally, small enterprises are less open to using financial statements. They are so difficult to interpret, especially their finance-related business. Thus, the success of Indonesian SMEs business is indicated by performance aspects, such as sales growth and profitability (Suliyanto, 2009; Ariawan et al., 2017). The previous study observed that one of the issues crucial to the success of SMEs in Indonesia is the use of IT in implementing the ERP system,

which is relatively low (Saputro et al., 2010; Falgenti & Pahlevi, 2013). By improving the performance of SMEs, Indonesian SMEs can enable its business viability and win the competition in the global market.

IT adoptions such as ERP systems and implementation of payment gateways experienced a lot of resistance if offered to sales SMEs Therefore, implementation requires higher investment and there are failures associated with it. The ERP system is one of the most powerful IT tools for business sectors. According to Wibowo (2016), the ERP system is implemented by the required modules, so that ERP systems can be classified according to their needs (Hamilton, 2004; Mudiantono, 2013, 2013; Wibowo, 2016). Based on this, it will be easier for Indonesian SMEs to adopt ERP systems. The problems of successful ERP systems are needed to encourage the improvement of the performance of Indonesian SMEs. A few years ago, many business organisations attempted to implement the ERP system (Ruivo et al.,2013; Dantes & Hasibuan, 2011; 2015; Venkatraman, & Fahd, 2016). This study is motivated partly by the lack of utilisation of information technology to implement the ERP system. In some research in the information systems (IS) field dealing with the success of ERP systems beyond the implementation phases (Gable et al., 2003; Ifinedo, 2007)

According to Teja (2017), the implementation of a payment gateway, as one of the financial technology services, is still low among SMEs. This is due to the lack of habits implementing new technology. Few studies have investigated the implementation of payment gateway in Indonesia and overall performance (Varga, 2017; Teja, 2017). The intensive efforts of policymakers in SMEs for the adoption of that new technology was to overcome the problem of market demand. Furthermore, it will have an impact on the performance of SMEs.

Small and medium-sized enterprises are non-subsidiary and are independent companies that employ less than a given number of employees (Ensari & Karabay, 2014). This number varies in different countries. Meanwhile, Indonesian Central Bureau of Statistics (BPS, 2016), based on the size of the employees of SMEs, has stated that Small Business is a business that employs five to nine people. The Medium Business has 20 - 99 people. Previous studies stated that the employee size effects the performance of SMEs (Doğan, 2013; Raziq, 2014; Dut, 2015). The number of employees in SMEs needs to be a consideration for the success of the ERP system. Hence, further affecting the efficiency of SMEs.

The success of ERP systems, payment gateways, along with the number of SME employees are the controlled variables, which are not mentioned in any of those studies, that pertain to the performance of Indonesian SMEs. Many previous studies have limited results on the analysis and review of ERP system implementation (Mudiantono, 2013, Falgenti & Pahlevi, 2013). Some studies observed the use of financial technology (Minerva, 2016; Teja, 2017). Such studies are an incentive for the adoption of IT, such as the success stories of ERP systems and the introduction of new technologies (payment gateways, etc.). Therefore, this is the future success of SMEs in the long term.

Problem Formulation

In order to boost the efficiency of SMEs in Indonesia, the use of IT is important, such as the implementation of ERP systems and the use of payment gateways. How IT adoption influences the Indonesian SMEs performance is the problem formulation established for this study. The size of SME employees as the controlled variable for the performance is also used for this study.

Objectives and Benefits

The objectives of this paper are as the following:
1.   To identify IT Adoption through implementing of ERP systems affecting the Indonesian SMEs performance
2.   To identify IT Adoption through utilising payment gateway factors as moderating variables and affect the performance of SMEs.

This study tries to highlight the number of employees that influence IT adoption on the performance of Indonesian SMEs. In this case, ERP system implementation and utilisation of payment gateways.

The original contribution of this study is the identification of IT adoption affecting Indonesian SMEs performance. An Indonesian SME performance model, based on IT adoption, by considering employee number as a control variable, is a novelty in this study.

Literature Review

The literature review is organized according to the four basic constructs of the research: SMEs performance, ETP System success, payment gateway, and employee size of SMEs.

SMEs Performance

In organisation theory, as expressed by researcher Frederick W. Taylor in 1960, stated that the application of scientific methods for research, analysis and problem-solving organisation or a set of mechanisms is aimed to improve the efficiency of organisational performance. Improving SMEs' performance in Indonesia is a topic that interested researchers in Indonesia. (Mudiantono, 2013; Falgenti & Pahlevi, 2013; Sa'diyah & Mudiantono, 2015). Lack of use of information technology and systems as one of the issues in adopting IT can affect the achievement of SMEs performance (Tambunan, 2012). Furthermore, according to Mudiantono (2013), the ERP System can improve the performance of SMEs when successfully implemented. Organisational performance is also an achievement of organisational success in operating organisational resources with indications of growth and profitability (Croteau & Bergeron, 2001; Law & Ngai, 2007). It is stated that the development of organisations in SMEs is through their performing results (Suliyanto, 2009).

This is because small companies are generally less open in their financial statements, so it is difficult to interpret the related financial business. Thus, the performance and success of Indonesian SMEs is based on measuring aspects of the development of sale and attained profit (Suliyanto, 2009; Ariawan et al., 2017).

ERP System Success

It is stated that ERP system for SMEs in Indonesia is a package of information systems (Verville et al., 2005), which is a combination of technology and business practice (Xu & Yeh, 2009), and it seeks to create an integrated product (Herzog, 2006) to be able to manage most of the business operations of SMEs as well as developed based classification of its use (Hamilton, 2004; Mudiantono, 2013; Wibowo, 2016). According to Hamilton (2004) it was defined that the classification of ERP is:
1.   "A" Classification – Integrating all modules of ERP system on all departments (HR, Finance, Operation)
2.   "B" Classification - Combining two modules and integrating it into the ERP system
3.   "C" Classification - Not wholly using the module of ERP system.
ERP systems can interact automatically with suppliers and customers by exchanging information and producing highly comprehensive and integrated information that can be used for online transactions (e-Payment) and decision making(Bharadwaj, 2016; Jamdaade & Champaneri, 2015).

Payment Gateway

In this research, it was defined that Payment Gateway is one way to process electronic transactions and provides tools for processing payments between customers, businesses and banks which is expected to improve the performance of Indonesian SMEs(Damanik,2012; Jamdaade & Champaneri, 2015; Varga, 2016; Teja, 2017). There are indications that Indonesian SMEs have implemented the Payment Gateway if they have used online payment systems

or cellular payments from customers to SMEs or from SMEs to suppliers (Wang & Tu, 2017; Wulan, 2017; Teja, 2017).
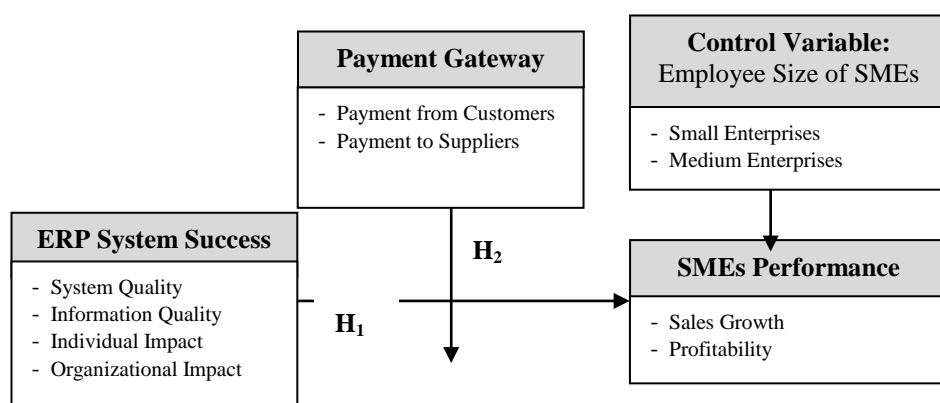
Employee Size

Considering organisational resources, employee size can be proxied by firm size; there are non-imitable managerial abilities and physical resources converted into competences. According to our research subject and our sample, employee size of SMEs is one controlled variable to the regression model. According to Dut (2015), employee size is perceived as an important contextual factor that may induce a high impact on IT adoption efforts and their influence on SMEs performance. We, therefore, integrate a firm's size through their total amount of employees as a control. Indonesian Central Bureau of Statistics (BPS, 2016) defined such that Small Enterprise is a type of business that has five to 19 workers, and Medium Enterprise is a type of business with 20 to 99 employees. Several previous studies have shown that employee size of SMEs affects SMEs performance (Doğan, 2013; Raziq, 2014; Dut, 2015). Some previous

studies have shown that employee size is a vital element of firm performance. Theoretically, the employee size of a firm can affect a firm's performance in many ways. According to a study conducted by Vo Van Dut (2015), where firm size is used as a control variable, the main features of large firms is their varying abilities, their ability to exploit economies of scale and formalisation of procedures. In this study, employee size of SMEs is what determines whether the type of small and medium enterprises affect the success of ERP systems on the performance of Indonesian SMEs.

Research Model

Figure 1 shows the research model that is proposed for this study. This research model has two variables of the construct which has dimension. The independent variable is the ERP system with the dimension being the system and information quality, along with information and individual impact. The second variable is SMEs Performance as the dependent variable, with the dimension of sales growth and profitability.

Figure 1. Research Model

In this study, the Payment Gateway is a moderator variable and Employee Size of SMEs is considered a control variable. The development model to boost the efficiency of SMEs in Indonesia with these variables is a novelty of current research.

The model is developed in order to answer the research questions as follow:
1. Does the success of ERP system affect the performance of Indonesian SMEs?
2. Does the success of ERP system affect the performance of Indonesian SMEs that are moderated by payment gateway?

Development of Hypotheses

This research model is tested across two hypotheses. The development of this hypothesis was used to answer the problems in this study. Some previous studies have shown that there is a significant influence between the success of the ERP System and organisational performance. Implementation of a successful ERP system will directly affect the company's performance (Farhanghi et al., 2013). The success of the ERP System also affects managerial and

operational concerns in organisational performance and many aspects of overall company performance (Haddara, 2013; Lecic & Kupucinac, 2013; Almgren & Bach, 2014). Thus, in this study the hypothesis can be drawn:

Hypothesis 1 (H_1):

ERP System Success is significantly impactful towards the performance of SMEs.
Payment Gateway is a new technology that will be able to overcome market demand and support the ERP systems that ultimately can be used to improve performance (Varga, 2016). Thus, it can be expressed in the hypothesis:

Hypothesis 2 (H_2):

ERP System Success is significantly impactful towards the performance of SMEs and is moderated by the payment gateway
Several studies have shown that employee size of SMEs affects SMEs performance (Doğan, 2013; Raziq, 2014; Dut, 2015), and the firm size has a positive effect on profitability as part of company performance (John & Adebayo, 2013). In this research, the investigation of Indonesian SMEs

performance was taken into consideration. The employee size was used as a variable control. Several previous studies stated that the analysis of control variables was not included in the hypothesis test (Doğan, 2013; Raziq, 2014; Dut, 2015).

Research Methodology

Sample and Data Collection

The research model of this study was tested with the use of a newly developed questionnaire on the Indonesian SMEs that have implemented an ERP system in their business with using payment gateway as a payment system. Data concerning Indonesian SMEs that could be included in the sample of the study were obtained via the web sites of the leading ERP system and Payment Gateway providers that operate in Indonesia. Convenience sampling techniques were used for this study, as there are few who have implemented ERP systems and payment gateway in their business. Of the 100 prospective SMEs contacted, 63 usable responses were received. The 63 returned questionnaires represent a very satisfactory response rate of 63 percent. The majority of the respondents (47.64 %) preferred to use "C" classification packages of ERP system for their business. The majority of the SMEs samples are 32 medium-sized enterprises, while 31 are small size enterprises. According to the previous research conducted by Hill (1998) it was stated that sample size between 30 and 500 could be used in research

Data Analysis

The five-point Likert scale was used for the measurement of all variables (from 1 "strongly disagree" to 5 "strongly agree"). The dependent variable is the SMEs' performance, which reflects the results of the study. ERP system success, as a variable independent, payment gateway, as a moderating variable, and employee size of SMEs, as a control variable in this study. The effect of employee size as a control variable on SMEs performance was analysed. The instrument (questionnaire) that was used in this 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, for bettering the proposed research model.

Results And Discussions

Result analysis on the research

The measuring of validity and reliability, the value of Average Variance Extracted (AVE) was determined. All indicators had a loading factor greater than 0.50 (Table 1), suggesting that they were valid for measuring their constructs. In measuring reliability, the researchers calculated a Cronbach's Alpha and Composite Reliability greater than 0.7, which showed that all variables met the reliability requirements. Then, once the measurement model finds the elements of validity and reliability, the model was executed using bootstrapping with the Smart-PLS tool (Ringle et al., 2015).

Table 1 Results of Validity and Reliability

Construct	Average Variance Extracted	Cronbach's Alpha	Composite Reliability	rho_A
ERP System Success	0.572	0.895	0.913	0.910
Payment Gateway	0.638	0.717	0.841	0.638
Moderating Effect	1.000	1.000	1.000	1.000
SMEs Performance	0.589	0.858	0.895	0.870

Discussing the results of hypothesis testing

The first hypothesis test (H_1) tests the direct relationship of ERP System Success with SMEs Performance. The aim was to find out the direct effect of IT adoption efforts through ERP System success on the performance of Indonesian SMEs. The findings of this research model are shown in Table 2.

Table 2 Results of Measurement Model

Variables	Original Sample	T-statistic	P Values
ERP System Success → SMEs Performance (*Direct Effect*)	0.351	2.481	0.006
ERP System Success*Payment Gateway ← SMEs Performance (*Moderating Effect*)	0.150	5.635	0.000

The first research question addressed the relationship between ERP System Success and SMEs Performance. As shown in Table 2, the measurements included a coefficient value beta of 0.351 and a T-statistics value of 2.481, thus, indicating ERP System Success has a significant effect on SMEs Performance. If there is a positive relationship between ERP systems and SME performance, it means that the adoption of IT through the success of the ERP system

has a significant impact on the performance of Indonesian SMEs. This finding is in line with previous studies(Ruivo et al., 2013; Dantes & Hasibuan, 2015; Venkatraman & Fahd, 2016).

The second hypothesis (H_2) tests the relationship of two variables in the presence of moderating variables. The result of H_2, which suggests that the relationship between payment gateway as a moderator variable and SMEs performance, which has a positive value, means that Moderating Effect strengthens SMEs performance, but it is not significant (p-

value > .05). These results indicate that SMEs in Indonesia are not ready to utilise payment gateway services that are expected to improve the performance of SMEs. Table 2 shows the direct effect of ERP systems on the performance of SMEs (path coefficient = 0.351) and indirect effect with payment gateway as a moderating variable (path coefficient = 0.150). Thus, payment gateway failed to moderate the ERP System and reduces its influence on SMEs performance among SMEs in Indonesia. These results indicate that the payment gateway does not have a significant impact on the performance of Indonesian SMEs. Thus, IT adoption through the utilisation of payment gateway has failed to moderate the performance of SME.

Discussing employee size as a control variable

Several previous studies stated that the analysis of control variables was not included in the hypothesis test (Doğan, 2013; Raziq, 2014; Dut, 2015). However, variable control analysis is needed to enrich and deepen research results. The results of the statistical analysis show that the employee size in SMEs is 5% which is a substantial level (p < 0.05). The employee size has a significant probability value, that is 0.00 <0.05. Thus, Employee Size as the control variable which has statistically significant influence on SMEs performance. This study demonstrates that their ability to harness economies of scale and to formalize processes is the key characteristic of medium-sized SMEs.

Revealed results findings that refer to the objectives of the study

Mudiantono's (2015) study stated that the implementation of ERP systems in Indonesian SMEs is still less effective. So this will impact on the performance of SMEs. Based on the survey results it was found that the majority of the respondents (47.64 %) preferred to use "C" classification packages of the ERP system for their business. "C" classification is using the ERP system module only partially, for example, just the Operational module or Financial module. The H_1 results showed that the ERP system has a major impact on the efficiency of SMEs. Based on this, Indonesian SMEs must make efforts to adopt IT, especially the implementation of ERP systems according to the modules they need. Thus, the effort to adopt IT will further improve the performance of SMEs.

The indication that Indonesian SMEs have implemented Payment Gateway is by using payment system from customers to SME, or from SME to suppliers online or mobile payment (Wang & Tu, 2017; Wulan, 2017; Teja, 2017). The results of a survey of 63 Indonesian SMEs prove that they have utilised payment gateways, especially online payments. The H_2 results suggested that there is a positive value that correlates between the payment gateway (moderator variable) and the performance of SMEs, however it is insignificant. Thus, the results of the study indicate that Indonesian SMEs (usually for a small category of SMEs) are not ready to use new technology in payment. Based on surveys, results show that Employee Size of SMEs (32 medium categories of SMEs) has an impact on SMEs performance, but it is not significant. The employee size of

SME has to be considered in the influence of IT adoption because it has an impact on SME performance.

Theoretical Implication

Theoretically, this following research on the theory of Information System (IS) was established to focus on the improvement of SMEs performance in Indonesia through the use of ERP system.

Managerial Implication

This research has managerial implications. First, SME owners and managers must consider IT adoption such as ERP System implementation and utilisation payment gateway more efficiently. Second, developers of ERP system packages and gateway payment service must support Indonesian SMEs in adopting IT and implementing new technologies.

Limitations

This study has some limitations. First, this study does not discuss the factors that affect the success of ERP systems, such as business strategy or organisational resources. Precisely, how to integrate the ERP system with a payment gateway. Second, the present study is limited by the relatively small size of the sample. And third, the questionnaire approach is not free to form a subjective opinion of the respondents.

Conclusions

The purpose of this research was to understand the effect of IT adoption, such as ERP implementation and the use of Payment Gateway in improving the performance of Indonesian SMEs
The findings of this suggest the following:
1.   IT Adoption through the success of ERP systems has a positive effect on the efficiency of Indonesian SMEs
2.   IT Adoption through the utilisation of payment gateway have failed to moderate the performance of SMEs.
The analysis shows the size of employees, being a control variable, statistically affects the correlation between IT Adoption and the success of Indonesian SMEs.

In the future research, we intend to develop the research model more accurately by using other factors which have an influence on the ERP system success.

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