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Factors Influencing Successful Implementation of Cloud ERP Solutions at Small and Medium Enterprises in Vietnam

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Abstract

A business's Enterprise Resource Planning (ERP) solution is software that fully integrates the services that businesses require, continuously updates business processes and department operations in real-time, and so aids in the successful management of enterprise resources. Previously, ERP solutions were often deployed for large enterprises, but along with the strong digital transformation process, many small and medium enterprises have been deploying Cloud ERP (CERP) solutions. The objective of the study is to measure the factors affecting the successful implementation of CERP solutions at small and medium enterprises and the impact of successful implementation of CERP solutions on business process re-engineering and enterprise performance. Using a quantitative method based on data collected from 230 small and medium enterprises in Vietnam that have been implementing CERP solutions, the results show that there are 5 factors affecting, which are Organizational ERP Strategic, Top management Commitment, Data Security, Training in ERP Projects, Organizational Culture. Research results also show that Successful implementation of CERP has a direct impact on business process re-engineering and business performance. Based on the results, the study has made a number of policy implications in the successful implementation of CERP towards re-engineering business processes to improve the performance of small and medium enterprises.

Keywords: Management Information System, SME, Cloud ERP, Digital Transformation

JEL Classification Code: M10, M15, C12, C31

1. Introduction

Since the 1990s, Enterprise Resource Planning (ERP) has been known as an overall enterprise management information system, operating separately, not integrating with other systems, high cost, complex system and much customization to meet the specific business requirements of the business. This has slowed down the ERP application process for a long time. In addition, new technologies in the 4.0 industrial revolution such as artificial intelligence, big data, connected things, cloud computing, business intelligence, etc. have also been included in the ERP system. All these factors have created a flexible ERP solution that provides better information, optimizes business processes, improves security and, privacy, system sustainability, and helps businesses make faster and smarter decisions in a timely manner. ERP solutions like the ones above are often called Cloud ERP (CERP) solutions. However, no matter how good a CERP solution is, if businesses do not successfully deploy it, it will be difficult for businesses to apply information technology to automate processes, fully exploit data, and support timely business decision-making for the organization.

In the economy of each country, small and medium enterprises (SMEs) always play a pivotal role. In Vietnam, SMEs account for 96.7% of the total number of enterprises in the country and the infrastructure of hardware, technology, legal and human resources; in general, it has been ready for SMEs in Vietnam to apply CERP in management (ICT VietNam, 2020). However, it is also shown in this report that only 23.1% of enterprises in Vietnam apply ERP, which shows that ERP application of enterprises in Vietnam is very low even though they understand the need and benefits of ERP solutions in the overall management of the business.

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Therefore, it is necessary to study the factors that help to successfully implement CERP in SMEs, contributing to accelerating the rate of enterprises applying CERP in management to meet the requirements of society. Currently, in the world, there have been many studies on the factors affecting the successful implementation of ERP solutions, and these studies have made very valuable announcements for businesses that want to deploy. These studies usually focus on CERP solutions for large enterprises, and very few studies on the factors that implement CERP solutions for small and medium enterprises. CERP solutions for small and medium-sized businesses have their specific requirements, and the conditions for implementing CERP solutions for these businesses are also different.

Therefore, an empirical study is needed on the process of implementing CERP solutions for small and medium enterprises. This research is based on a survey of 230 small and medium enterprises in Vietnam implementing CERP solutions to experimentally identify the factors affecting the successful implementation of CERP solutions and determine the impact of CERP solutions on successfully implementing CERP solutions to improve business processes and SME performance.

2. Literature Review and Hypotheses

2.1. Cloud ERP and Critical Success Factors

The implementation of traditional ERP solutions is considered complex because it is influenced by many factors inside and outside the organization (Ke & Wei, 2008; Lai et al., 2010). However, these problems have gradually been properly handled by large enterprises when they spend appropriate financial resources and long enough time to apply and implement, while small and medium enterprises (SMEs) are still facing many difficulties. Recently, with technological advancements in cloud computing, traditional ERP solutions can be offered in a plug-and-play model to SMEs (Battleson et al., 2016). In this way, the SMEs only pay for the services they use, and this saves them from having to invest in IT hardware installation and software development (Daniel & Wilson, 2003; Hofmann & Woods, 2010). In addition, the need for an IT support staff to maintain the ERP solution is not required in CERP solutions. Cloud providers can supply services to SMEs so that they can process and manage their business data in a cost-effective and efficient way (Salleh et al., 2012).

However, up to now, many businesses still believe that: CERP is a complex solution when businesses apply for management because it involves many stakeholders, and requires large and frequent changes in business management, so when deploying, there are many risks that lead to failure. Up to now, many authors have studied CERP and the factors that help to successfully deploy CERP solutions for businesses. Huang et al. (2021) have compiled nearly 40 studies and identified 35 factors influencing the successful implementation of CERP in SMEs in India and the UK. Research results have divided factors into different groups, analyzing the complexity and lack of clarity of different factors affecting the implementation of CERP.

The author group Kuranga et al. (2021) also studied the factors affecting the success of implementing CERP solutions for businesses in the maritime and supply chain fields in Nigeria, the results of the study confirmed the benefits of CERP and provided a model of the factors affecting the successful implementation of the CERP solution, in the model with 10 factors and components of the factors that help to successfully deploy CERP solutions. Along with this topic, the author Jayeola et al. (2020), have researched and modeled on the factors affecting the acceptance of enterprises with CERP solutions, the influence of CERP acceptance to activities as well as the competitive advantages of enterprises. Two authors Erwanto and Zusi (2020), also proposed a model of factors affecting the successful implementation of CERP solution; the authors proposed 6 factors as well as indicators to evaluate these factors in the model.

There have been a number of studies that have published factors affecting the successful implementation of CERP solutions, but the research results are not exactly the same because of different points of view. According to Winahyu (2005), the critical success factor is the most important factor used by an organization as a key tool to deal with opportunities and threats in order to survive and win in a competitive environment. A critical success factor is a set of key factors or activities required to ensure success of the implemented operations (Winahyu, 2005). Consistent with Winahyu's (2005) thought the authors of the article have summarized a number of important success factors affecting the successful implementation of Cloud ERP solutions from published studies, including:

2.1.1. Top Management Support

Studies on implementing traditional ERP solutions have shown that the direct and continuous involvement of business top management is one of the important factors for successful system implementation. For CERP solutions, this factor is especially thought to be more important because this implementation also involves the participation of many stakeholders and many new factors that lead to people in the organization being unable to not understand and find it difficult to accept this innovation. The top management of the enterprise must be the vanguard not only to support resources but also to closely and periodically monitor the ERP implementation process (Sumner, 1999). In the research results of, the author, Tweel, has confirmed that the commitment and support of the top management has a

positive influence on the organization's application of CERP (Tweel, 2012; Low et al., 2011). According to the research results of Nusraningrum (2018) and Nguyen et al. (2021), top management has an important role in formulating, implementing and evaluating an organization's information technology strategy. Obviously, the direct and continuous involvement of top management plays an important role in the successful implementation of the CERP solution.

2.1.2. Organizational ERP Strategy

Implementing a CERP solution is considered a complex project because it involves many steps and it involves every aspect of the business, requiring huge collaboration and teamwork between all functional departments of a company, such as IT, sales, finance, production and people. This is a project that will greatly affect the future of the business at a strategic level. The successful implementation of this system will have a huge positive impact on the company. On the contrary, the failure of this project will have a great negative impact on the goals and strategy of the business. Therefore, enterprises must have a clear vision and business plan for the implementation of the CERP project. It is very important to define the goals before implementing the CERP project because it is necessary to clearly define the CERP solution that supports and accompanies the goals and strategies of the organization. There are many studies that have shown that the enterprise's ERP strategy has a great influence on the successful implementation of the CERP solution because when developing the CERP strategy, it is very important to pay attention to the feasibility from the current resources of the enterprise and the external factors such as the general infrastructure of national cloud computing, development of current IT solutions, etc (Huang et al., 2021, Tsai et al., 2010, Nah et al., 2003, 2007). If the organization's ERP strategy is clearly defined, it will positively affect the successful implementation, otherwise it will cause the failure of the system implementation.

2.1.3. Data Security

Data security is an important issue of CERP adoption because it involves the development of a secure environment for information integration and sharing in the system. Data security in CERP often refers to the data security protection of IT infrastructure service providers. However, through practice and the results of Peng and Nunes' (2009) studies, it shows that: the main cause of data leakage and loss in CERP solutions is human rather than technical error. Specifically, the essence of CERP is to integrate data from multiple sources, i.e. it defines that data stored in the system can be shared and used by different entities. As a result, managers have access to data in other business areas as well as within their own departments. With a conventional ERP solution, administrators often save multiple copies of important company data on personal computers, laptops, hard drives, and memory cards. However, if one of these hardware devices is damaged or lost, the risk of unauthorized access to the data stored on the device increases. Furthermore, internal employees can download confidential company data from the system and illegally pass it to competitors for higher profits (Peng & Nunes, 2009). If CERP data is hosted by a third-party cloud provider, the client company has less control compared to who has access to their confidential data, and its security is more dependent on the cloud service provider. Each method has its advantages and disadvantages, but traditional ERP solutions often carry more risks. Such a lack of control in the cloud environment inevitably leads to increasing threats to the data security of client companies (Tehrani & Shirazi, 2014). To ensure security, enterprises should establish data security principles and negotiate with their cloud service providers (Lenart, 2011). The Data Security factor in CERP has been chosen by many researchers as the most important factor that needs to be carefully studied when businesses choose CERP solutions (Huang et al., 2021).

2.1.4. Organizational Culture

The modern business environment is characterized by constant economic volatility, constant changes in technology, and an accelerating pace of change with the advent of the Internet. As a result, the management of technological change has become a major challenge for most organizations. The way each company defines performance, develops new technologies, trains and prepares its workforce, etc. is all considered as a company culture on how to manage and embrace change. The study of Kitchell (1995) concluded that corporate culture is predictive of technology adoption. According to Romm et al (1991), the relationship between organizational culture and information systems is important for businesses to achieve the potential benefits that the system promises (Romm et al., 1991). According to Son and Lee (2011) and Diana et al. (2021), organizational culture is both a key driver and a deterrent to the adoption of innovative technology. Organizational culture influences employee attitudes towards ERP adoption and contributes to successful CERP implementation (Jones et al., 2006). The implementation of CERP is clearly associated with the organizational culture because it constantly needs to be updated with new technologies in the application of IT in business management (Ke & Wei, 2008).

2.1.5. Training in CERP Projects

In order to manage change well and the system to operate as desired, it is necessary to have a full range of awareness

training and human resource training programs. As mentioned in previous sections, the implementation of CERP involves many changes at the strategic, tactical and operational levels. It is important to develop a comprehensive training plan to ensure effective dissemination and implementation of the ERP solution in the organization (Fitrah, 2010). In the view of Martinsons and Westwood (1997), training refers to the process of preparing employees and managers through logical explanations and overall concepts of an ERP solution (Martinsons & Westwood, 1997). Furthermore, it is the view of Nah et al. (2007, 2003) that adequate training can help increase the success of an ERP solution (Nah et al., 2003, 2007). According to research by Huang et al. (2021), Nur and Irfan (2020) and research by Dumitru et al. (2019), the training factor in ERP projects is very important, it greatly affects the successful implementation of ERP projects. Once the system is deployed, the commissioning phase begins. If the system operators do not understand the system, do not understand the requirements of the system for the business, and especially do not understand the nature of CERP as a solution related to the process, not simply an IT software. The CERP solution will become difficult to use and not be effective for businesses.

In summary, from a review of related research papers, from the perspective of Winahyu's (2005) key success factors, the article has compiled and selected the factors affecting the Successful Implementation of Cloud ERP as: Organizational ERP Strategic, Top management Commitment, Data Security, Training in ERP Projects, Organizational Culture. These important success factors need to be verified in small and medium enterprises that have been implementing Cloud ERP solutions. Therefore, the study proposes the following hypotheses:

H1: *Top management support positively affects the successful implementation of CERP solutions in SMEs.*

H2: *Organizational ERP Strategic positively affects the successful implementation of CERP solutions in SMEs.*

H3: *Data Security positively affects the successful implementation of CERP solutions in SMEs.*

H4: *Organizational Culture positively affects the successful implementation of CERP solutions in SMEs.*

H5: *Training in ERP Projects positively affects the successful implementation of CERP solutions in SMEs.*

2.2. Successful Implementation of CERP Effects on Business Process Re-Engineering

The Business Process Re-engineering (BPR) concept was firstly introduced by Hammer in 1990. BPR is defined as a fundamental re-engineering of business processes to achieve dramatic improvements in critical areas such as cost, quality, service, and speed (Hammer, 1990). BPR started as a fundamental technique to help organizations rethink their processes to improve service quality, cut down operational costs, and more. Today, BPR has become a major change management tool to cope with rapid technological and business changes in the competitive environment of enterprises (Dennis et al., 2003).

CERP has proven to be useful in improving production efficiency, used by enterprises to improve their competitiveness, as CERP integrates both business processes and technology to manage all resources of enterprises in an efficient way. A successful ERP solution can significantly cut operating costs, generate more accurate demand forecasts, speed up production cycles, and dramatically improve customer service and future demand forecasting (Johansson & Newman, 2010).

Today, the two implementations of CERP and BPR are both considered major change-making activities in the business aiming at a fresh start for a new opportunity in the face of rapid market changes. Therefore, these two factors have a strong influence on each other. A CERP solution can be chosen to replace an existing Management Information system in the enterprise, it is very simple, but the enterprise needs to clearly define: with CERP, it is not merely software that integrates the overall information in the enterprise but it is a solution which combines technology and process. In order for CERP to be effective, it is imperative that businesses change and restructure their operation processes to match the overall information management activities in CERP solutions. On the other hand, a BPR project after completion may also propose a key information system, CERP, to support new processes. Furthermore, when an enterprise changes its business goals and decides to choose a CERP solution as the technology foundation for management, but during the implementation process, they may realize that CERP requires enterprises to restructure the new business process to achieve the goal. If a business rushes to implement a CERP solution without a clear understanding of the business process impacts, the dream of integration can quickly turn into frustration (Davenport, 1998). Therefore, the successful implementation of ERP will force businesses to restructure business processes.

From there, the study proposes the research hypothesis:

H6: *Successful implementation of CERP solution has a positive impact on business process re-engineering in SMEs.*

2.3. Successful Implementation of CERP Impacts on Organizational Performance

In the research results of Hendra Alianto (2016), it is shown that the ERP solution is an application that integrates the data sources in the system, and the main purpose of using the ERP solution is to improve the processes for

the organization to work more efficiently. According to Hendra Alianto (2016), an ERP solution will help related business units share data and information, reduce costs, and improve business processes, which in turn has an impact on improving work results (Hendra Alianto, 2016). The study of Anardani and Putera (2018) also argues that an ERP solution is a software package tasked with coordinating the internal strength of the company to create an effective data processing management system (Anardani & Putera, 2018). Research results of Hermawan (2019), through the data collected for 4 consecutive years after a number of businesses have successfully implemented ERP solutions, he has concluded that: Since the implementation of ERP in 2015, the revenue of the company has increased as a result of time efficiency increasing employee productivity and can reduce operating costs as paperless; as a result, it has an impact on increasing the net profit of the company. Therefore, questions from management are how the ERP implementation affects employee productivity for the company and to what extent the ERP implementation affects more efficiently and effectively business implementation. In addition, the study of the author Salleh et al. (2012) also shows that: CERP is more than just a tool to cut costs; it provides a rich source of information that enables companies to support business strategies in pursuit of growth, innovation. It provides access to customer and market data allowing a company to investigate and evaluate external opportunities for growth.

From there, the study proposes the research hypothesis:

H7: *Successful implementation of CERP solution has a positive impact on the performance of SMEs.*

2.4. Business Process Re-Engineering Impacts on Organizational Performance

Organizational performance is an indicator of the performance results achieved by an organization in a given period. Evaluation of performance of an organization is said to be performing well, if the obtained results show an increase in the performance of the previous period.

According by Shah et al. (2011) asserted that Business Process re-engineering means not only change, but significant, dramatic change in organizational structure, management systems, employee responsibilities, and performance measurements. Business Process re-engineering provides a way to manage that has profoundly changed the way organizations do business while making it possible to achieve significant business performance gains. However, not all BPR projects have been successful in achieving significant performance gains (Shin & Jemella, 2002). The study by author Abubakar (2016) finds that business process re-engineering affects business performance because business process re-engineering is the re-engineering of business processes to achieve improvements in performance such as cost, quality, service, and speed. In addition, business process re-engineering requires fundamental, radical and revolutionary changes.

From there, the study proposes the research hypothesis:

H8: *Business process re-engineering positively affects the performance of SMEs.*

The research model is proposed in Figure 1 as follows.

3. Research Methods

3.1. Measurement

In this study, the authors use the following concepts: Top management Commitment, Organizational ERP Strategic, Data Security, Training in ERP Projects, Organizational Culture, Successful implementation of CERP, Business Process Redesign, Organizational Performance (Appendix 1).

All of these scales are inherited and developed from previous studies and adjusted to suit the context of Vietnamese small and medium enterprises that have

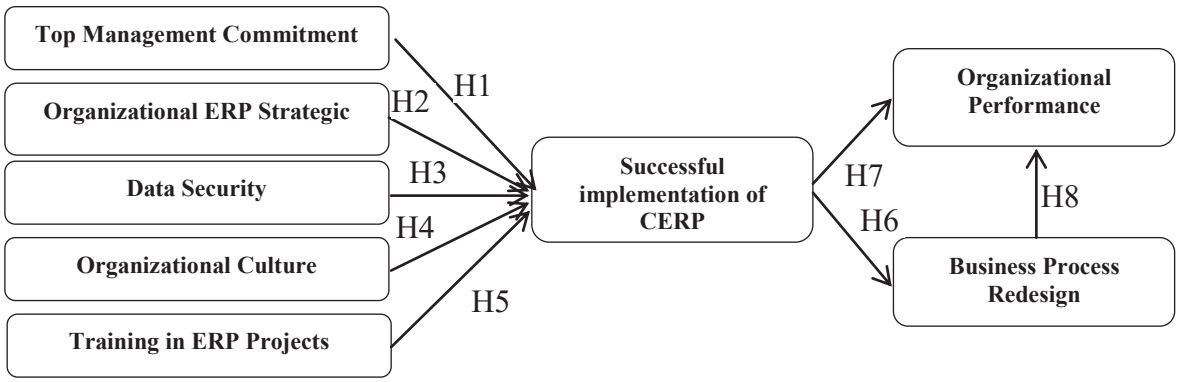

Figure 1: Research Model

been implementing Cloud ERP solutions. The scale uses a 5-level Likert form, where 1 is strongly disagree, 5 is strongly agree. The *Top management commitment* (TMC) scale is inherited and selected from the scales of research results of 02 groups of authors: Erwanto and Zusi (2020) and Albar and Hoque (2019), including 04 observed variables. The Organizational ERP Strategic (OES) scale includes 04 observed variables inherited from the research results of Pastor-Collado and Salgado (2000). Data Security (DS) scale inherited from the study of Ahn and Ahn (2020) includes 04 observed variables. The Organizational Culture (OC) scale includes 05 observed variables inherited from Ahn and Ahn (2020). The Training in ERP Projects scale includes 05 observed variables inherited and selected from the research results of 03 groups of authors: (i) Ahn and Ahn (2020); (ii) Erwanto and Zusi (2020) (iii) Albar and Hoque (2019). The Successful implementation of cERP (SIC) scale has 05 observed variables inherited from Erwanto and Zusi (2020). The Organizational Performance (OF) scale has 05 observed variables inherited from (Ilmudeen et al., 2019), and the Business Process redesign (BPR) scale has 04 observed variables inherited from Hammer (1990). The survey is designed based on the observed variables measuring the concept in the research model. In addition, the survey also has questions about statistics on business scale, business lines, the scale of CERP solution, starting and ending time of CERP solution implementation, etc.

3.2. Data Collection

The surveyed sample is the managers of ERP implementation projects in Vietnam's small and medium enterprises conducted from November to December 2021 by taking an online survey through the address https://forms.gle/auuyXbJXK3FcuWSNA. As a results, the sample gets 230 legal votes included in the analysis. Some descriptive statistics of the study sample are as follows: About the size of the enterprises, 48%Medium-sized enterprises, 39% Small businesses and 13% micro-businesses; In the type of businesses, 30% trade and service, 40% industry, 25% Agriculture and 5% others; 70% of enterprises deploy international solutions, 30% domestic solutions CERP. The average deployment time of surveyed enterprises is 4.5 months.

3.3. Methodology

After having the data, SPSS 20 & AMOS 20 were used to test the hypothesized relationships in the research model and evaluate the reliability of the measurement scale based on Cronbach Alpha reliability coefficients, EFA and CFA, SEM.

4. Results

4.1. Reliability of Measurement Scales

The study tests the reliability of the scales using the Cronbach Alpha reliability coefficient. After removing 04 observed variables with correlation coefficients with total variables < 0.3 as: OES4, DS4, TP5, SIC4. The results obtained all the remaining observed variables are correlated with the total variable greater than 0.3 and the Cronbach Alpha coefficient of the factors is greater than 0.6, so the scales of the components TMC, OES, DS, TP, OC, SIC, FP, BPR are all accepted to be included in the next factor analysis.

4.2. Exploratory Factor Analysis

EFA exploratory factor analysis is used to re-evaluate the degree of convergence of the observed variables according to the components. Research on performing KMO and Bartlett's test in factor analysis shows that the coefficient KMO = 0.794 > 0.5 value of Bartlett's test is significant (Sig. 0.00 < 0.05), which shows that the EFA factor analysis is very suitable. All indicators have "Factor loading" > 0.5. At Eigen values greater than 1 and with the factor extraction used as Principal Axis Factoring (PAF) with perpendicular rotation Varimax, factor analysis extracted 8 factors from 32 observed variables and with variance deduction of 66% (greater than 50%) satisfactory.

4.3. Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM)

Based on the results of EFA exploratory factor analysis, 32 observed variables are kept for further confirmatory factor analysis (CFA) in AMOS 20. The analysis results show that the observed variables for all variables have loading coefficients greater than 0.5. This further confirms the convergence value and discriminant value of the scale.

Research and analysis of SEM linear structure model on AMOS 20 software obtains the following results (Figure 2):

SEM results show that the weights of the observed variables all meet the allowable standard (≧0.5) and the statistical significance of all p values is 0.000. Thus, it can be concluded that the observed variables used to measure the component variables of the scale reach the convergent value. SEM shows that the model has 456 degrees of freedom, Chi-square test value = 637.123 with p-value = 0.000 < 0.05; Chi-square/df = 1.397 meeting the requirements <3, and the indicators show a consistent model with market data (CFI = 0.941; TLI = 0.936, GFI = 0.856 > 0.8 and RMSEA = 0.042 < 0.08). The components of the variables TMC, OES, DS, TP, OC, SIC, FP, BPR

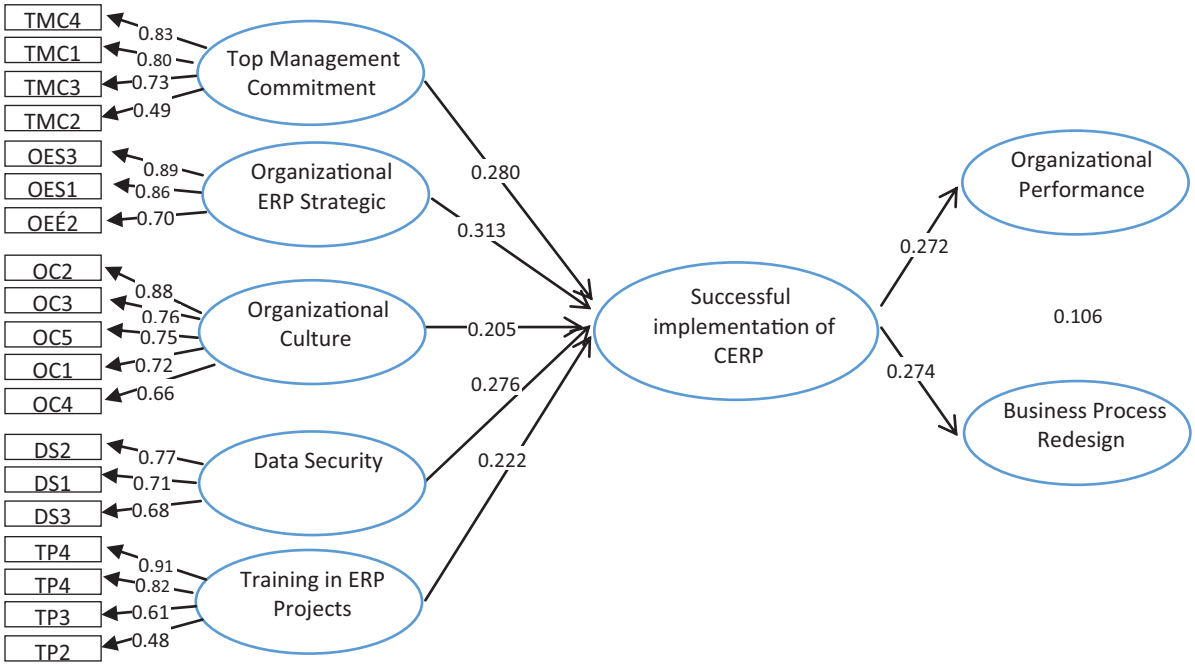

Figure 2: Structural Equation Model

all have no correlation between the errors of the observed variables, so they all achieve unidirectionality. In addition, the study examines the discriminant validity of the concepts in the model. The results in Figure 2 show that the concepts in the model achieve discriminant validity. This result is consistent with published studies.

***Testing of research model hypotheses**:* From the test results from the unnormalized regression weight table, it shows that at the 5% level of significance (95% of confidence level), the test value for the relationship is statistically significant (*P*-value < 0.05 = ***), it can be concluded that the hypothesis H1 → H8 is approved.

5. Discussion

This study has determined the factors affecting the successful implementation of Cloud ERP solutions and tested the relationship between successful implementation of Cloud ERP solutions with business process re-engineering and operational efficiency relationship between business process re-engineering and performance of small and medium enterprises. The factors of Top management Commitment, Organizational ERP Strategic, Data Security, Training in ERP Projects, and Organizational Culture all have a positive impact on the Successful implementation of CERP. Successful implementation of Cloud ERP has a positive impact on Business Process redesign, Organizational Performance. Business Process redesign also has a positive impact on Organizational Performance.

Research results show that 05 factors of Organizational ERP Strategic, Top management Commitment, Data Security, Training in ERP Projects, Organizational Culture in order of influence of Successful implementation of Cloud ERP are from high to low. In which the factor of Organizational ERP Strategic has the greatest positive effect on the Successful implementation of Cloud ERP with 0.313 standard units. The factor of Top Management Commitment has a positive effect on the Successful implementation of Cloud ERP is second with 0.280 standard units. This result is consistent with the research by Ploder et al. (2021). The significance value of the index explains that the hypothesis of top management support has a significant influence on the successful implementation of the CERP solution (Ploder et al., 2021). This is in line with previous studies, according to experts interviewed in several groups

Support from top management plays a dominant and influential role in the success of CERP solution implementation. The respondents state that: Top management is the initiator of the CERP project, decides which software and service providers to use, and actively defends the project. Successful CERP projects need to be supported through weekly or monthly face-to-face review meetings by the company's owners or company executives with the implementing entity. Some experts also assert that top management is an important factor related to the provision of financial capital. If unexpected disruptions or delays occur, it is also up to top management to make the final decision. Besides, there are also opinions disagreeing with the role

of top management in the implementation of CERP, but really having such a role or not depends on their role in each company.

Data Security is the third factor affecting Successful implementation of Cloud ERP with 0.276 standard units, *Training in ERP Projects* impacts on Successful implementation of Cloud ERP with 0.222 standard units. And an interesting result is *Organizational Culture* is the factor that has the lowest effect on *Successful implementation of Cloud ERP,* with 0.205 standard units. These results are consistent with the research results of (Huang et al., 2021). In the traditional ERP solution, security is a factor that is rarely mentioned because, in these systems, the security is quite high. However, the security factor in CERP solution is mentioned in most of the related studies. When CERP was first born, the cloud infrastructure was not good, so there were still many security problems in the system, which made organizations very afraid when choosing CERP. Over time, along with the rapid development of technology, the legal and security issues in Cloud systems have recently been improved, but this is still one of the factors that are concerned when an organization implements CERP system. Next to the security factor is the training factor in ERP systems, which is also a factor that is of interest to top management in the organization, and it is also a phase in the life cycle of the CERP system. The training of personnel in information systems in general and CERP in particular is necessary; obviously, technology is always changing, if the users and operators of the system are not trained to update new technologies and processes in the system, then it is very likely to lead to incorrect operation, or incorrect manipulation, even higher is not understanding the processes and requirements in the system, leading to information loss, leakage data, etc. which cause great damage to the organization. Besides the above two factors, the enterprise's planning factor has the least impact on the successful implementation of the system. Research shows that if any organization has a culture of exchanging and updating new knowledge. With new technology, the access to the CERP system is faster; on the contrary, this is also a barrier when the unit deploys personnel training.

In addition, the study results show that Successful implementation of Cloud ERP has a strong impact on Business Process redesign with 0.274 standard units. This result is consistent with the results of Panayiotou et al. (2015). According to Panayiotou et al. (2015), when the organization decides to choose an ERP solution for the overall management of the business, the organization has to define a business strategy and take ERP as the technology foundation to implement that business strategy. For successful ERP implementation, as soon as the organization determines the functions of the ERP, the organization needs to restructure the business process according to the functions of the selected ERP solution. Since then, the organization has had new functions that combine technology and processes to create a new ERP solution that addresses the organization's strategic business goals. That is why a successful ERP implementation will have a strong impact on re-engineering an organization's business processes.

In addition, the study results also show that the successful implementation of Cloud ERP successfully has a strong impact on Organizational Performance with 0.272 standard units. This result is consistent with the results of Marsudi and Pambudi (2021) argued that the successful implementation of ERP has a significant effect on the performance of small and medium enterprises. Overall, from the results obtained, it can be concluded that the implementation of ERP in an organization with a positive impact on the operational performance of that organization. Organizations typically measure performance by (i) information availability, (ii) information quality, and (iii) overall information responsiveness in real-time. Availability, complete information, and real-time holistic receipt of information help organizations to make faster, more accurate decisions and thus inevitably increase profits in transactions; this is the thing that makes ERP play a role in measuring company performance by providing useful information to help give decisions for the organization. Information quality is often seen from the relevance of information when used by users. ERP systems are designed to process information, identify alternative strategies, and analyze management that can later help make decisions. Companies implementing ERP can predict the future with more accurate historical data so that the relevance of the information generated can help make decisions for investors (Elragal & El Kommos, 2013). Business Process Redesign also impacted Organizational Performance with 0.106 standard units. This result is consistent with the research results of Abubakar (2016). This study has once again confirmed that business process re-engineering has an impact on organizational performance, which describes how cost-effective business process re-engineering, improved customer service, increased quality, and improved speed, which can encourage organizational performance. Business process re-engineering requires fundamental, radical, and revolutionary changes in the organization. BPR combined with information systems in general and with CERP in particular will form a CERP solution that brings outstanding strengths, which makes CERP systems increasingly interested and deployed by organizations.

6. Conclusion

The study is conducted based on the research model proposed from the review of related research papers,

combined with the experience opinions of experts implementing ERP systems and some top managements in technology-savvy organizations. Next, the study verifies the model based on the results of surveys and surveys from more than 230 small and medium enterprises in Vietnam to determine the important factors affecting the successful implementation of CERP solutions in small and medium enterprises. Therefore, it will make a significant contribution to the application documentation of implementation and management of the organization.

First, the research results are empirical evidence showing the strong impact of many factors on the successful implementation of CERP solutions in small and medium enterprises, such as Top Management Commitment, Organizational ERP Strategic, Data Security, Training in ERP Projects, Organizational Culture. In which, the group of strategic factors, the commitment of top management in the implementation process has a greater influence than technology and cultural factors.

Secondly, the study also examines the impact of CERP on business process re-engineering in organizations. This is also considered a solution to help businesses improve operational efficiency. And this has also been confirmed to be positive in the study results.

Next, the study also measured the impact of successful implementation of Cloud ERP solutions on business performance and business process re-engineering; the impact of business process re-engineering on the performance of small and medium enterprises.

Final, top management in the organization, ERP implementation teams, strategic planners, and even ERP system operators will gain a better understanding of this area and focus support to medium and large enterprises to successfully apply CERP; as a result, they can improve organizational performance and accelerate digital transformation in national and worldwide organizations.

The limitation of the study is the small sample size due to the small number of small and medium enterprises in Vietnam that have been implementing Cloud ERP solutions. In the future, when the number of small and medium enterprises successfully implementing Cloud ERP solutions increases, research can develop towards (1) Research on different types of small and medium-sized enterprises (2) Research on additional factors affecting the successful implementation of Cloud solutions in small and medium-sized enterprises from which to conduct research to build frameworks for successful implementation of Cloud ERP solutions for small and medium enterprises.

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Appendix 1: The scale

Variables	Encryption	Scale
The commitment of top management	TMC1	Top management of the enterprise actively participates throughout the CERP project implementation process
	TMC2	The top management of the enterprise has a vision and implementation goals for the CERP solution
	TMC3	The top management of the enterprise has a CERP solution application strategy
	TMC4	The top management of the enterprise is committed to fully and promptly supporting the resources in process of implementing CERP solutions
Enterprise ERP strategy	OES1	Enterprises have developed a strategy to deploy CERP solutions
	OES2	Enterprises have identified the specific objectives of the strategy CERP
	OES3	Enterprises have identified the strategic scope of the CERP solution
	OES4	Enterprises have identified the strategic scale of CERP solutions
Data security	DS1	Enterprises together with partners deploy CERP solutions to build data protection solutions.
	DS2	Enterprises together with partners deploy CERP solutions to build access control solutions
	DS3	Enterprises together with partners deploy CERP solutions to build data security solutions
	DS4	Enterprises together with partners deploy CERP solutions to build data protection regulations
Corporate culture	OC1	Employees in the enterprise always cooperate in the implementation process of the CERP solution
	OC2	Employees in the enterprise are always willing to share between individuals and parts
	OC3	Employees in the enterprise are always well aware of the benefits and importance of CERP
	OC4	The process of coordination between departments in the enterprise is complete, clear, simple with specific rules
	OC5	Employees and departments in the enterprise always work towards the common goal of CERP when solving problems arising in the process of deployment
Training activities in the CERP project	TP1	Training activities take place both before, during, and after the CERP solution is deployed
	TP2	Employees of the enterprise are well trained in CERP
	TP3	Employees of the enterprise are fully aware of the functions of the CERP solution
	TP4	Employees of the enterprise easily adapt to technology and new processes of CERP solution
	TP5	Employees of enterprises fully apply CERP solutions at work
Successfully deployed CERP solution	SIC1	CERP solution deployed on schedule
	SIC2	CERP solution is guaranteed to follow the allocated budget
	SIC3	CERP solution achieved the set goals
	SIC4	CERP solution achieved the proposed effect
	SIC5	CERP solution achieves accountability to stakeholders.
Re-engineering business processes	BPR1	Re-engineering enterprise business processes bring business efficiency
	BPR2	Re-engineering enterprise business processes towards flexibly responding to modern technologies
	BPR3	Re-engineering enterprise business processes are aimed at meeting customer needs and increasing competitive advantage
	BPR4	Enterprises proactively re-engineer appropriate business processes with a future business development strategy
Business performance	FP1	Enterprise resources are managed uniformly
	FP2	Business processes are operated and managed synchronously
	FP3	Business performance is improved
	FP4	Financial performance is improved
	FP5	Competitiveness is increased