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Analysis of Factors Related to the Application of Accounting Information Systems in Small, Medium, and Micro Businesses

Rapina Rapina [*], Yenni Carolina , Joni , and Silvia Anggraeni

Maranatha Christian University, Bandung-Indonesia

RESEARCH ARTICLE

Abstract

The purpose of this study is to determine how big influence time constraints, financial constraints and external expertise constraints on the successful application of accounting information systems in Small and Medium-sized Enterprises (SMEs) in Bandung, Indonesia. The population in this study consisted of accounting and finance staff in Bandung. The sampling technique used was purposive sampling. The data that has been obtained was processed using Structural Equation Modeling Partial Least Squares (SEM PLS). The statistical analysis technique uses SEM because there is a causal relationship between variables and each variable is unobserved. Research has shown that time constraints, financial constraints, and external expertise constraints can affect the success of implementing accounting information systems. According to the concept, a successful implementation of accounting information system will help users in making decisions.

Keywords: Time Constraints, Financial Constraints, External Expertise Constraints, Accounting Information Systems

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***Corresponding author**
rapinacen@yahoo.com

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1 Introduction

The implementation of information systems on the way often experiences rejection from users so that they fail (Kim & Kankanhalli, 2009). Barriers will be more common in small business organizations when implementing information systems due to low capital investment and a lack of skilled personnel (Dwyer, 1990). If a small business organization successfully implements an information system, it will benefit from increasing sales, profitability, productivity, decision-making, and securing a competitive position (Meredith, 1987). The unsuccessful application of information systems to small businesses is because they are less able to rely on limited resources as support for implementing the information system (Carter, 1990). This identifies problems that will be confirmed regarding the unsuccessful application of accounting information systems in small, micro, and medium enterprises. This research is more directed at the successful implementation of information systems and not the decision to adopt an information system. In the technological innovation cycle, there are different stages meaning adoption, implementation, and further implementation. The adoption stage is the stage in adopting new technology. If the adoption stage is continued, it will enter the implementation stage involving the role of technology in business. The extent to which the company can learn more about technology adoption will continue to affect the function of technology that was effectively implemented previously (Lefebvre et al., 1995).

The method of establishing an efficient decision support framework for implementing an integrated information system in Micro, Small and Medium-sized Enterprises (MSMEs) is then presented in empirical research on small and medium-sized companies in agriculture conducted in partnership with Cranfield University. According to the study, system integration can boost motivation, save time, reduce risk, and aid decision-making (Achanga et al., 2006).

Based on some literature on case studies and surveys that discuss the success of information systems in small organizations, it is known that several factors have been identified. For example, DeLone (1988) did research on 93 small manufacturing firms in Los Angeles, employing a questionnaire filled out by the CEOs of the firms as well as information system managers. This study examines nine organizational factors that can affect the success of a computer-based information system (CBIS). Empirical findings, also stated by Prasanna and Huggins (2016), concluded that there is a combination of psychological approach factors and mental acceptance of users in a technology acceptance model. Furthermore, Leyh's (2014) research contributes to the critical factors in implementing ERP projects with a special focus on small companies (SMEs).

Through interviews with SMEs in Germany, the results showed that organizational factors had a significant influence. Similar previous studies have also been conducted by Sohal (1999), Windrum and Berranger (2002), Montazemi (2006), Hiyari et al. (2013), Rapina et al. (2020), and Carolina et al. (2020). This research is a replication of the research that has been done by Thong (2000) by examining time constraints (top management support, user involvement, information system planning), financial constraints (investment in information systems), expertise constraints (user knowledge in information systems) and external environment (external expertise) that affect the success in the implementation of information systems. The distinction between this study and prior studies is in the dimensions and indicators used to create the statement items in the questionnaire and the respondents who will be focused on accounting users.

In truth, Indonesian firms' information systems continue to have issues. Many MSME actors still underestimate the necessity of accurate financial records and bookkeeping. In fact, with proper bookkeeping, business owners may determine whether their company is healthy (Ferdiansyah, 2018). Nuryanto, the Deputy for Human Resources Development of the Ministry of Cooperatives and SMEs (2019), stated the same thing, stating that MSME actors, particularly micro and small business actors, are encouraged to be able to manage their businesses professionally, including better managing their financial aspects. Many micro company players are still hesitant to record their financial aspects in an orderly and according to relevant standards, which should be done using information technology in today's fast-increasing information technology era. This research focused on the object of research, which is top management support, user involvement, information system planning, investment in information systems, user knowledge, and successful implementation of accounting information systems. Likewise, also to follow up on the background that has been described and place it in conditions in Indonesia.

1.1 The Effect of Top Management Support on the Implementation of Accounting Information Systems

Zach et al. (2012) stated in their empirical findings that top management plays a role in implementing information systems in small and medium-sized businesses by paying attention to all matters related to business processes in their companies. In research by Seliem et al. (2003), 247 managers from diverse Egyptian organizations discovered that top management support as an organizational component has a beneficial influence on the efficacy of information systems. According to Schwalbe (2010), personnel at the top are the main bearers of any information system deployment. According to Kljunikov et al. (2019), top management support has a major impact on information security management created by an information system in Slovakia's small and medium-sized firms. The more top management provides support will affect the implementation of accounting information systems.

1.2 The Effect of User Involvement on the Implementation of Accounting Information Systems

The research conducted by Le et al. (2020) aimed to explore the relationships between various organizational factors and the effectiveness of management information systems in small and medium enterprises in Vietnam. The researchers developed a mediation model and analyzed the data using structural equation modeling. The study's findings suggest that managers' expertise, user involvement, and information quality are crucial factors in enhancing the efficacy of management information systems. Specifically, the study found that managers' knowledge and commitment positively influenced information quality, which, in turn, positively impacted the efficacy of management information systems. User involvement was also found to have a positive and significant impact on the effectiveness of these systems.

Overall, the study highlights the importance of organizational factors such as managerial expertise, user involvement, and information quality in optimizing the effectiveness of management information systems in small and medium enterprises. The same thing was also said by Goni et al. (2011), who concluded in their empirical study that several functional factors must be considered in implementing a system: communication, collaboration, knowledge transfer, user involvement, and competence of the project team. However, SMEs in Malaysia, the unit of analysis in the study, have not paid attention to the functional factors mentioned earlier, so they often experience system implementation problems. User involvement found to influence the use of information systems is also shown in a study conducted by Rouibah et al. (2009) in Arab countries. This study investigated three organizational factors (top management support, availability of training, and user involvement) on using information systems and user satisfaction with the Technology Acceptance Model as a mediating variable. Successful implementation of an accounting information system requires positive user involvement.

1.3 The Effect of Information System Investment on Implementing Accounting Information Systems.

Small firms must set aside appropriate finances for information system investment, even if funds are limited. They must not pick the cheapest option that does not fulfill their company's needs (Thong, 2001). The decision to invest in information systems can be considered one of the major challenges that most organizations may face today (Abbassi & Khalid, 2014). The complexity of investing in information systems, however, is due to the many interrelated factors (e.g., costs, benefits, and risks) that have a human or organizational dimension to an information system that is thought to facilitate organizations to increase responsiveness and reduce organizational supply chain costs (Irani et al., 2014). Investment in information systems positively affects the implementation of accounting information systems.

1.4 The Effect of User Knowledge on the Implementation of Accounting Information Systems.

Competent and motivated personnel will be needed to apply accounting information systems (Stair & Reynolds, 2012). The information system will not be established if the user cannot comprehend and utilize it appropriately (Satzinger, 2016). According to empirical results on MSMEs in Malaysia, the understanding of managers involved in accounting and finance would impact accounting information systems (Ismail & King, 2007). The more the user's expertise, the more likely accounting information systems will be implemented successfully.

1.5 Effect of External Expertise on the Implementation of Accounting Information Systems.

Small organizations, often assumed to be minimal with resources for information systems, often use external expertise as their consultants (Thong, 2001). According to Ifinedo (2008), external knowledge is the most significant aspect in adopting the software for a company to integrate all its business operations known as ERP. Ismail and King (2007) performed the next research, which looked at numerous factors influencing the alignment of accounting information systems in small businesses. External expertise is one of the seven independent factors examined. Small businesses are less interested in hiring outside experts since the fees would be higher. External expertise positively affects the implementation of accounting information systems.

2 Methodology

Using the convenience sampling method, researchers select subjects that are the easiest to access or the most convenient to take as a sample. This method is often used in qualitative research or research with limited budgets. The questionnaire distribution is done through personal connections, and researchers ask for assistance from accounting and finance staff to send the questionnaire responses via Google Forms. Additionally, the questionnaire distribution process took almost five months in Bandung in 2021. Structural Equation Modeling (SEM) with parameter estimation of the model using the PLS (Partial Least Squares) method was used in this research to test the research hypothesis.

This statistical analysis technique (SEM) is used because of the causal relationships between variables; each variable is unobserved. According to Hair et al. (2014), the minimum sample size for SEM-PLS can refer to the rule of thumb of ten times the number of structural paths leading to constructs in the structural model. The final sample obtained was 78 respondents who had participated in filling out the research questionnaire. This should meet the sample size requirements for SEM-PLS (Henseler et al., 2016). The sample size should be about ten times the maximum arrow pointing to the dependent variable. Therefore, the minimum sample size is 50 respondents when considering the arrows pointing to the dependent variable, and the sample size used in this study has exceeded 50 respondents.

3 Result and Discussions

The surveys were distributed and gathered by emailing a survey link in the form of a Google form and collecting 110 responses from various MSMEs in Indonesia. However, only 78 responses were sufficient for further processing after filtering inconsistent replies with irregular replying patterns, excluded from the total number of responses gathered. Data analysis using Smart-PLS 3 obtained a full model path diagram as follows:

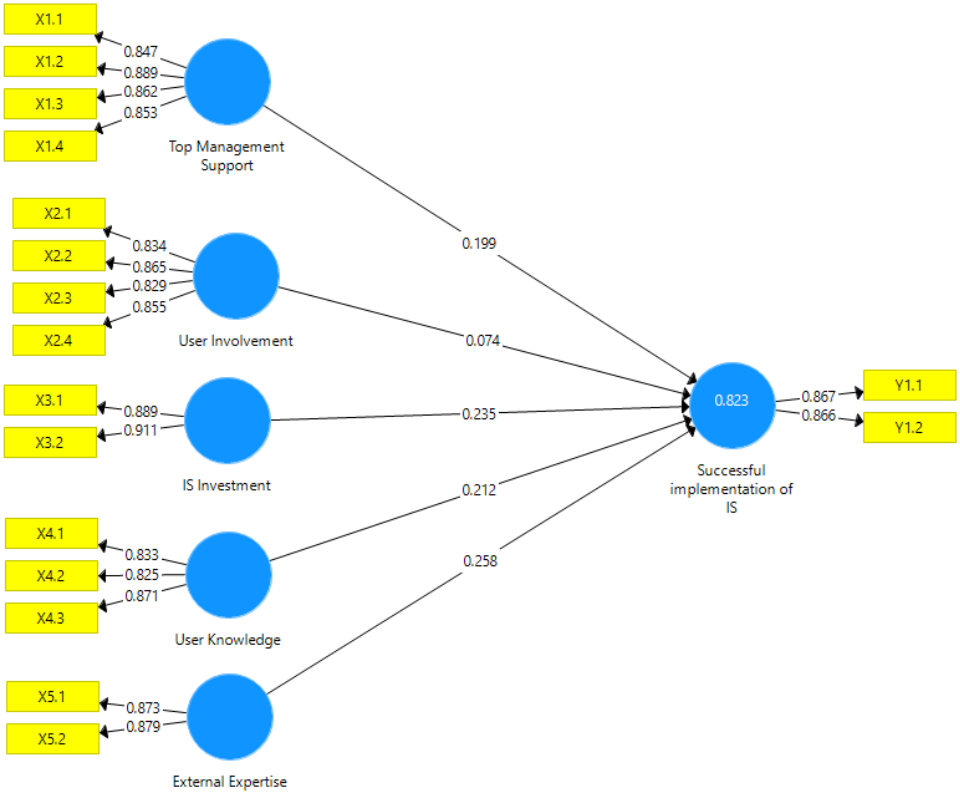

Figure 1. Full Model Path Diagram

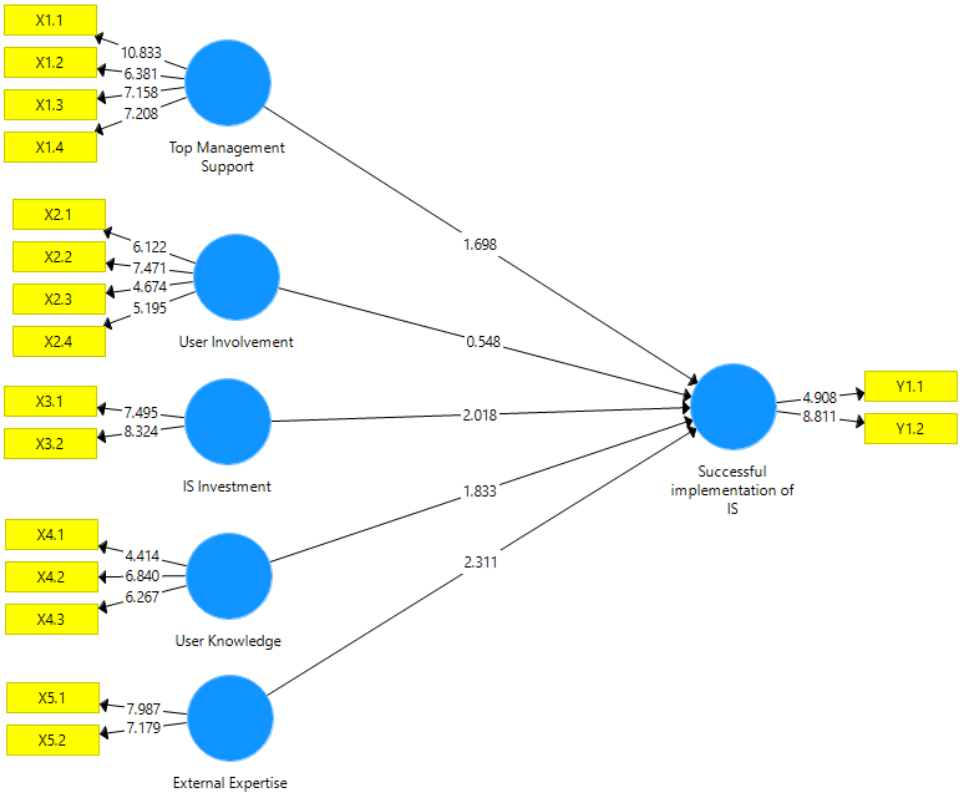

Figure 2. Full Model T-Statistics

3.1 Model Evaluation

In this study, all measurement models in the first stage, namely the relationship between indicators and their dimensions, are reflective measurement models. Furthermore, the quality of an indicator is indicated by the validity and reliability of the indicator, along with the collective validity and reliability of the indicator with other indicators that measure a dimension.

3.1.1 Validity Test

Convergent and discriminant validity are two important aspects of construct validity that can be evaluated using Confirmatory Factor Analysis (CFA). Convergent validity is assessed by examining each construct's average variance extracted (AVE). AVE is a measure of how much of the variation in the indicators is accounted for by the construct being measured. A value of 0.5 or greater is generally considered acceptable, as it indicates that the construct explains more than half of the variance in the indicators. On the other hand, discriminant validity is assessed by examining the cross-loadings of the indicators. Cross-loadings are the correlations between each indicator and the other constructs being measured. A common guideline for acceptable discriminant validity is that the indicator should correlate more with its construct than with any other construct.

The method suggested by Hair et al. (2014) involves comparing the outer loading values of each indicator to the squared correlations between the constructs. An outer loading value of 0.7 or higher is generally considered acceptable for assessing discriminant validity. The discriminant validity of the indicators for each dimension can be seen based on the Fornell-Larcker Criteria in Table 1. In this case, the criterion value of the indicators of a dimension must be greater for the dimension itself than for other dimensions (Hair et al., 2014). Furthermore, all criteria values for each dimension (on the main diagonal) are greater than those for different dimensions (outside the main diagonal). Therefore, the indicators of these dimensions have good discriminant validity.

Table 1. Indicator Validity & Cross Loading between Constructs

Indicator	EE	IS-I	SI-IS	TMS	UI	UK
EE	0.876					
IS-I	0.790	0.900				
SI-IS	0.840	0.834	0.867			
TMS	0.842	0.811	0.854	0.863		
UI	0.852	0.848	0.848	0.854	0.866	
UK	0.779	0.804	0.840	0.869	0.871	0.883

Source: Data processed 2021
Information: EE (External Expertise), IS-I (Information System Investment), SI-IS (Successful Implementation of IS), TMS (Top Management Support), UI (User Involvement), UK (User Knowledge)

Table 2. Convergent Validity Test Results

Variable	Item number	Average Variance Extracted (AVE)
EE	2	0.767
IS-I	2	0.810
SI-IS	2	0.751
TMS	4	0.745
UI	4	0.715
UK	3	0.711

Source: Data processed 2021
Information: EE (External Expertise), IS-I (Information System Investment), SI-IS (Successful Implementation of IS), TMS (Top Management Support), UI (User Involvement), UK (User Knowledge)

According to the Table 2, the AVE value for each construct is legitimate, ranging between 0.711 and 0.810. Because the AVE value of the indicator set for each variable exceeds the minimal criterion of 0.50 (Hair et al., 2014), this suggests that the construct explains more than half of the variation of the indicators on average or that indicators differ from one another (Convergent validity is deemed enough).

3.1.2 Reliability Test

The reliability test is based on the internal consistency reliability test findings, calculated using Cronbach's alpha coefficient and the composite reliability coefficient value. Hair et al. (2014) believe a combined reliability value of 0.70 to 0.90 to be adequate.

Table 3. Convergent Validity Test Results

Variable	Composite Reliability Coefficient	Cronbach Alpha Coefficient
EE	0.868	0.700
IS-I	0.895	0.766
SI-IS	0.858	0.700
TMS	0.921	0.886
UI	0.909	0.867
UK	0.880	0.797

Source: Data processed 2021
Information: EE (External Expertise), IS-I (Information System Investment), SI-IS (Successful Implementation of IS), TMS (Top Management Support), UI (User Involvement), UK (User Knowledge)

Table 3 shows the reliability of the internal consistency of each construct, which is indicated by the value of Cronbach's alpha, and the value of composite reliability of each construct which shows a value above the minimum threshold of 0.7 (Hair et al., 2014). These results conclude that respondents' answers consistently answer statement items related to research variables.

3.1.3 Structural Model Testing

The R-squared value was used as the measuring foundation for structural model testing (Hair et al., 2014). The findings of the structural model testing are provided in Table 4 below:

Table 4. Convergent Validity Test Results

Path	Coefficient	Statistics	p-value (one-tailed)	R2
EE → $SI - IS$	0.258	2.311	0.011	0.823
IS-I → $SI - IS$	0.235	2.018	0.022	0.823
TMS → $SI - IS$	0.199	1.698	0.045	0.823
UI → $SI - IS$	0.074	0.548	0.292	0.823
UK → $SI - IS$	0.212	1.833	0.034	0.823

Source: Data processed 2021
Information: EE (External Expertise), IS-I (Information System Investment), SI-IS (Successful Implementation of IS), TMS (Top Management Support), UI (User Involvement), UK (User Knowledge)

The table shows that EE (External Expertise), IS-I (Information System Investment), TMS (Top Management Support), UI (User Involvement), and UK (User Knowledge) have an influence of 82.3% on SI-IS (Successful Implementation of IS). This R^2 value indicates a strong predictive power.

3.2 The Effect of Top Management Support on the Successful Implementation of Accounting Information Systems

The coefficient of the top management support path on the successful implementation of AIS is positive with a probability value (p-value) less than 0.01. As a result, it can be argued that top management support has a favorable and considerable impact on the effectiveness of AIS adoption (H1 is supported). These results support the empirical study by Zach et al. (2012) and Ključnikov et al. (2019) arguing that people in top management positions are determinants of the success of information systems used by an organization. Top management support must be carried out ideally because if it is not supplied in full, the system project will become a bottleneck during the implementation phase.

3.3 The Effect of User Involvement on the Implementation of Accounting Information Systems.

From the path coefficient, it is known that user involvement on the successful implementation of AIS is positive but the probability value (p-value) is greater than 0.01. This means that the effect of user involvement on the successful implementation of AIS is not significant. This result is different from previous studies which found a significant effect between user involvement on the implementation of AIS such as that conducted by Le et al. (2020) & Goni et al. (2011). Users are not involved in the design, development, and implementation of accounting information systems, according to one argument. Whereas direct engagement is proof of maximal user participation, which is thought to be capable of ensuring the effective adoption of accounting information systems. When AIS is created with user expectations in mind, the subsequent output will also be in line with user expectations and needs, potentially increasing the success rate of AIS deployment.

3.4 The Effect of Information System Investment on the Implementation of Accounting Information Systems.

The IS investment path coefficient on the success of the SIA implementation is positive with a probability value (p-value) less than 0.01. Thus, it is concluded that IS investment has a positive and significant effect on the success of the implementation of AIS. These findings support the empirical studies by Abbassi and Khalid (2014) and Irani et al. (2014) on the basis that the organization must be able to measure the overall performance of the information system in order to determine the impact of the information system investment made to support the organization's business operations. Today, the use of information technology in an organization is vital not just to support corporate operations, but also as a competitive edge in an increasingly competitive

business environment. The deployment of information technology necessitates a significant financial commitment, with a demonstrable rate of return.

3.5 The Effect of User Knowledge on the Implementation of Accounting Information Systems.

From the path coefficient, it is known that the user's knowledge of the successful application of AIS is positive with a probability value (p-value) less than 0.01. This suggests that user interaction had a substantial impact on the effective installation of AIS. This result is in line with previous research which found a significant effect between user knowledge on the application of AIS such as that conducted by Thong (2001) and Ismail and King (2007). The argument that can be explained is that user knowledge which has a learning dimension tells us together that system users who understand and can apply information systems adequately will have a positive influence on the success of accounting information systems that are run in an organization.

3.6 Effect of External Expertise on the Implementation of Accounting Information Systems.

The coefficient of external expertise path to the success of the implementation of AIS is positive with a probability value (p-value) less than 0.01. Thus, it is concluded that external expertise has a positive and significant impact on the success of the implementation of AIS. These results support the empirical studies by Thong (2001) and de Guinea (2005) with the reason that an information system based on a website for MSME actors makes it possible to provide updated and fast information about their business. This external expertise is related to the importance of human resources in the development of Micro, Small and Medium Enterprises in order to create entrepreneurs that are independent from the community. Therefore, human resources, in this case external parties, are also needed to facilitate the successful implementation of AIS.

4 Conclusion

In conclusion, the successful implementation of Accounting Information Systems (AIS) is influenced by several factors. The support of top management is critical to the success of AIS implementation, as they can provide the necessary resources and assistance. However, user involvement in the design, development, and implementation of AIS has not been maximized, indicating a potential area for improvement. Investment in IS is essential in today's globalized business environment, as it provides time and energy efficiency for workers, which ultimately leads to competitiveness. User knowledge is crucial in the effective use of AIS, and the provision of training is necessary. Finally, external expertise in the field of information systems is critical for MSMEs to achieve their organizational goals and gain a competitive advantage.

Therefore, it is essential for MSMEs to pay attention to these factors when implementing AIS, as they can significantly affect the success of the system. Organizations should involve users and provide them with the necessary knowledge and training to operate the system effectively. Top management should also support the implementation process and provide adequate resources to ensure its success. Additionally, external expertise can be sought to supplement the organization's knowledge and skills in the field of information systems. Overall, the effective implementation of AIS can enhance organizational performance, improve decision-making, and enable businesses to remain competitive in today's digital landscape.

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