
A Preliminary Study on Examining the Determinants of Cloud Accounting Adoption for SMEs in Sungai Petani, Kedah

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Abstract – A preliminary study was carried out to determine the variables affecting SME business adoption of cloud accounting. A convenience purposive sample was used in this study to choose the targeted SME companies in Sungai Petani, Kedah. From May to June 2021, data was collected online using a Google form. A total of 77 respondents were noted out of the 100 Google forms that were disseminated. Pearson’s correlation analysis and multiple linear regression analysis were performed on the data. The results of this study demonstrated that adoption of cloud accounting among SME enterprises was significantly influenced by cost and security. According to the findings, SME enterprises should be targeted for intense cloud accounting promotion in order to take advantage of the system’s cost saving and optimum security. This will increase awareness of the benefits of cloud accounting in transforming a traditional business into a digital business. Due to the nature of this study, the findings are not generalizable. It is suggested that a more comprehensive study in Malaysia on cloud adoption should be conducted in the future.

Keywords: “cloud accounting”, “cost”, “security”, “Pearson’s correlation”, “multiple linear regression”.

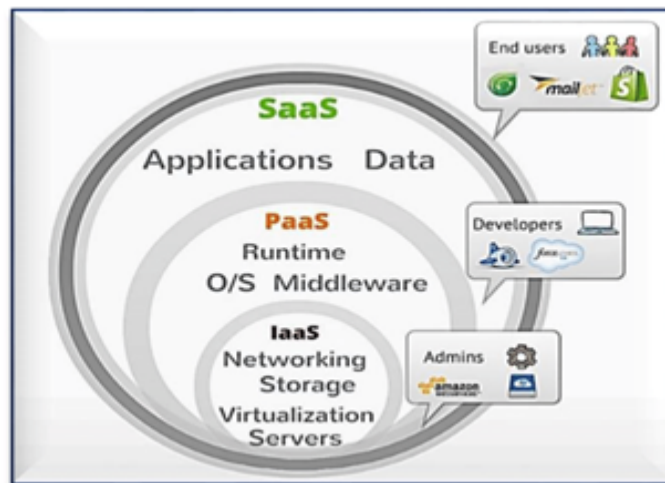
1. Introduction

As the pandemic crisis of Covid-19 advanced across the world, many businesses have opted for digital transformation to cope with the current situation. The introduction of internet technology, namely cloud computing, has become a great step in a business’s digital transformation journey. Through the internet or a cloud service provider, customers are able to remotely access software applications in cloud computing. The accounting industry has benefited greatly from cloud computing. With cloud accounting, any business is expected to obtain extensive benefits, such as better cost efficiency, being updated with real-time information, obtaining accessibility to all accounting information, increase

business productivity, and automatic data backup and restoration (Dimitriu & Matei, 2015; Khanom, 2017).

According to Shukur et al. (2020) study, there are three categories of cloud services worth mentioning: software as a service (SaaS), platform as a service (PaaS), and infrastructure as a service (IaaS). IaaS is the foundation of cloud computing systems, allowing software developers to independently create platforms and run applications by using the necessary processing, storage, and networking resources. For instance, Xenon, Google Compute Engine (GCE), Microsoft Azure, Amazon Web Services, etc. The PaaS is the second layer, where developers offer platforms like operating systems and software development frameworks as a service to programmers so they may create, test, run, and manage the applications. Google App Engine (GAE), as an illustration. Last but not least, SaaS gives users access to create online apps. Gmail, Google Apps, YouTube, and Facebook are among the few examples.

Figure 1: Types of Cloud Services



Based on a survey conducted by Cloud Accounting Institute (2013), 75% of the companies in the United State (U.S.) have adopted cloud accounting solutions and technology. However, it is not favorable in Malaysia. Karkonasasi et al. (2016) stated that only 34% of the companies in Malaysia have adopted cloud accounting services. In a global study on cloud transformation conducted by the International Business Machines Corp (IBM), the adoption of cloud by Malaysian executives was reported to drop to only 15% in 2021 as compared with 60% in 2019 (Hazim, 2021). Evidently, the level of cloud computing adoption in Malaysia has decreased drastically.

In order to determine whether cost and security are the main factors influencing SMEs' adoption of cloud accounting, this study was purposely conducted. By doing this, it will be

possible to boost the degree of cloud accounting adoption in Malaysia through more effective education and awareness-raising campaigns. It would be an effort to make Malaysia a high-income, digitally-driven country that leads the region in the digital economy.

2. Literature Review

2.1. Technology Acceptance Model (TAM)

Davis (1989) developed the Technology Acceptance Model (TAM), an information systems theory, to describe how consumers adopt and employ technology. According to this concept, perceived utility and perceived ease of use are the two main variables that affect consumers' intentions to utilize technology. In other words, consumers are more likely to adopt technology when they believe it to be advantageous and practical.

Lai (2017) has made an effort to assemble all of the TAM-related literature. The results demonstrated that perceived utility and perceived usability may be influenced by outside factors, such as the technology's security. Additionally, several earlier studies have utilized the Technology Acceptance Model (TAM) to identify the factors that influence the adoption of cloud computing (Gangwar, Date & Ramaswamy, 2015; Gangwar & Date, 2016; Sharma et al., 2016). Their results lend credence to the idea that consumers are more likely to accept cloud computing if it is simple to use and useful for company operations. They have identified the overall cost of IT operations, trust, security, efficiency, and effectiveness as some of the external components of TAM.

This study's main objective is to investigate the relationship between the adoption of cloud accounting and external factors like cost and security. The next sections demonstrate earlier research that investigates how cloud adoption, pricing, and security are related to each other. It should be emphasized that in this study, the terms 'cloud computing' and 'cloud accounting' were used interchangeably.

2.2. The Relationship between Cost Saving and the Adoption of the Cloud

Three variables have been used to develop a research framework created by Al-Isma'ili et al., (2016): (i) technological variables (cost savings, relative advantages, compatibility, and trialability); (ii) organizational variables (firm size, top management support, innovativeness of the firm, and IS knowledge); and (iii) environmental variables (market scope and external computing support). The adoption of cloud computing by Australian SMEs was found to be highly influenced by all three criteria, with cost savings being one of the most crucial ones.

A framework that analyzes the critical elements influencing the adoption of cloud computing in Jordanian higher education institutions has been developed by Al-Ramahi & Odeh (2020). Cost advantages are discovered to have a favorable impact on how beneficial cloud computing is thought to be. If an organization can save money on the costs of

buying, implementing, and maintaining hardware and software, it will be more likely to use cloud computing.

The study by Ali & Osmanaj (2020) on the adoption of cloud computing by the Australian government also found that cost is a significant factor in the decision to use cloud computing. Their findings indicate that the motivation for adopting cloud computing is the absence of required upfront investments, cost savings on hardware and software, as well as savings on IT staff hiring.

Similarly, a recent study conducted by Chinyere, Winikime & Wokeh (2022) found that the tendency for commercial banks in Rivers State to adopt cloud computing was increased when it had boosted the banks' profitability by lowering the banks' IT expenses. Most respondents agreed that cloud computing reduced hardware and software maintenance costs in banks. Their findings are further supported by an articles review study that found the cost to be the most highlighted organizational factor (i.e., 79% of the published articles) influencing the adoption of cloud computing in SMEs (Zide & Jokonya, 2022).

According to the knowledge of the researcher, only one study shows contradictory findings. Soni, Saluja & Vardia, (2018) conducted a study examining the factors of cloud software adoption by different sectors (i.e., banks, insurance sector, retail sector, and SMEs) in Udaipur city. Their findings show that the organizations which are reluctant to adopt cloud software perceived it to be costly and non-beneficial. In other words, cloud computing is perceived to be expensive and not useful to the operation of the business.

2.3. The Relationship between Security and the Adoption of the Cloud

The majority of survey participants believe that security, privacy, dependability, hacking, theft, and attacks would be the main factors influencing the adoption of cloud computing as a whole, according to Salunkhe & Kelkar's (2016) study on the topic. According to their survey, 60% of the participants thought cloud computing was insecure. Malaysia is also experiencing similar problems. Cloud computing adoption among Malaysian businesses is reported to be comparatively low due to concerns about cloud security and privacy (Karkonasasi et al., 2016).

While examining the reasons for adopting and not adopting cloud software in accounting by four chosen sectors (i.e., bank, insurance, retail, and SMEs), Soni, Saluja & Vardia, (2018) concluded that the security of data is found to influence the decision to use cloud software. Respondents who considered cloud software to be secure are more likely to adopt it, and vice versa.

A study on the benefits of cloud computing among Malaysian SMEs was done by Al Lami et al. (2019). Numerous criteria, including agility, assurance, accountability, finance, security and privacy, performance, and usability, are used to evaluate the characteristics of cloud computing. According to their research, security and privacy rank first in

importance. It suggests that SMEs might adopt cloud computing if its features were viewed as advantageous and capable of increasing a business's productivity.

Saha et al. (2020) discovered that the majority of respondents in Bangladesh lacked awareness of cloud accounting. Those who are experienced with cloud accounting concur that they are worried about hackers getting access to personal information. This problem would result in higher operating costs for businesses, preventing them from using cloud accounting. Marsintauli et al. (2021) carried out evaluation research on the application of cloud accounting in the accounting process. The results demonstrate that security is a key factor in determining how well cloud accounting systems perform. About 75% of respondents that use cloud accounting concur that it is quite secure.

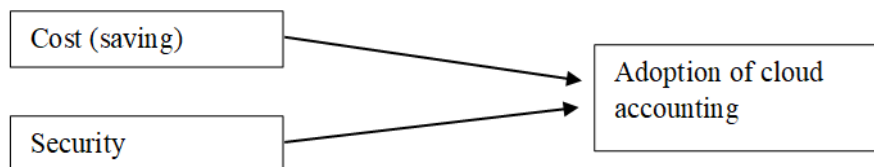
According to Hassan et al., (2022), there is a strong positive correlation between perceived security and cloud computing usage among Pakistani IT workers in the cities of Islamabad and Rawalpindi. Cloud computing would be viewed as helpful for corporate development if it were believed to be safe from cyber dangers. Conversely, if cloud computing is thought to present higher security threats, its uptake would decline. The study conducted by Dutta, Kovid & Ranjan (2022) discovered a negative and significant correlation between perceived security risk and the use of cloud-based services in India, which lends credence to this assertion.

As a summary of the findings of past studies, the following hypotheses are constructed:

- H1 Cost (saving) has a positive relationship with the adoption of cloud accounting among SMEs.
- H2 Security has a positive relationship with the adoption of cloud accounting among SMEs.

2.4. Conceptual Framework

Figure 2: The Relationship between Cost (saving), Security, and the Adoption of Cloud Accounting



3. Methodology of Study

3.1. Research Approach and Study Design

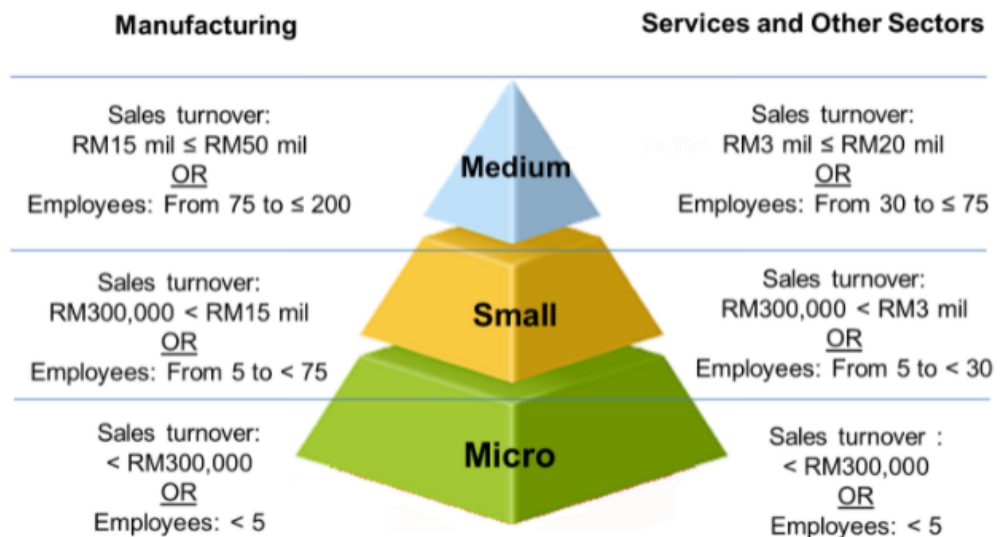
This is a preliminary study to look at the major factors that influence SME adoption of cloud accounting in Sungai Petani, Kedah. It is a quantitative study that makes use of survey-based primary data collection. The reliability and consistency of the constructs were evaluated using the Cronbach Alpha test. To investigate the relationship between independent (cost and security) and dependent (the adoption of cloud accounting) factors, Pearson's correlation and linear multiple regression were used.

3.2. Population and the Definition of Small and Medium-sized Enterprises (SMEs)

The targeted respondents of this study were the users of accounting software in the SME businesses located at Sungai Petani, Kedah. To the researchers' knowledge, the exact population size is unknown in Sungai Petani. However, there is a total of 48,894 SME businesses in Kedah (smecorp.gov, 2015).

Figure 3: The Classification of SME in Malaysia.

Detailed definition of category, namely micro, small and medium is as follows:



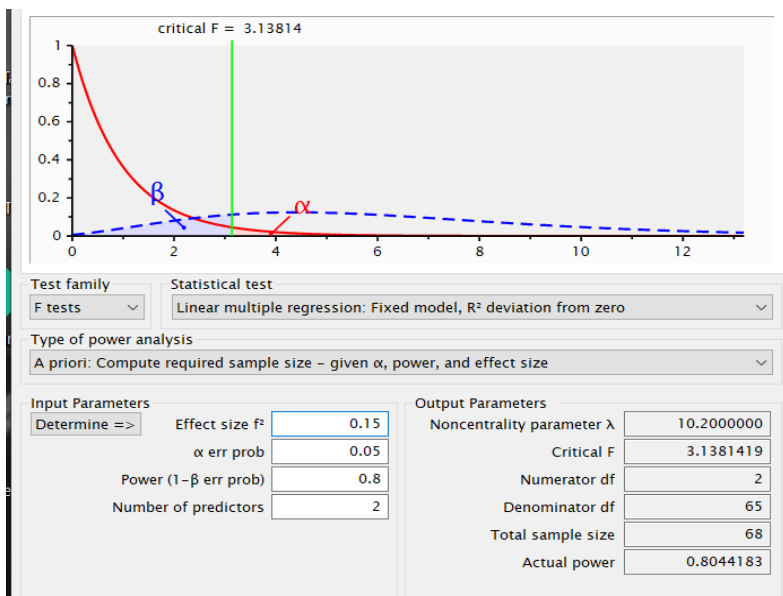
Source: SME Corporation Malaysia Official Website

As quoted in the guidelines, if a business fulfills either one category across the different sizes of operation, then the smaller size will be applicable. For example, if a company's sales turnover falls under medium but the number of employees falls under micro, the business will then be deemed to be a microenterprise.

3.3. Sample Size and Data Collection

This study used a convenient purposive sampling approach. 100 chosen respondents were sent the questionnaire via email once it was created using Google Forms. Only 77 out of the total responses were discovered to be fully answered, with 32 employees, 4 business owners, 20 managers, and 21 accountants among the respondents. An a priori power analysis was performed using G*Power version 3.1.9.2 (Faul et al., 2007) to establish the minimal sample size necessary to test the study hypotheses. According to Figure 4, the results showed that for linear multiple regression, N = 68 respondents were needed to achieve 80% power for detecting a medium effect at a significance level of 0.05. Therefore, the N = 77 respondents in the obtained sample size is more than sufficient for this investigation.

Figure 4: Minimum Sample Size for Linear Multiple Regression



3.4. Questionnaire Design

The questionnaire is arranged into two sections. The first section requests the respondents to indicate their personal details and company-related details such as age, gender, education level, working experience, job position, and working business sector. The second section contains questions relating to the dependent and independent factors. The measurements for the adoption of cloud accounting, cost, and security can be shown in the following Table 1, Table 2, and Table 3.

Table 1: Measurement of the Intention to Adopt Cloud Accounting

| Dependent Variable | |
|--------------------|--|
| No. | Measurements |
| 1 | I intend to use cloud accounting services in the future. Yes or No |

Table 2: Measurement of the cost (Adapted from Ali & Thakur, 2017)

| Independent Variable 1 (5 Likert scale from strongly agree to strongly disagree) | |
|---|--|
| No. | Item |
| 1. | The cost of using cloud accounting is pricey. |
| 2. | The cost of migrating to cloud services is pricey. |

Table 3: Measurement of the security (Adapted from Kumar, Samalia & Verma, 2017)

| Independent Variable 2 (5 Likert scale from strongly disagree to strongly agree) | |
|---|---|
| No. | Item |
| 1. | The confidentiality of business data is guaranteed when using cloud accounting services. |
| 2. | The security system built into the cloud accounting services is strong enough to protect our data. |
| 3. | I have considered that cloud accounting is more secure than traditional accounting. |
| 4. | I am confident that cloud providers will not use my company's data for their own commercial benefits. |

4. Results and Discussions

4.1. Demographic Characteristics of the Respondents

Most respondents were from the age group of under 24 years old (29.9%). Subsequently, other age groups ranged from 25 - 34 years old (23.4%); 35 - 44 age group (20.8%); 45 - 54 age group (15.6%); 55 - 64 age group (9.1%). Only 1 respondent was from the age group above 65 years old. Out of 77 respondents, 36 were male and the rest were female. The education level of the respondents was divided into four groups, which are STPM, Diploma, undergraduate and postgraduate. The majority of the respondents were undergraduates (59.7%), followed by 28.6% diploma graduates, 7.8% postgraduate and only 3.9% were STPM holders. About 41.6% of the respondents had 1- to 3- years of working experience, followed by 27.3% with more than 10 years of experience, 26.0% between 4- and 6- years of experience, and 5.2% had 7- to 10- years of experience. A total of 32 out of 77 respondents were employees, while 20 respondents were managers, 21 were accountants and 4 were business owners. Based on the business sector, 41.56% were small enterprises, 33.77% were micro-enterprises and 24.67% were medium enterprises. As many as 65 respondents intended to use cloud accounting services in their business in

the future. This was due to the high percentage of respondents (55.6%) being familiar with cloud accounting concepts.

4.2. Reliability Analysis

The reliability analysis shows the reliability test, the mean, and the standard deviation values for cost and security. Cronbach's Alpha value is used to measure the internal consistency of the instrument based on the average inter-item correlation (Refer Table 4).

Table 4: Scale of Cronbach's Alpha on Internal Consistency

| Cronbach's Alpha | Internal Consistency |
|-------------------------|----------------------|
| $0.9 \leq \alpha$ | Excellent |
| $0.8 \leq \alpha < 0.9$ | Good |
| $0.7 \leq \alpha < 0.8$ | Acceptable |
| $0.6 \leq \alpha < 0.7$ | Questionable |
| $0.5 \leq \alpha < 0.6$ | Poor |
| $\alpha < 0.5$ | Unacceptable |

Source: Glen (2021)

Table 5: Cronbach's Alpha, the Mean and Standard Deviation of Cost (saving) and Security.

| Variables | Cronbach's Alpha | Mean | Standard deviation | N of Items |
|----------------------|------------------|-------|--------------------|------------|
| Cost (saving) | 0.939 | 2.013 | 2.812 | 2 |
| Security | 0.979 | 4.039 | 5.217 | 4 |

In regards to the results shown in Table 5, cost (saving) and security have scored a Cronbach's Alpha of 0.939 and 0.979 respectively. As such the six items in these two constructs are considered reliable.

4.3. Pearson's Correlation Analysis

Pearson's Correlation is the measure of statistical relationship, where it gives information on the strength and the direction between 2 variables. For research purposes, between the adoption of cloud accounting and cost (saving); and the adoption of cloud accounting and security.

Table 6: The Results of Pearson's Correlation on the Relationship between the Adoption of Cloud Accounting, Cost (saving), and Security.

| Correlations | | | | |
|----------------------|----------------------------|-----------------|-------------|-----------------|
| | | Adoption | Cost | Security |
| Adoption | Pearson Correlation | 1 | .878** | .949** |
| | Sig. (2-tailed) | | .000 | .000 |
| | N | 77 | 77 | 77 |
| Cost (saving) | Pearson Correlation | .878** | 1 | .885** |
| | Sig. (2-tailed) | .000 | | .000 |
| | N | 77 | 77 | 77 |
| Security | Pearson Correlation | .949** | .885** | 1 |
| | Sig. (2-tailed) | .000 | .000 | |
| | N | 77 | 77 | 77 |

**** indicates correlation is significant at 0.01 level (2-tailed).**

Based on the results in Table 6, both cost (saving) (0.878, p-value = 0.000) and security (0.949, p-value = 0.000) have a strong positive correlation with the intention to adopt cloud accounting. When the adoption of cloud accounting is considered to be inexpensive and secure, the respondents are found more likely to use cloud accounting in their daily business activities. In order to assess the strength of the relationship, a linear multiple regression was employed for further analysis.

4.4. Linear Multiple Regression

The results of the multicollinearity diagnostic test indicate that all variables in the model are free from the collinearity problem, that is neither the tolerance value less than 0.10 nor VIF values above 10. Based on Table 7, the estimated model as a whole is considered a good fit, whereby the F-value = 362.789 (df = 2, 74) at p-value = 0.000. Cost (saving) and security collectively are able to explain 90.7% of the variance in the adoption of cloud accounting.

Table 7: Estimated Model showing the relationship between the Adoption of Cloud Accounting, Cost (saving), and Security (n = 77)

| Model Summary | | | | |
|----------------------|----------|-----------------|--------------------------|-----------------------------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .953 | .907 | .905 | .15219 |

| ANOVA | | | | | | |
|--------------|-------------------|-----------------------|-----------|--------------------|----------|-------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 16.806 | 2 | 8.403 | 362.789 | .000 |

| | | | |
|-----------------|--------|----|------|
| Residual | 1.714 | 74 | .023 |
| Total | 18.519 | 76 | |

| Model | Coefficients | | | | | | |
|----------------------|-----------------------------|------------|---------------------------|--------|------|---------------------------------|-------------|
| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 (Constant) | .037 | .022 | - | 1.692 | .095 | -.007 | .081 |
| Cost (saving) | .061 | .027 | .174 | 2.284 | .025 | .008 | .114 |
| Security | .301 | .029 | .796 | 10.469 | .000 | .244 | .358 |

In support of the results found in Pearson’s correlation analysis, cost (saving) (B = 0.061, p-value = 0.025) and security (B = 0.301, p-value = 0.000) have a positive and significant relationship with the adoption of cloud accounting. These results support H1 and H2. First, cost and security are found to be the predominant factors that respondents would consider before deciding to adopt cloud accounting. Second, the tendency of cloud accounting adoption increases when it does not incur additional operational costs for the business. Lastly, respondents would use cloud accounting if it is considered a safe and secure system to store their consumers’ data.

5. Conclusions and Recommendations

As aforementioned, cloud computing is still considered to be a relatively new service among SMEs in Malaysia. In line with the movement towards becoming a digitally competitive country, SMEs are encouraged to embrace cloud-based services as a method to lower costs and maximize efficiency. This study focuses on cloud accounting. It is a preliminary examination to determine whether cost and security are the primary factors that influence the adoption of cloud accounting among SMEs in Sungai Petani, Kedah.

Both Pearson’s correlation and linear multiple regression analyses have shown that cost and security are essential factors to be considered by business owners before making the decision to use cloud accounting. These factors are also positively and significantly related to the adoption of cloud accounting among SMEs. Strictly speaking, cloud accounting would be more acceptable for business owners if it is cheap and offers the required security to protect their data.

The survey by World Bank showed that the digital literacy of most SMEs in Malaysia (around 77%) remains at the basic stage (BusinessToday, 2021). Inevitably, cloud developers and the Malaysian government could cooperate to provide SMEs with more free cloud training support. Based on the findings of this study, cloud developers could

emphasize these aspects, which are cost and security, while promoting their services to business owners.

6. Limitations of the Study

The study is limited to SMEs in Sungai Petani, Kedah. Despite being the largest city of Kedah, the generalization of the results of this study could still be unachievable. The reason is that states in Malaysia are different in household income, ethnic composition, population, and level of development. As such, a single sample will not represent the complexity of a heterogeneous population.

7. Suggestions for Future Research

According to the limitations of the study, future studies could cover larger areas by including all the states in Malaysia in order to confirm and generalize the findings of this study. Since the issue of low adoption of cloud computing among SMEs in Malaysia remains unresolved, most studies should be conducted to identify other possible underlying factors that hinder business owners from using cloud computing.

Disclosure Statement

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