The Antecedents of Cloud Computing Success in Hotel Industries

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Abstract. This study aims to examine the effect of Information System quality on cloud computing performance in hotel industries in North Sumatra. Cloud computing is the innovation of accounting information system, which is warmly discussed and significantly adopted by the industry to maintain the credibility of information storage and accessibility. Understanding the importance of Information System characteristics in optimizing its performance is helpful particularly on the specific and productive function of Information Systems like Accounting Information Systems (AIS). Data for this study were collected from hotel employees in North Sumatra who interact with AIS. With systematic random sampling and an electronic questionnaire, this study collected 347 data. SEM-PLS was used to analyze the data. The result shows that relative advantage and compatibility are the critical antecedents of cloud computing success in the hotel industry.

Keywords: Cloud Computing, Technology Adoption, Accounting Information Systems, Tourism.

1 Introduction

The use of cloud computing in the management of corporate information and databases has attracted the attention of industry and information systems researchers. Cloud computing offers data management flexibility and reliability compared to server-based storage. Badger [1] suggested that cloud computing allows end-user computing to access information anytime and anywhere (ubiquitous) conveniently and on demand. It is just that the accessibility of information in cloud computing-based information systems is based on the availability of the internet network. In short, cloud computing is a parallel and distributed computing system service with virtual connected computer devices where consumers can use the service through an agreement between the customer and the cloud computing service provider [2]. Cloud computing service providers, in this case, provide network access, security, application software, and data storage in the form of data centre located on the internet [3].

Besides its accessibility and practicality, the previous research also found the essential superiority of cloud computing in business. [4] argue that the implementation cloud computing will probably make companies reduce their investment cost. The industry should spend the maintenance and investment costs for upgrading or updating the IS on server-based IS.

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Conversely, the maintenance and investment cost has been transferred to the cloud computing provider on cloud computing-based IS. Therefore, in some cases, the use of the cloud computing is more efficient than server-based IS. Furthermore, the combination of its accessibility, reliability, and efficiency, in turn, will escalate business value in the organization. The business organization will be able to deliver reliable information for their employee to make valuable decisions, avoid information loss due to network crash or natural disaster, optimize e-business function, and provide reliable information to customers [5],[6].

However, the success of using cloud computing cannot be separated from the quality of IS used by the business entity itself. This is because the cloud computing provided by the provider does not cover all aspects of the system that accommodates various business functions. The business functions include creating, absorbing, exchanging, manipulating, storing, communicating, and disseminating information [7],[8]. The complexity of these functions is unique in every type of business and may not be provided by cloud computing providers. Therefore, identifying IS functions as the antecedents of cloud computing success becomes an influential research agenda. Unfortunately, not many studies further analyze the factors supporting the performance of cloud computing on the service user's side. Therefore, this study aims to examine the effect of IS quality on cloud computing performance. The SI quality in this study was observed with three dimensions: relative advantage, compatibility, and result demonstrability.

The three dimensions of IS quality were adopted from the study of [9]. Relative advantage refers to the extent to which an IS can optimize end-user computing performance in terms of time efficiency, work quality, control, and productivity [9]. Furthermore, compatibility refers to how suitable or appropriate an IS is with the characteristics or task functions of end-user computing [9]. Finally, result demonstrability refers to the extent to which an IS can display relevant information for decision-making and communication [9].

Furthermore, this study uses the hotel industry as a research subject. This condition was chosen because the hotel is in the tourism industry, which is currently a strategic industry in Indonesia. This is because the tourism industry contributes 15% to Indonesia's gross domestic product (GDP). This contribution certainly increases competitiveness in the tourism industry. At the same time, the use of IS has become a common condition in the hospitality industry. Hotels need to reach a broad market, massive promotions, long-distance transactions, cross-sectoral and cross-region collaboration, and dynamic business decision-making from day to day, this condition certainly requires the availability of reliable IS. Furthermore, the use of cloud computing has also been widely carried out by the hotel industry for the reliability of information traffic [10]. Thus, the condition is considered representative of examining the effect of the dimensions of IS quality on cloud computing performance. The results of this study will be helpful in the hotel industries and its ecosystem in planning for IS investment based on cloud computing and reorienting the use of cloud computing by referring to the optimization of essential functions based on the dimensions of IS quality offered in this study. This research can also add to the repertoire of knowledge related to the importance of the availability and suitability of functions from cloud computing.

2 Literature Review

Barney [11] argues that business companies must understand and exploit their unique resources to generate their competitive advantage. The resources could be in the form of physical, human, and organizational aspects [11]. That view is known as the "Resource-Based View" [11]. Based on RBV, a company should be able to manage its heterogeneous resources simultaneously to drive innovation in the company process, model, or marketing. Related to this, cloud computing, as the result of IT innovation, is available or accessible to companies to innovate their business process. In this case, the accounting function is one of the unique business processes that would be improved significantly due to implementing cloud computing in its system, especially for the Hotel industry, which has multi-area or distance transactions and dynamic supply chains.

Cloud computing is a parallel computing system consisting of several groups of computers connected virtually [2]. Cloud computing service is distributed through one or more resources that consumers can use through agreements between customers and service providers [2]. Service providers, in this case, provide network access, security, application software and data storage in the form of data centres located on the internet [3]. In its development, cloud computing providers have produced services for various information system functions, including Accounting Information Systems (AIS) [12]. The use of AIS based on cloud computing allows users to increase business efficiency and information accessibility, which can improve company decision-making performance [4], [12].

Basically, innovation in information technology, in general, can significantly improve AIS performance in companies [13]. Further explained by Schneider et al. [14], information technology is used by AIS to collect, create and distribute valuable data. In this case, Cloud Computing can virtually facilitate these functions so that end users can access information in real time and anywhere [12], [15]. However, practical cloud-based AIS applications require an understanding of the organization, management, and IT architecture comprising the AIS [16], [17]. In this context, Moore & Benbasat [9] proposed constructs of information technology adoption to measure end-user acceptance of IT innovations that companies invest in. In contrast to the concept of the Technology Acceptance Model (TAM) [18], [19], which tends to analyze technology adoption from the point of view of IT itself, meanwhile, Moore & Benbasat [9] tend to analyze it from the point of view of the user.

Theoretically, Moore & Benbasat [9] argue that IT innovation should be compatible with user-specific needs and support user relative advantage. Related to AIS, cloud-based AIS must be able to produce financial information relevant to accountant responsibility for strategic decision-making. Therefore, the new AIS would support accountant-specific tasks, improving business performance [12], [15]. Moore & Benbasat [9] propose relative advantage, compatibility, and result in demonstrability as the critical antecedents of new IS performance. Relative advantage is related to how the new IS will help end-users improve their specific task. Compatibility relates to how the new IS consistently facilitates existing values, needs, and experiences already provided by past IS [9]. Furthermore, the result is demonstrability related to how the new IS can provide relevant information that users need regarding the specific task [9]. According to those frameworks, we formulate the following hypothesis:

H1: Relative advantage positively affects cloud-based AIS success.

H2: Compatibility positively affects cloud-based AIS success.
H3: Result demonstrability positively affects cloud-based AIS success.

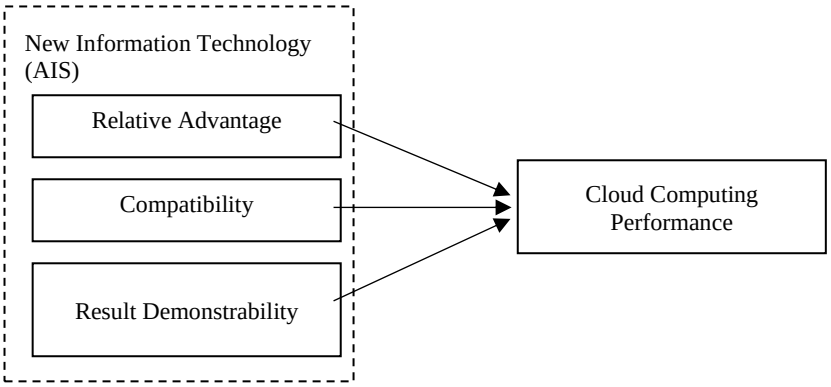

Fig 1. Conceptual Model

3 Research Method

The current research was quantitative research with a survey method. The subjects of this research were hotel employees who interact with the Accounting Information System. The research settings were limited to hotels that have used cloud computing as a database system on their AIS. Thus, this study used a systematic random sampling technique [20]. The method was chosen to maintain the data's relevance following this study's objectives. Furthermore, items in the questionnaire were adapted from the previous studies by applying Likert scale [21]. The dimensions of IS performance were adapted from [9] while the items for cloud performance were adapted from [22] and [23]. Before it was used for data collection, the items were translated into Indonesian language and done face validity by experts and representatives of targeted respondents.

This research questionnaire was distributed online and offline through the general manager of hotels in North Sumatra. The data collection in this study focused on the area of Medan City, Karo Regency, and Parapat Regency. The three regions were chosen because of the availability of hotels that have used cloud computing. Based on the techniques and criteria above, this study collected 347 data. The demography of sample of this study are presented in table 1 below. Once collected, the data were entered, tabulated, and analyzed. The data analysis in this study used Structural Equation Modeling (SEM) based on Partial Least Square (PLS) (See: [24]). The researchers used smartPLS to analyze the data. The data analysis stage was divided into two, namely testing the measurement model and testing the structural model. Testing the measurement model consisted of measuring discriminant validity, convergent validity, and reliability. Meanwhile, the structural model testing referred to the significance of the t-stat and p-value of each path coefficient with a critical value of 5%.

Table 1. Sample Demography.

No.	Variable		n	%
1	Gender			
		Female	144	41%
		Male	203	59%
			347	100%
2	Region			
		Karo	50	14%
		Parapat	40	12%
		Medan	257	74%
			347	100%
3	Star			
		Five	75	22%
		Four	149	43%
		Three	103	30%
		Two	20	6%
			347	100%

Source : Data Processed (2022)

4 Results and Discussions

The descriptive statistics of this study indicate that each construct has a high response with an average number above > 4.5. In addition, the variations of responses are not much adrift with the standard deviation below <1. This condition indicates that hotel employees who interact with SIA generally have a positive response to the IS they use.

Table 2. Statistics Descriptive.

No.	Variable	n	Avg	St. Dev
1.	Relative Advantage	347	4,509	0,814
2.	Compatibility	347	4,479	0,969
3.	Result Demonstrability	347	4,535	0,869
4.	Cloud computing Performance	347	4,473	0,764

Source : Data Processed (2022)

Furthermore, the researchers analyzed the measurement model. The measurement model is measured by three indicators, namely convergent validity, discriminant validity, and reliability. In measuring convergent validity, the researcher reviewed the factor loading of each item. Items with a loading factor below <0.704 are dropped from the model [24]. Based on these indicators, several items must be dropped, namely items CC1, CC2, CC4, CC5, CC6, and CC7 from the Cloud Computing Performance construct; item TI3 of the Relative Advantage construct; TI7 and TI9 items of the Compatibility construct; and the TI11 item from the result demonstrability construct. According to the convergent validity result, compatibility was only represented by two indicators. Statistically, two indicators are

representative enough for variance-based SEM in measuring the specific construct [24]. The results of these tests can be reviewed in table 3 of the cross-loading factor below.

Table 3. Cross-Loading Factor.

Variable	Cloud computing Performance	Compatibility	Relative Advantage	Result Demonstrability
CC3	0,733			
CC8	0,841			
CC9	0,770			
CC10	0,813			
TI1 (RA)			0,812	
TI2 (RA)			0,714	
TI5 (RA)			0,774	
TI6 (RA)			0,739	
TI8 (C)		0,885		
TI10 (C)		0,858		
TI12 (RD)				0,789
TI13 (RD)				0,747
TI14 (RD)				0,757

Source : Result of smartPLS 3.0. (2022)

Discriminant validity was measured by the Fornell-Larcker Criterion ([24], [25]). These criteria were reviewed by observing the root number of the Average Variance Extracted (AVE), which was inputted into the correlation matrix diagonally. The AVE root number must be greater than the correlation coefficient between the variables on the bottom and left side of the AVE root. These figures are presented in table 4 below. Based on the data in the table, it can be seen that all AVE root numbers in the correlation matrix are greater than the correlation numbers between variables. Thus, the measurement model has met discriminant validity. Finally, the reliability in this study was reviewed by observing the Composite Reliability (CR) number [24]. A good CR number is above > 0.8. Based on these criteria, the CR number for each construct (presented in table 4) indicates that the constructs of this study have met construct reliability.

Table 4.Discriminant Validity and Reliability.

Variable	CR	AVE	CP	Comp	RA	RD
Cloud computing Performance	0,869	0,625	0,790			
Compatibility	0,863	0,759	0,439	0,871		
Relative Advantage	0,846	0,579	0,420	0,630	0,761	
Result Demonstrability	0,809	0,585	0,394	0,691	0,723	0,765

Source : Result of smartPLS 3.0. (2022)

After every construct meets validity and reliability, structural model testing is carried out. The results of structural model can be observed in Table 5 and Figure 1 below. Based on the results of structural model testing, it was found that relative advantage had a significant positive effect on cloud computing performance. Relative advantage has an influence value of 0.211 with a t-stat equal to 2.563 (>1.96) and a p-value equal to 0.011 (<0.05). Therefore, H1 was supported. Furthermore, compatibility was also found to have a significant positive effect

on cloud computing performance with a path coefficient equal to 0.265, t-stat 3.414 (> 1.96), and p-value 0.001 (<0.05). Then, H2 is supported. Different things are found in the dimension of the result demonstrability. The effect of the result of demonstrability on cloud computing performance was found to have an influence value of 0.058 with a t-stat of 0.626 (<1.96) and a p-value of 0.532 (>0.05). The figure shows that the result demonstrability does not affect cloud computing performance. Therefore, H3 was not supported. In general, these findings indicate that compatibility is the primary antecedent of cloud computing performance, followed by relative advantage. Meanwhile, respondents do not feel that the result of demonstrability significantly influences the performance of the cloud computing they use.

Table 5. Hypothesis Testing.

H	Path	Coef.	t-stat	p-value	Result
H1	Relative Advantage > Cloud computing Performance	0,211	2,563	0,011	Supported
H2	Compatibility > Cloud computing Performance	0,265	3,414	0,001	Supported
H3	Result Demonstrability > Cloud computing Performance	0,058	0,626	0,532	Not supported

Source : Result of smartPLS 3.0. (2022)

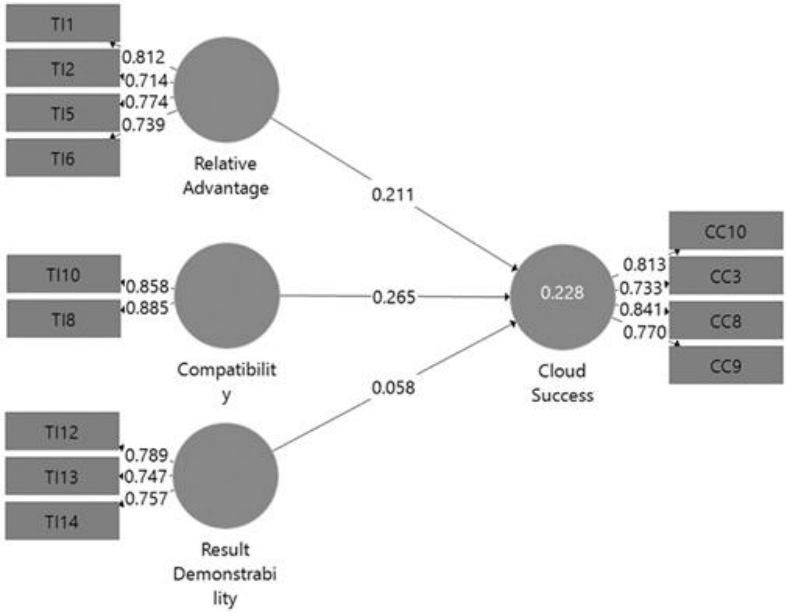

Fig 2. Research Model

This study found that relative advantage and compatibility positively affect cloud computing performance. Meanwhile, the result of demonstrability does not affect cloud computing performance. Moore & Benbasar [9] argue that theoretically, relative advantage refers to the extent end-user computing perceived that the current IS they used is better than the previous one concerning its optimization of time efficiency, work quality, control, and productivity. In this study, cloud-computing-based AIS, viewed as the later version of the platform, viewed as the last version of the platform, compared to end-user computing perception, tends to evaluate their actual experience. The new IS innovation, which cannot give added value, , is perceived as a relative advantage which tend not to be adopted by individuals or industries ([9]; [26]). Relative advantage perceived by AIS users gives them more valuable experience during interaction with it and stimulate the perception that the AIS is working better. This indicates the performance is good.

Furthermore, compatibility refers to the extent to which the IS innovation is compatible or appropriate with job specification [9], which is the accounting function of AIS. According to that view, this study indicates that the use of cloud computing in the AIS function should have a specific setting as it is needed to present the compatibility of accounting tasks. In this case, the use of cloud computing is a valuable alternative to operating AIS, and researchers argue that the use of cloud computing will generate more reliable, accessible, and efficient AIS in Hotel Industry.

This study is in line with the previous research which considers the importance of IS characteristics to reach its practical to improve business performance as IS investment is expensive ([9]; [3]; [7]; [4]). This study also supports the previous research which argues that compatibility and alignment between IS and task characteristics is an essential issue for IS success ([9]; [26]). This study recommends hotel industry adopt cloud computing technology. However, during the installation, the IS manager should ensure that the functionality and design completely fit with the specific employee task. Finally, this study has limited sample characteristics as it is collected from a single business industry area. Further research would be more fruitful with more business fields in the sample. It will escalate the external validity of the study result.

5 Conclusions

This study examines the effect of Information System quality on cloud computing performance in hotel industries in North Sumatra. This study found that relative advantage and compatibility contribute to cloud computing performance. However, result of demonstrability cannot affect cloud computing performance. The study suggests that when incorporating cloud computing in the AIS function, it is crucial to tailor it to the specific needs of accounting tasks to ensure compatibility. This investigation aligns with the previous research, emphasizing the significance of Information System (IS) characteristics in enhancing business performance, considering the considerable investment of IS implementation. Therefore, the study proposes that the hotel industry should embrace cloud computing technology. Nevertheless, during the installation process, the IS manager must ensure that the functionality and design of the cloud system perfectly align with the distinct tasks of employees. It is

important to note that the study has limitations regarding sample characteristics, as the data were gathered solely from a single business industry area.

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