

TECHNOLOGY FACTORS IN CLOUD ACCOUNTING DURING THE ERA OF COVID 19 OUTBREAK: A LESSON FROM THE INDONESIAN BANKING SECTOR

Hasnawati
Etty Murwaningsari
Juniati Gunawan

ABSTRACT

COVID 19 has made many people work remotely, including accountants. One of software application that allows accountants to work from a remote area is cloud accounting software. This study aims to analyse the influence of technological factors on the implementation of cloud accounting. The technological factors are proxied by three variables, namely relative advantage, technological complexity, and technology compatibility. This study uses a quantitative method with the unit of analysis of banking in Indonesia. The purposive sampling technique was applied. Data was collected using a questionnaire, distributed to respondents using a google form, during the COVID 19 outbreak. There were 243 respondent and 160 of them could be evaluated. The data was processed using SPSS 22 with multiple regression model. The result reveals that technology complexity has a negative influence, meanwhile technology compatibility has a positive influence on cloud accounting implementation. Otherwise, the relative advantages have no influence on cloud accounting implementation. This study provides new insights of accounting in the era of massive technology during the COVID-19 outbreak. New measurements for the variable factors of technology and cloud accounting have been developed for further studies. In addition, empirical evident on how banking sectors put in efforts by rapidly adopting technology was also discussed. Finally, this research contributes to provide flourish understanding regarding the technology factors and cloud accounting from a developing country, which is banking sector has been a central leverage for the whole economy.

Keywords: relative advantage, complexity, compatibility, cloud accounting

INTRODUCTION

Information technology has developed very quickly and has been developing into the 5th generation technology (5th G) which is characterized by the use of nanotechnology and wireless networks. The era of society 5.0 which is marked by augmented reality, robots, the internet of things, cyber security, system integration, 3D, big data, and cloud computing (Salgues, 2018). The digital era brings consequences to various fields of life, including the business world, and this situation is getting intense during the COVID-19 outbreak. The pandemic situation has made us feel the benefits of information technology and network technology and has forced many people around the world to be quarantined also have to work from home, both studying and working. Consequently, the information technology and network technology make work from home and learn from home a necessity. Rapid technological progress is like a double-edged sword, on the one hand, it provides great benefits but on the other hand, it can also be deadly because it makes future situations full of uncertainty, difficult to predict and change the way we coordinate (An and Rau, 2019). Technology has disrupted traditional industries, and the business situation will never be the same again. Digital technology will bring change at an exponential rate, the landscape of business in the 21st century is very different. Many things in today's world have been digitized, and when something is digital, it behaves like Information technology (Diamandis and Kotler, 2020).

Many companies have become victims of disruption caused by advances in digital technology and COVID-19 outbreak. Several well-known brands in Indonesia have also begun to close their outlets due to drastic sales declines such as Giant, Matahari, Centro, Gramedia, Ramayana and Kinokuniya (Sandy, 2021). It is not only the retail sector that is affected by technological advances but the banking sector is also affected (Rini, 2021). Banks in the European Union had closed 9,100 branches and cut some 50,000 staff in 2016. In total there have been 48,000 bank branches closed in the European Union from 2008 to 2016 (Setiawan, 2017). A recent study by a consulting firm in Europe, entitled branching out, estimates that around 18 percent or more than 11,000 bank branches will be closed in Southeast Asia shortly. In Malaysia, it is estimated that nearly 600 bank branches will be closed. The Malaysian government targeted that half of the population in Malaysia will become e-wallet users by 2025. (Pamungkas, 2021).

In Indonesia, the impact of disruption due to technological developments combined with the COVID-19 outbreak has driven large banks such as BRI, Mandiri, BNI, Panin, BTN to close a number of their branch offices, sub-branches, cash offices, and payment points. The pandemic has been accelerating digital transformation because customers are encouraged to make transactions electronically to reduce the spread of the virus. Based on data from the Financial Services Authority (OJK) as of April 2021, the number of banking branch offices decreased by 1,232 units from last year (Rini, 2021). The phenomenon of technology disruption, in fact has been predicted few years ago. Sampler (2015) says that for the rapid change, a shock absorber strategy is needed. Hence, the company is expected to be able to change in accordance with the surrounding environment. The company also should be able to act accurately, agility and take advantage of the momentum and predict the future.

Apart from the rapid changes in business model due to the technology application, one of the information technologies that is currently developing is cloud computing. Cloud computing offers various benefits such as cost efficiency, collaboration, flexibility, availability, and reducing environmental impact (Krelja et al., 2014; Shayan et al., 2014), even though there are still several issues related to security, privacy, the readiness of human resources, and organizational support (Amron et al 2017). One variant of cloud computing is cloud accounting. Similar as cloud computing, cloud accounting also offers various benefits, but on the other side

this new implementation may be too complex, therefore it needs time to understand and implement this new system (Buyya et al., 2009, Chemjor 2017). In addition to the benefits and complexity, another consideration factor in applying cloud accounting is the compatibility or suitability of the new system with the old system (legacy system) also the company's requirement in accordance with the business environment. According to Chemjor et al., (2017) and Wang et al., (2010), compatibility is an important factor in the implementation of an innovation.

Several empirical studies related to cloud accounting have been undertaken. They are discussed awareness of cloud computing and its implementation in Malaysia (Tarmidi, Rashid, Alrazi, and Roni, 2014); changes in the role of accounting in the context of cloud computing (Tugui and Gheorghe, 2014), the perception of external auditors in the implementation of cloud computing in Australia (Ogan, 2015); explores how the use of cloud-based accounting/finance infrastructure affects the performance of MSMEs in Ireland (Cleary and Quinn, 2016), exploration of risks from the use of cloud accounting information systems in Australia (Yau-Yeung, 2017), awareness of the use and implementation of cloud accounting among Chartered Accountants in Udaipur, India (Ali and Thakur, 2017); awareness of the use of cloud accounting technology in public accounting firms in Cape Town, South Africa (Klopper and den Bergh, 2019) and discussion of the impact in using cloud accounting on small medium enterprise performance (Kariyawasam, 2019). All of these studies providing some evident in cloud accounting in different countries across region and to the utmost understanding, very limited studies are conducted from Indonesia. Since Indonesia is consider as one of the biggest important countries in Asia and 4th largest internet user in the world, hence implementing technology such as cloud accounting is very essential to support the country's business and competitive advantage (Mursid, 2021).

This study aims to provide empirical evidence about the determinant factors that influence the implementation of cloud accounting. The determinant factors to be tested are the relative advantage, the complexity, and the compatibility of the technology. This study provides insights of academic contributions by adding scientific references in the field of accounting information systems from one of developing countries which is considered as a high technology adopter (Wahyudi, 2020). In addition, this study also contributes new measurements of technology factor and cloud accounting which may benefit for future study. For the practical contributions, banking sector may get the utmost benefits in understanding and learning the adoption of cloud accounting that should be able to beneficial in supporting their technology transformation.

CONCEPTUAL BACKGROUND AND HYPOTHESES DEVELOPMENT

According to Resource-Based Value of The Firm (RBV) theory, technology is one of the physical resources owned by the company (Barney, 1991). Technology investment is a strategic decision and is expected to be able to added value for the company. Many companies invest in technology, including information technology as a response to a business environment that is constantly changing and full of dynamics. Teese, Pisano & Shuen (1997) in their dynamic capability theory say that companies must be able to behave in rapidly changing conditions or situations where continuous innovation and price competition occurs to the level of "creative destruction" of existing competencies. The application of cloud accounting can be an answer to face competition and prevent companies from "creative destruction" because they are busy dealing with something that is not their core competence. The application of this technology also allows companies to be able to integrate, build and reconfigure internal and external competencies to deal with the rapidly changing environment. Accounting and financial reporting also can be done using cloud accounting services and companies can focus more on the company's core business.

RBV theory and dynamic capability theory were developed later by Hart (1995) into the Natural Resourced Based View of The Firm (NRBV) theory. The RBV theory is considered to have serious shortcomings because it ignores the interactions between organizations and their natural environment. In the past before the environmental damage and its impact was not as severe as it is today, the shortage may be understandable. However, for today, natural environmental factors can create serious obstacles for companies to win the competition and can affect the company's sustainability (Hart and Dowell, 2011). Therefore, it is relevant to relate this Natural RBV theory to cloud accounting implementation. In the long term, cloud accounting software in addition to being able to reduce costs also has the potential benefit to protect the environment, because one of the advantages of this technology is a hardware resource sharing system.

Several studies had taken technology as a determining factor. These factors include cost savings, security and privacy, reliability, technology readiness, technology integration, relative advantages, complexity, compatibility, triability, observability (Zhu et al, 2004; Karkonasasi, 2009; Oliveira and Martin, 2010; Wang et al., 2010; Low et al 2011, Ahmad et al, 2014, Boonsiritomachai, 2014; Chemjor 2017), but this research only focuses on 3 (three) aspects, namely relative advantages, complexity, and compatibility.

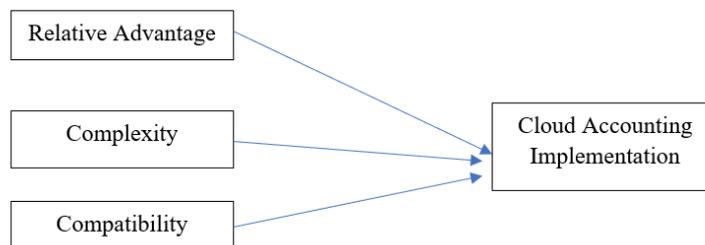


Figure 1. Conceptual Framework

Relative Advantage

Every decision that will be taken by the company will always consider the costs and benefits; advantages and disadvantages. This is also applied in the decision to implement cloud accounting. If management thinks the benefits of implement cloud accounting are greater than the cost, then management will tend to implement the technology. Benefits are not always in the form of money, but they can be a form of acceleration of business communication, working efficiently and better coordination, also access to market information (Armbrust et al, 2010; Hayes, 2008). In accordance with the RBV theory (Barney, 1991), the benefits derived from cloud accounting technology resources are expected to provide value-added for the company and increase the efficiency and effectiveness of the company. If this technology is implemented in the accounting process, the process of making financial reports will be faster and more efficient, on time, in addition to other main benefits, namely savings in terms of investment in hardware and software infrastructure. In addition, the implementation of cloud accounting is able to exploit existing opportunities and neutralize threats within the company. Compared to traditional accounting, cloud accounting provides companies with more opportunities such as access to information from anywhere and faster updating of financial data. Cloud accounting is also able to minimize the threat of data loss due to viruses that attack data storage on the desktop which is generally done in traditional accounting (Khanom, 2017). The study of Karkonasi et al (2009) found that cost savings are one of the influential variables in cloud computing adoption. A study by Low et al., (2011); Chemjor et al (2017) found that relative advantage proved to have a significant effect on cloud computing adoption. Perception of the usefulness of technology is also important in the adoption of technology in the SME industry (Tan et al (2008); Ahmad et al (2014); Boonsiritomachai (2014)). Understanding the relation of cloud accounting and the implementation, hence, the first hypothesis is stated as:

H1: The relative advantages of cloud accounting technology have a positive effect on cloud accounting implementation.

Complexity

The usefulness of technology is not the only factor that determines whether a company will adopt it or not, but the human factor as a technology user is also decisive. Cloud accounting may offer considerable advantages, but companies will not necessarily adopt this technology because it may be considered something new and it will take time to understand and implement this new system (Buyya et al, 2009). The complexity of the technology can be a barrier to implement technology. System users become one of the determining factors whether the technology will be implemented or not. Barney (1991) in RBV theory says that training, experience, consideration, intelligence, and insight from managers and workers are some of the important resources owned by the company. If the existing cloud accounting technology was not too complex, it would be easy to train accountants and managers to use it. The easier it is for accountants and management to understand and use cloud accounting, it will provide a pleasant experience for them and will be very helpful in carrying out their daily work. This will certainly provide its own advantages and can add value to the company. If the company's human resources can understand and take all the benefits offered by cloud accounting technology, this will also make the company more agile to face the current rapidly changing business situation and conditions as expected in dynamic capability theory. One of the conveniences offered by cloud accounting is that it allows employees to work from remote areas. In this era of the COVID-19 pandemic, software features that allow data to be easily accessed from anywhere and at any time are a significant factor. The study of Boonsiritomachai (2014) found that complexity influenced SME entrepreneurs in Thailand to adopt business intelligence technology, and the study of Chemjor et al (2017) found that complexity had a significant effect on the adoption of cloud computing. Based on the understanding of cloud accounting complexity, the following hypothesis is derived:

H2: The complexity of cloud accounting technology has a negative effect on cloud accounting implementation.

Technology Compatibility

In addition to the benefits and complexity, another consideration factor is the compatibility or suitability of the new system with the old system (legacy system) and the company requirement in accordance with their business need. Compatibility is an important factor in the implementation of an innovation (Cooper and Zmud, 1990; Wang et al, 2010). The more compatible an innovation is, the easier the implementation process will be. On the other hand, if an innovation is not compatible, many adjustments are needed so that the innovation is vulnerable to failure to be implemented. In the 4.0 era, the speed and easiness of accessing data from anywhere in addition to the speed of updating and data accuracy is an unavoidable need. In addition to these technical aspects, Hart (1995) suggests in the NRBV theory that the resources used by the company must also give attention to the organization's interaction with the environment. The implementation of cloud accounting is the answer to these demands. In addition to being compatible with the old system, cloud accounting is also compatible with the demands of the current situation, where the companies should give more awareness to the environment. The study of Chemjor et al (2017) found that compatibility had a significant effect on cloud computing implementation. Based on the arguments that technology of cloud accounting will influence the accounting implementation, , the third hypothesis is derived:

H3: Cloud accounting technology compatibility has a positive effect on cloud accounting implementation.

RESEARCH METHOD

Sample and data collection

The type of data used is primary data taken through the distribution of questionnaires. Questionnaires had been distributed to cloud accounting software users in the banking sector from January 18, 2021, to February 6, 2021, using google form. This data collection period occurred when the COVID-19 pandemic was still high and lockdown situations have occurred in Indonesia. This study uses employees of banks in Indonesia as respondents. The banking industry was chosen because banking industry has been considered as the major sectors which apply massive technology in order to be sustain (OECD, 2020). This industry is one of the leading industries in the application of the latest information technology (PWC, 2020). The selected banks include conventional banks and Islamic banks with a minimum category of BAKU 3 (Commercial Banks based on Business Activities, category 3). The reason for not choosing a bank with the BAKU category 1 and 2 is because this bank which only has a core capital of less than 1 trillion, hence has limited resource to invest in advance information technology.

The selection of respondents using the purposive sampling technique. This technique was chosen in order to get respondents who appropriate with this research. The criteria for respondents to be selected are banking employees, both accountants and non-accountants who are users of cloud accounting systems, have worked at least 3 years in the company with a minimum education level of diploma 3. It is assumed that who has worked for 3 years and with a minimum education level of diploma 3, they will quite understand the company's environment and have sufficient knowledge about information system, where their works. Hence, with these criteria, the respondents are expected to provide reliable answering.

Variables and Measurement

The Relative Advantage of Technology is the benefits that companies can obtain when implementing cloud computing-based accounting systems (Low et al., 2011, Khanom, 2017, Chemjor et al., 2017). This variable will be measured with 7 (seven) indicators. Technology Complexity is how complicated is the cloud computing-based accounting system to implement and in terms of learning, using, operating, upload, download, backup, and restoration data. This variable will be measured with 10 (ten) indicators). Technology Compatibility is how far is the compatibility of the cloud computing-based accounting system implemented with the existing infrastructure, standard operating procedures, also regulations and accounting principles that are generally accepted. This variable will be measured using 4 (four) indicators). Cloud accounting is an accounting information system that uses software and accounting data that is placed on one or more servers (cloud), where data access can be done remotely using an internet connection. This variable will be measured using 6 indicators. The questioner used 7 Likert scale (1= strongly disagree; 2=disagree; 3= more or disagree; 4 = neutral; 5 = more or less agree; 6 = agree; 7 = strongly agree. Below are the indicators used to measure each variable.

Table 1: Variables and Indicators

No.	Variable	Indicator
1.	Relative Advantage	Reduce transaction cost
		Enhance transaction speed
		Enhance service quality to our customers
		Enhance accuracy in transaction calculation
		Real-time updating data
		Able to view data simultaneously with other users
		Enhance corporate image
2.	Complexity	Accessible from anywhere
		Accessible anytime
		Easy to learn and use
		Able to draw data from different division or department
		Easy to upload data
		Easy to download data and application
		Application features can be customized
		Automatic backup data
		Automatic data restoration
		In line with the functions of the company's accounting information system
3.	Compatibility	Compatible with company's infrastructure
		Compatible with the company's standard operating procedure
		In accordance to generally accepted accounting principle
		In accordance with the financial regulation
4.	Cloud Accounting	Our bank has a special division that builds and develop accounting application software
		Our bank managed its cloud data storage
		Our bank has a special division that develops and maintain information system security
		Our bank has its database server
		Our bank has its application server
		Our bank has its network infrastructure

Notes: For complexity variables, before regression processing, the data scores must be reversed in order to match with the hypothesis

RESULT AND DISCUSSIONS

This research is quantitative research that used a questionnaire as a data collection instrument. Data were collected from January 18, 2021, to February 6, 2021. During this period, 243 respondents were obtained. However, there were 83 answers did not meet the criteria, and as a result 160 answers were examined. The data selection process is described in table 2.

Table 2: Data Selection

No	Criteria	Total Data
1	Total respondents	243
2	Respondents with education < Diploma 3	(7)
3	Respondents with working tenure < 3 years	(69)
4	The respondent from banking that categorized as BUKU 2	(7)
	Total data can be processed	160

Source: Processed

A total of 7 (seven) respondents with education less than diploma 3 were excluded because they were deemed ineligible. If users with education below diploma 3 were feared could not be able to understand the contents of the questionnaire. Respondents with work tenure less than three years as many as 69 people were also excluded, as many as 7 people were also excluded because they are worked in BUKU 2 banks. BUKU 2 bank is a bank that has a core capital less than Rp 5 trillion, hence this is not appropriate to the criteria, because in general the information system for this type of bank is still simple.

Demographics of Respondents

This section describes the demographics of respondents that describe the characteristics of the respondents consisting of gender, age, education level, length of work, and position of the respondent

Table 3: Characteristics of Respondents

Characteristics of Respondents	Frequency	Percentage
Gender		
a. Male	90	56,3 %
b. Female	70	43,6%
Total	160	100%
Age		
a. 20 – 30 years	56	35,0%
b. 30.1 – 40 years	75	46,9%
c. 40.1 – 50 years	23	14,4%
d. 50.1 – 60 years	6	3,8%
Total	160	100%
Education		
a. D3	17	10,6%
b. S1	123	76,9%
c. S2	20	12,5%
Total	160	100%
Working Tenure		
a. 3 – 10 years	126	78,8%
b. 10.1 – 17 years	24	15,0%
c. 17.1 – 24 years	6	3,8%
d. 24.1 – 31 years	2	1,3%
e. > 31 years	2	1,3%
Total	160	100%
Position		
a. Staff	62	38,8%
b. Supervisor	63	39,4%
c. Middle Manager	35	21,9%
Total	160	100%

Sumber: Diolah dengan SPSS 22

Table 3 shows that the proportion of respondents' gender between male and female is balanced. The majority of respondents are in the age range of 30 to 40 years with the highest level of education being a bachelor's degree (76.9%). Thirty-eight-point eight percent of respondents are worked as banking staff and 39.4% held supervisory positions, the remaining 21.9% were middle managers.

Hypotheses Result

The data collected has gone through a quality test to see the seriousness of the respondents in answering the questions and to see the situational factors at the time the research was conducted. The tests carried out were validity tests using Pearson Correlation and reliability tests using Cronbach's Alpha. This research used multiple regression to test the hypotheses using the coefficient of determination (adjusted R²), fit model (F test), and partial test (t-test). Table 4 shows the results of hypothesis testing.

Table 4: Hypotheses Result

Research Model: CA = a + b1.MR + b2.KT + b3.CT + e							
Variable	Prediction	Unstandardized Coef		t	Sig	Sig/2	Decision
		B	Std Error				
(Constant)	+	5.149	2.141	2.405	.017		
Relative Advantages	+	0.105	.097	1.080	.282	0.141	H ₁ rejected
Complexity	-	-0.172	-.276	2.151	.033	0.016	H ₂ accepted
Compatibility	+	0.441	.158	2.797	.006	0.003	H ₃ accepted
Adjusted R ²	0.434						
F test	41.604						
F significance	0.000						
Dependent Variable: Cloud Accounting Implementation							
Source: Processed with SPSS 22							

From table 4, it can be seen that the adjusted R² value is 0.434. This means that 43.4% of the variation in cloud accounting variables can be explained by the relative advantages, technology complexity, and technology compatibility variables, while 57.6% is caused by other factors not included in this model. The significant value of F shows the number 0.000 which means the model was fit. From the results of the partial t-test, it was found that the complexity and compatibility of technology affect the implementation of cloud accounting. This can be seen from the significance value of t/2 is smaller than 0.05.

Hypothesis 1: The effect of relative advantages on cloud accounting implementation.

The results of testing this hypothesis were failed to prove because the t-test results are greater than 5%. The results of this study contradict the results of the study of Karkonasi et al (2009) who found that cost savings is one of the influential variables in cloud computing implementation, as well as the study of Low, China, and Chen (2011); Chemjor et al (2017); Tan et al (2008); Ahmad et al (2014); Boonsiritomachai (2014)) who found that the relative advantages had a significant effect on the implementation of cloud computing.

This difference result may occur because the situation when this research was conducted was different from the situation when previous research was conducted. This research data collection was carried out during the COVID 19 pandemic. The pandemic, which began to spread at the end of December 2019 and then got worse in 2020, had caused governments all over the world to impose large-scale social restrictions (lockdown). This makes people unable to leave the house and is forced to carry out activities from home, including banking transactions. Most of the world's population has become very dependent on an internet connection (Fernandes et al, 2020). The COVID-19 pandemic has made everyone benefit from the existence of the internet of things (IoT), including small and large-scale companies (Siddiqui et al., 2021). Based on this situation, it can be said that at this time IT implementation, including cloud accounting is a must because the benefits have already been proven.

It can be concluded that it is not surprising that relative advantages are no longer a determining factor for management to implement cloud accounting. Everyone has benefited from the existence of this cloud-based banking system, including cloud accounting. (Lakshmi and Rani, 2018). This does not mean that the results of this study contradict the RBV theory which states the importance of the existence of physical resources (in this research is cloud accounting) in gaining competitive advantage of an organization (Barney, 1991). It's just that if you only rely on the existence of standardized IT and only provide standard benefits, then the existence of IT will no longer be a competitive advantage. Resource with a standard feature is very easy to replicate by the competitors. Within disruptive and uncertain business conditions, dynamic capabilities of companies are needed (Teese et al, 1997). The existence of IT resources must be able to be utilized to create innovation or breakthroughs so that IT becomes a competitive advantage.

Hypothesis 2: The effect of technology complexity on cloud accounting implementation.

This study finds that technological complexity affects cloud accounting implementation because the t-test results show a value of 0.016 which is smaller than the standard error value of 0.05 and beta value of -0.172 which indicates that the more difficult a system to use, the more resistance user to use the system and vice versa. If the software is easy to use, the level of use will be high,

the probability to implement cloud accounting becomes higher. This is in accordance with the RBV theory (Barney, 1991) which says that training, experience, and human resource intelligence are important in a company. The ease of use becomes an important thing because if the software is easy to use it will make it easier for employees to learn on their own and will provide a pleasant experience for them so that the level of resistance will be reduced (Kim and Park, 2020, Schmidt et al., 2020). Regarding the work situation in this pandemic era, where the majority of work must be done remotely, the ease of uploading data, downloading data, being able to work from anywhere and anytime is an absolute requirement for a corporate system, also for the cloud-based accounting information system (Roe, 2020).

The advantages of cloud accounting in terms of the convenience provided are a manifestation of dynamic capability theory (Teese et.al 1997) where companies must be able to integrate, build and reconfigure internal and external competencies to deal with rapid environmental changes. Working remotely is the company's response to the current COVID-19 pandemic (Miftahudin, 2021), hence the use of cloud computing became wider. Accountants are also affected by the pandemic so they have to work remotely, therefore cloud accounting has become a necessity. Sage research (2020) says that 83% of accountants agree that investing in the latest technologies and digitalization is necessary to keep up with the market. The results of this study are in line with the results of previous studies which showed that technological complexity had a negative effect on cloud accounting implementation (Buya et al (2009); Boonsiritomachai (2014); Chemjor et al (2017)).

Hypothesis 3: The effect of technology compatibility on cloud accounting implementation.

Based on the t-significance score, the third hypothesis that wants to test whether technology compatibility has a positive effect on cloud accounting adoption can be proven. This is shown from the t-significance value (0.003) which is smaller than the standard error value (0.05) and the beta coefficient of 0.441 which has a positive direction. Compatibility of the system with the old system and fit in with the user's need are important factors to decide whether to implement a system or not (Cooper and Zmud, 1990; Wang et al, 2010). Banking is a type of industry that is full of regulations and strict in implementation. Financial regulation is part of ensuring the safety and soundness of the financial system and protecting consumers (LPS, 2021).

Currently in Indonesia, the latest accounting principle that must be applied in 2020 is **PSAK 71 (refer to IFRS 9)** regarding the recognition and measurement of financial instruments. Based on the 2019 annual report, the banks that became the sample of this study, have tried to adjust the information system in their company to accommodate the implementation of PSAK 71. Compatibility is not only seen in terms of the suitability of technology with the company's requirements, but also with the business environment (Nayyar et al., 2020). The era of 4.0 and COVID-19 proved that cloud computing is a necessity and the most appropriate technology for current conditions. The RBV theory (Hart, 1995) says that a resource used by a company must not only be compatible with its organization but should also give attention to the organization's interaction with the business environment. Currently, environmental issues are also a central issue in the world. Cloud computing, which includes cloud accounting, is one of the answers to this environmental issue (Beardmore, 2020). The COVID-19 pandemic has proven that with the help of cloud computing, we can all work from home, thereby reducing the traffic on the streets. This makes the world's pollution levels decrease drastically. NASA research found that from February 2020 to November 2020, the lockdown policy had reduced nitrogen dioxide levels by almost 20%. Nitrogen dioxide is air pollution caused by the combustion of fossil fuels used by industry and transportation (NASA, 2020). The results of this study are in line with the results of Chemjor et al (2017) that compatibility has a significant effect on cloud computing implementation.

CONCLUSION, IMPLICATION AND LIMITATION

This study examines the effect of technological factors on the implementation of cloud accounting. Technological factors are measured using 3 (three) variables, namely relative advantages, complexity, and compatibility of technology. The data of this study were obtained using a questionnaire in the form of a google form and distributed through the WhatsApp friendship network and 245 google forms were filled out. The answers that meet the requirements to be processed are 160 respondents. The results of this research indicate that the relative advantages have no effect on the implementation of cloud accounting, technology complexity has a negative effect, meanwhile, compatibility has a positive effect on the implementation of cloud accounting.

This study finds that the complexity and compatibility of technology may influence the implementation of cloud accounting. This finding is useful for software developers to give attention to the easiness and compatibility factors in developing a software. For banks that are the object of this research, if they purchase accounting software, they should still have their own division to customize software, especially accounting application software, so that it can in line with infrastructure, corporate's standard operating procedures, in line with financial regulations and accounting standards. This finding also has impact on the accounting software application development division. This division will need accountants, not only programmers. This phenomenon also will impact in curriculum of accounting department in the university.

This study has several limitations, first is the use of questionnaires as an instrument of data collection. The questionnaire media has limitations in terms of ensuring the honesty and seriousness of the respondents in answering the statement in questionnaires. There is a possibility that respondents have different interpretations regarding the statement items so that there can be bias in answering. This has been anticipated by the researcher by using language as easy as possible, avoiding technical terms as much as possible so that the statement items can be understood well. Control procedures to minimize respondent bias have also been carried out by distributing questionnaires in google form format through a network of friends to ensure that the respondents who answer are the expected people. In addition, the researchers also sorted out respondents' answers carefully, so that answers that were judged not to meet the criteria were not included in the data processing. The second limitation is that the respondents of this study only

came from 17 banks (out of a total of 109 Commercial Banks consisting of 95 Conventional Commercial Banks and 14 Islamic Commercial Banks as of January 2021), so the results of this study must be interpreted with caution.

Based on the limitations of the study, further research can be carried out using mixed methods so that the research results will be better. Researchers can conduct content analysis using information sources both from within the company and outside the company such as mass media (online newspapers), research results from independent institutions, or social media (Facebook, Twitter). The results of this content analysis are then combined with the results of the quantitative test. Future research also can enhance the number of sample banks. It is expected that with the addition of banks, the research results will be better to reflect the situation of the information technology banking sector in Indonesia. Future research is also able may add more variables, such as management characteristics or type of banking (sharia or conventional) or use wider sample scope in the Asian region.

REFERENCES

- Ahmad, S.Z., A. R. A. Bakar, T. M. Faziharudean & K. A. M. Zaki (2015), An Empirical Study of Factors Affecting e-commerce Adoption among Small-and Medium-Sized Enterprises in a Developing Country: Evidence from Malaysia, *Information Technology for Development*, Vol 21, No.4.
- Ali, Y., U. Thakur (2017), Awareness and Adoption of Cloud-Based Accounting by Qualified Chartered Accountants in Udaipur District of Rajashtan: An Empirical Study, *Indian Journal of Accounting*, Vol. XLIX (2), pp. 77-82
- Amron, M.T., Ibrahim, R., & Chuprat, S. (2017). A Review on Cloud Computing Acceptance Factors, *Procedia Computer Science*, 124, 639-646
- An, Jiafu & Raghavendra Rau (2019): Finance, technology and disruption, *The European Journal of Finance*, DOI: 10.1080/1351847X.2019.1703024
- Armbrust, M., Fox, A., Griffith, R., Joseph, A.D., Katz, R., Konwinski, A., Lee, G., Patterson, D., Rabkin, A., Stoica, I. and Zaharia, M. (2010), A view of cloud computing, *Communications of the ACM*, Vol. 53, pp. 50-8.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 99-120.
- Beardmore, Adele (2020, Oct 12), *Uncovering the Environmental Impact of Cloud Computing*, retrieved from <https://earth.org/environmental-impact-of-cloud-computing/>
- Boonsiritomachai, Waranpong (2014), *Enablers affecting the adoption of Business Intelligence: a study of Thai small and medium-sized enterprises*, dissertation in College of Business, Victoria University, Melbourne, Australia
- Buyya, R., Yeo, C.S., Venugopa, S., Broberg, J. and Brandic, I. (2009), Cloud computing and emerging it platforms: vision, hype, and reality for delivering computing as the 5th utility, *Future Generation Computer Systems*, Vol. 25, pp. 599-616
- Chemjor, Emily Mworira; Charles Lagat; and Loice Maru, Effects of Technology Context on Cloud Computing Adoption in Small and Medium Enterprises in Nairobi County, Kenya, *IOSR Journal of Business and Management*, Volume 19, Issue 5. Ver. V. (May. 2017), PP 70-80.
- Cleary P., M. Quinn, (2016), Intellectual Capital and Business Performance: An Exploratory Study of the Impact of Cloud-Based Accounting and Finance Infrastructure, *Journal of Intellectual Capital*, Vol. 17. No.2, pp 255-278.
- Diamandis, Peter H & Steve Kotler, *The Future Is Faster Than You Think: How Converging Technologies are Transforming Business, Industries, and Our Lives*, New York, Simon & Schuster.
- Fernandes, B., U. N. Biswas, R.T.Mansukhani , A. Vallejo & C. A. Essau, (2020), The impact of COVID-19 lockdown on internet use and escapism in adolescents, *Revista de Psicología Clínica con Niños y Adolescentes*, Vol. 7 n°. 3- Septiembre 2020 - pp 59-65, doi: 10.21134/rpcna.2020.mon.2056
- Hart, Stuart L. (1995), A Natural-Resource-Based View of The Firm, *Journal of Academy of Management Review*, Vol. 20, No, 4, 966-1014
- Hart, Stuart L & Glen Dowell (2011), A Natural-Resource-Based View of the Firm: Fifteen Years After, *Journal of Management*, Vol. 37 No. 5.
- Kariyawasam, A.H.N, (2019), Analysing the impact of cloud-based accounting on business performance of SMEs, *The Business and Management Review*, Volume 10, Number 4, pp 34-41.
- Khanom, Tahmina (2017), Cloud Accounting: A Theoretical Overview, *IOSR Journal of Business and Management (IOSR-JBM)*, Volume 19, Issue 6, Ver V, pp 31-38.
- Kim, Jina & Eunil Park (2020): Understanding social resistance to determine the future of Internet of Things (IoT) services, *Behaviour & Information Technology*, DOI: 10.1080/0144929X.2020.1827033
- Kloppers, Sharon Rudansky & Kobus Van den Bergh (2019): The absorption and usage of cloud accounting technology by accounting firms in Cape Town for services provided to their clients, *African Journal of Science, Technology, Innovation, and Development*, DOI:10.1080/20421338.2018.1550933

- Krelja, K., Tomljanović, J., & Bronić, K. (2014). Usage of cloud applications by students. *Zbornik Veleučilišta u Rijeci*, 2(1), 13–26.
- Lakshmi, S. & Jansi Rani (2018), Cloud Computing in Banking: An Overview, *Research Review International Journal of Multidisciplinary*, Vol 3, Issue 10.
- Lembaga Penjamin Simpanan (2021), *Penguatan Regulasi dan Pengawasan Demi Perlindungan Konsumen FinTech*, retrieved from: https://lps.go.id/siaran-pers/-/asset_publisher/1T0a/content/penguatan-regulasi-dan-pengawasan-demi-perlindungan-konsumen-fintech?inheritRedirect=false
- Low, Chinyao; Y. Chen & M.Wu (2011), Understanding the determinants of cloud computing adoption, *Industrial Management & Data Systems*, Vol. 111 No. 7, pp. 1006-1023
- Mursid, Fauziah (2021, June 23), *Kominfo: Pengguna Internet Indonesia Terbesar ke4 di Dunia*, retrieved from <https://www.republika.co.id/berita/qv56gb335/kominfo-pengguna-internet-indonesia-terbesar-ke4-di-dunia>.
- Nayyar A., R. Rameshwar & A. Solanki, Internet of Things (IoT) and the Digital Business Environment: A Standpoint Inclusive Cyber Space, Cyber Crimes, and Cybersecurity, *The Evolution of Business in the Cyber Age* (pp.111-152), DOI:10.1201/9780429276484-6
- OECD (2020), Digital Disruption in Banking and its Impact on Competition <http://www.oecd.org/daf/competition/digital-disruption-in-financial-markets.htm>
- Oliveira, T. & Martins, M.F. (2010), Understanding e-business adoption across industries in European countries, *Industrial Management & Data Systems*, Vol. 110, pp. 1337-54.
- PWC (2020), *Financial Services Technology 2020 and Beyond: Embracing Disruption*, retrieved from: <https://www.pwc.com/gx/en/industries/financial-services/publications/financial-services-technology-2020-and-beyond-embracing-disruption.html>
- Rini, Annisa Sulisty, (2021) *Bank-Bank Tutup Kantor karena Digitalisasi, dari Mandiri hingga Panin*, retrieved from <https://finansial.bisnis.com/read/20210723/90/1420955/bank-bank-tutup-kantor-karena-digitalisasi-dari-mandiri-hingga-panin>.
- Roe, David (2020), *How IoT Is Impacting the Digital Workplace and Remote Working*, retrieved from: <https://www.cmswire.com/information-management/how-iot-is-impacting-the-digital-workplace-and-remote-working/>
- Sage (2020), Accountancy firms on the brink of ‘positive disruption’, Sage research says, retrieved from: <https://www.sage.com/en-ie/news/press-releases/2020/07/accountancy-firms-on-the-brink-of-positive-disruption-sage-research-reports/>
- Salgues, Bruno, (2018), *Society 5.0 - Industry of The Future, Technologies, Method and Tools*, Volume 1, Wiley
- Sampler, J. (2015). *Bringing Strategy Back: How Strategic Shock Absorbers Make Planning Relevant in a World of Constant Change*. San Francisco: Josey-Bass a Wiley Brand.
- Sandy, Ferry (2021, May 26), *Deretan 7 Ritel yang Tutup, Centro, Giant hingga Golden Truly*, retrieved from <https://www.cnbcindonesia.com/market/20210526092056-17-248457/deretan-7-ritel-yang-tutup-centro-giant-hingga-golden-truly/2>.
- Setiawan, S. R. (2017, September 13). *Nasabah Pindah Ke Online, 48.000 Kantor Bank Di Uni Eropa Tutup*, retrieved from [kompas.com:http://ekonomi.kompas.com/read/2017/09/13/120700626/nasabah-pindah-ke-online-48.000-kantor-bank-di-uni-eropa-tutup](http://ekonomi.kompas.com/read/2017/09/13/120700626/nasabah-pindah-ke-online-48.000-kantor-bank-di-uni-eropa-tutup)
- Shayan, J., Azarnik, Chuprat, S., Karamizadeh, S., & Alizadeh, M. (2014), Identifying Benefits and Risk Associated with Utilizing Cloud Computing, *arXiv:1401.5155*.
- Siddiqui S., M. Z. Shakir, A. A. Khan & I. Dey (2021), Internet of Things (IoT) Enabled Architecture for Social Distancing During Pandemic, *Original Research article*, retrieved from: <https://doi.org/10.3389/frcmn.2021.614166>.
- Schmidt, P.J., J. Riley & K.S. Church (2020), Investigating Accountants’ Resistance to Move beyond Excel and Adopt New Data Analytics Technology, *Accounting Horizons*, Vol 34, Issue 4, <https://doi.org/10.2308/HORIZONS-19-154>.
- Tan, S.K., Chong, S.C., Lin, B., and Eze, U.C. (2008), "Internet-based ICT adoption: evidence from Malaysian SMEs", *Industrial Management & Data Systems*, Vol. 109, pp. 224-44.
- Tarmidi, M., S. Z. A. Rasid, B. Alrazi, R. A. Roni (2014), Cloud Computing Awareness and Adoption among Accounting Practitioners in Malaysia, *Procedia - Social and Behavioral Sciences* 164, pp 569-574.
- Teese, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities And Strategic. *Strategic Management Journal*, Vol. 18:7, 509-533.
- Wahyudi, Ade (2020, February 15), *Indonesia Raksasa Teknologi Digital Asia*, retrieved from: <https://katadata.co.id/adewahyudi/analisisdata/5e9a57b01be97/indonesia-raksasa-teknologi-digital-asia>
- Wang, Y.M., Wang, Y.S. and Yang, Y.F. (2010), Understanding the determinants of RFID adoption in the manufacturing industry, *Technological Forecasting & Social Change*, Vol. 77, pp. 803-15.

- Yau-Yeng, P, Y. (2017), *An Exploration Risk in Using Cloud Accounting Information System in Australia*, Thesis in School of Accountancy, QUT Business School, Queensland University of Technology
- Zhu, K., Kraemer, K.L., Xu, S. and Dedrick, J. (2004), Information technology payoff in e-business environments: an international perspective on value creation of e-business in the financial services industry, *Journal of Management Information Systems*, Vol. 21, pp. 17-54.

Hasnawati

*Economics and Business Faculty Universitas Trisakti
Jakarta 11440 – Indonesia
Email: hasnawati@trisakti.ac.id*

Etty Murwaningsari

*Economics and Business Faculty Universitas Trisakti
Jakarta 11440 – Indonesia
Email: etty.murwaningsari@trisakti.ac.id*

Juniati Gunawan

*Economics and Business Faculty Universitas Trisakti
Jakarta 11440 – Indonesia
Email: juniatigunawan@trisakti.ac.id*