

Effect of Information Communication and Technology Use and Its Implications To Firm Performance In SMEs

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Abstract: *Research on firm performance during the Covid-19 pandemic, especially in SMEs, is important because it is related to efforts to survive in uncertain conditions due to the pandemic and the government's policy of restrictions that affect all businesses, both small and large. Therefore, this study aims to investigate the factors that can improve firm performance, namely ICT use and as an update from previous research we add the innovation variable as a mediation. This research was conducted on SMEs in Malang City by involving as many as 179 samples after validating the answers to the questionnaire. Questionnaires were distributed through google forms which were distributed directly to respondents. The data is collected and then tested for validity and reliability so that the data used is of high quality. After testing the quality of the data, it is continued with hypothesis testing which is carried out using the bootstrapping method using the Smartpls 3.0 application. The results showed that ICT use had a significant effect on firm performance. Furthermore, innovation did not succeed in mediating the effect of ICT use on firm performance.*

Keywords: *ICT Use, Innovation, Firm Performance, Small Medium Enterprise, Covid-19*

Abstrak: *Riset kinerja UKM di masa pandemi Covid-19 penting agar dapat bertahan dalam kondisi yang tidak menentu dan kebijakan pembatasan pemerintah yang berdampak pada semua pelaku usaha, baik kecil maupun besar. Oleh karena itu, penelitian ini bertujuan untuk mengetahui faktor-faktor yang dapat meningkatkan kinerja UKM yaitu penggunaan ICT dan sebagai pembaruan dari penelitian sebelumnya kami menambahkan variabel inovasi sebagai mediasi. Penelitian ini dilakukan pada UKM di Kota Malang dengan sampel sebanyak 179. Kuesioner disebarikan melalui google form. Data dikumpulkan kemudian diuji validitas dan reliabilitasnya sehingga data yang digunakan berkualitas tinggi. Setelah dilakukan pengujian kualitas data dilanjutkan dengan pengujian hipotesis yang dilakukan dengan menggunakan metode bootstrapping menggunakan aplikasi Smartpls 3.0. Hasil penelitian menunjukkan bahwa penggunaan ICT berpengaruh signifikan terhadap kinerja perusahaan. Selanjutnya, inovasi tidak berhasil memediasi pengaruh penggunaan ICT pada kinerja perusahaan.*

Kata kunci: *Penggunaan TIK, Inovasi, Kinerja Perusahaan, UKM, Covid 19*

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INTRODUCTION

The Covid-19 pandemic has become a challenge as well as a threat to all countries in the world, especially Indonesia, it becomes a challenge if in responding to this pandemic always innovating within the limitations of movement and space due to the implementation of restrictions on community activities that have been in effect since January 2021. This restriction requires all companies to work from home (WFH) as much as 75% and working from the office (WFO) 25% by implementing strict health protocols. This condition is a new rule that can have an impact on the company's performance (Nasution & Rosanti, 2020). The importance of an innovation from each individual employee as a response to the problems that occur can affect the company's performance. This innovation can be in the form of optimizing the optimal and efficient use of information, communication and technology (ICT). ICT use is the most important part in this pandemic, considering that the target of the marketing department is still running while there are limitations of movement and space, ICT use is believed to be able to improve firm performance, including increasing sales.

Several previous studies have tested ICT use to improve firm performance (DeStefano et al., 2018; Grant & Yeo, 2018; Kumar et al., 2020; Yunis et al., 2018). Information System (IS) becomes a resource with many features related to dynamic capabilities. This stems from the fact that ICT and IS can greatly support organizations operating in dynamically and rapidly changing markets and conditions. The dynamic capability view has been used by many studies examining the contribution of ICT to enterprise value (Kindstrom et al., 2013). (Del Gaudio et al., 2020) have also found research results that ICT provides a positive role in improving performance measures. Moreover, he also finds that the overall financial stability in the banking industry is enhanced intensively with the adoption of IT and financial technology, which increases the distance to failure.

One that can affect the firm performance is innovation (Yunis et al., 2018). Innovation has been reported to be able to improve company performance. Innovation is an idea or idea in answering the problems that occur, good innovation is an idea that appears and can be applied in the company and has a positive impact on company performance such as increased sales, budget efficiency and effectiveness of working time. Therefore, the most important thing is to identify and sort out the best ideas from the

various ideas that arise from each employee. (Chege et al., 2020; Hanelt et al., 2020; Zhang et al., 2020) states that innovation can improve company performance. In contrast to the results of research from (Darroch, 2005) who found that innovation directly had no significant effect on company performance. (Feng et al., 2020; Kijkasiwat & Phuensane, 2020) innovation has a direct effect on company performance. There are inconsistencies from research (Darroch, 2005) there are still research gaps to be filled.

This study answer the call from (Gerguri-Rashiti et al., 2017) who conducted research using Business Environment Enterprise Performance Survey (BEEPS) data in the period 2002, 2005 and 2008. However, this study attempts to fill in the gaps of previous unresolved research, and also this research focuses on the small medium enterprise. So this study aims to examine the effect of ICT use on company performance through innovation as a mediation. This research contributes to the literature on ICT use, innovation and firm performance. First, this research contributes to the literature that explains the role of ICT use, innovation in improving firm performance during the covid 19 pandemic. Second, this study again examines the theory of dynamic capabilities of ICT use and innovation translation to be applied during the covid 19 pandemic whether it is still reliable or not.

LITERATURE REVIEW

Information Communication and Technology Use

ICT use is defined as a means to enable businesses to compete on a global scale through increased efficiency, with closer customer and supplier relationships (Alam & Noor, 2009). The use of ICT that is not optimal can affect organizational performance. (Wade & Hulland, 2004) states that the information system is a resource that has many dynamic features and capabilities. This is derived from the fact that ICT and IS can greatly support organizations to operate dynamically and rapidly in changing market conditions. The use of ICT plays an important role in the survival of the organization, and ICT can link supply chains, reduce costs resulting from operating processes and can improve service quality. Some indicators of the use of ICT include (Davis, 1989; Yunis et al., 2018).

Innovation

Innovation is a result-oriented measure such as the quantity of a new product that has been successfully developed for application (O'Cass & Weerawardena, 2010). The level of innovation describes the extent to which the company can accept new ideas, analyze new ways of solving problems, think creatively about ways and methods of operation to be carried out, support and encourage to continue to create new approaches to meet market needs that are constantly moving and growing (Amabile et al., 1996; Calantone et al., 2002; De Jong & Den Hartog, 2007). Innovation is an effort to survive in any conditions, in order to continue to increase sales, with new ways that are fresher and more adaptive even in the worst conditions. The items used to measure innovation are (Gatignon et al., 2002; Yunis et al., 2018).

Firm Performance

Performance is the most important work attitude because it can improve the effectiveness and performance of the organization (Jankingthong & Rurkkhum, 2012; Pawirosumarto et al., 2017; Siswanto et al., 2019) Therefore, performance is the main work attitude that is the concern of the organization or company. Firm performance can be interpreted as a managerial measure in assessing the work of employees, the work can be assessed quantitatively and qualitatively. The indicators used in performance are profitability, market share, sales growth, overall performance, and stakeholder satisfaction (Lumpkin & Dess, 1996; Yunis et al., 2018).

Hypothesis Development

ICT Use and Firm Performance

The relationship between the use of ICT on company performance as developed by (Teece & Pisano, 2003) who argue related to the organization's ability to create new things, reshape, assimilate knowledge and skills, stay ahead in a rapidly changing competitive environment. Global market winners are those who demonstrate the company's fast and timely response, flexible product innovation, supported by effective management capabilities to coordinate and disseminate internal and external competencies, which distinguish the company from other companies, able to create something unique that is difficult to imitate. Thus, according to the theory of dynamic capabilities of the company, ICT use can affect performance. The results of research on ICT use on company performance are similar to previous research from (Aesaert & Van Braak, 2015; DeStefano et al., 2018; Grant & Yeo, 2018; Tarut & Gatautis, 2014; Yunis et al., 2018). Furthermore, the hypothesis can be formulated as follows:

H1: ICT Use affect on firm performance.

ICT Use and Firm Performance Mediated Innovation

(Yunis et al., 2018) stated that the use of ICT can result in better organizational performance. Innovative companies are companies that are active in initiating a strategy for new products, services and business models to outperform the competition in the market. Furthermore, (Roberts & Amit, 2003) said that successful innovation can become a company that has a competitive advantage and can increase profitability which is categorized as organizational performance. In addition to being the influence of ICT use, work innovation can also contribute to company performance (Wang & Wang, 2012). Previous research found that ICT use can increase employee innovation (DeStefano et al., 2018; Irani et al., 2013; Kumar et al., 2020; Odell et al., 2020; Yunis et al., 2018) also found a positive relationship between ICT use on organizational performance including innovation. Therefore, the proposed hypothesis is as follows:

H2: Innovation mediates the relationship between ICT Use and firm performance.

RESEACRH METHOD

This study uses three variables, namely ICT use, innovation and firm performance. Data were collected using a questionnaire from 1 (strongly disagree) to 5 (strongly agree). ICT use is measured using six scales from (Davis, 1989) namely "Frequent users of Information and Communication Technology and Information systems in organizations", "I consider myself to use my organization's technology and information systems frequently", "Integration of information and communication technology in work processes", "Using information and communication technology capabilities and information systems", "Management provides support in decision making", and "Completion of tasks using technology, information and communication as well as management information systems". Innovation is measured using 8 measurement items, namely "My company is pursuing new knowledge", "The company I work for is always looking for the latest technology", "The leadership continues to investigate in various directions", "All employees are required to explore in new areas", "The company continues to strive to make new discoveries", "Employees are required to always have breakthrough improvements", "High R&D spending in the industry", and "High R&D spending in the company" (Gatignon et al., 2002; Yunis et al., 2018).

The last variabel firm performance is measured using (Lumpkin & Dess, 1996) namely "Company performance is better than competitors", "High level of efficiency in company operations", "Produktivitas perusahaan tinggi", "The enterprise market continues to grow", "High level of employee satisfaction in our company", "Customers are satisfied with our service", and "Overall, the company's performance is high and improving". The three variables above use a Likert scale measurement. This research was conducted at SME's in Malang, by distributing 250 questionnaires using Google Form, but only 179 returned questionnaires. The questionnaires were distributed on 2 March - 30 June 2021. Furthermore, the data were analyzed using partial least squared structural equation modeling (PLS-SEM). The PLS-SEM is used because this research is exploratory or an extension of existing theories and the model used is relatively complex (Hair et al., 2011). Consistent with approach by (Chin & Newsted, 1999) this study uses two steps, first testing the validity and reliability, then testing the structural model used to test the hypothesis.

RESULT AND DISCUSSION

Result

The respondents in this study included 90 men (50%) and the rest were women. This illustrates that the sample is balanced between male and female. Then, the majority of respondents aged 22-25 years 79 people (44%), 26-29 years 51 people (28%), 42 people (23%) aged 30-33 years and aged >34 years 7 people (5%). So that in this study already have samples that represent from various layers of age or across generations. Then, the majority of respondents had bachelor's education 109 people (60%), the rest 50 people (27%) diploma and 20 high school seniors (13%). Furthermore, the majority of work experience is 5-10 years 81 people (45%), >10 years 55 people (31%) and <5 years 43 people (24%). This illustrates that respondents have described employees with little to much experience. The results shown in Table 1.

Table 1. Respondent Demographics

No.	Characteristics	Description	Frequency	%
1	Gender	Male	90	50%
		Female	89	50%
2	Age	22-25 year	79	44%
		26-29 year	51	28%
		30-33 year	42	23%
		>34 year	7	5%
3	Education	Senior High	20	13%
		School	50	27%
		Diploma	109	60%
		Bachelor		
4	Experience	< 5 years	43	24%
		5-10 years	81	45%
		> 10 years	55	31%

Measurement Model Analysis (Outer Model)

As explained in the method section, this study uses two steps of analysis, the first is validity and reliability testing which is included in the category of model measurement analysis. In validity testing there is discriminant validity which uses the loading factor value and discriminant validity by looking at the average variance extracted value endekata (Chin & Newsted, 1999). The results of the validity test (ICT use, Innovation and Firm performance) show that each indicator has a loading factor value greater than 0.70 (Hair et al., 2015), then on the average variance extracted each variable has an AVE value of 0.623, 0.670 and 0.641 which means it is already above 0.50. It can be said that the research instrument is valid. In reliability testing, composite reliability (CR) values can be used and in this study it is known that the CR value of the ICT use variable is 0.908, Innovation is 0.942 and Firm performance is 0.926, which means that each variable is reliable because the CR value is above 0.70 (Hair et al., 2017). It can be concluded that the instrument is reliable. For more details, see table 2 below.

Table 2. Data Quality Test

Variable	Item	Loading Factor	Result	Composite Reliability	AVE	Result
ICT Use	ICT1	0.764	Valid	0.908	0.623	Reliable
	ICT2	0.816				
	ICT3	0.747				
	ICT4	0.772				
	ICT5	0.832				
	ICT6	0.803				
Innovation	INOV1	0.824	Valid	0.942	0.670	Reliable
	INOV2	0.741				
	INOV3	0.763				
	INOV4	0.906				
	INOV5	0.835				
	INOV6	0.767				
	INOV7	0.848				
	INOV8	0.850				
Firm Performance	PERFOR	0.783	Valid	0.926	0.641	Reliable
	M1	0.895				
	PERFOR	0.811				
	M2	0.783				
	PERFOR	0.788				
	M3	0.819				
	PERFOR	0.714				
	M4					
	PERFOR					
	M5					
	PERFOR					
	M6					
	PERFOR					
	M7					

Structural Model Analysis (Inner Model)

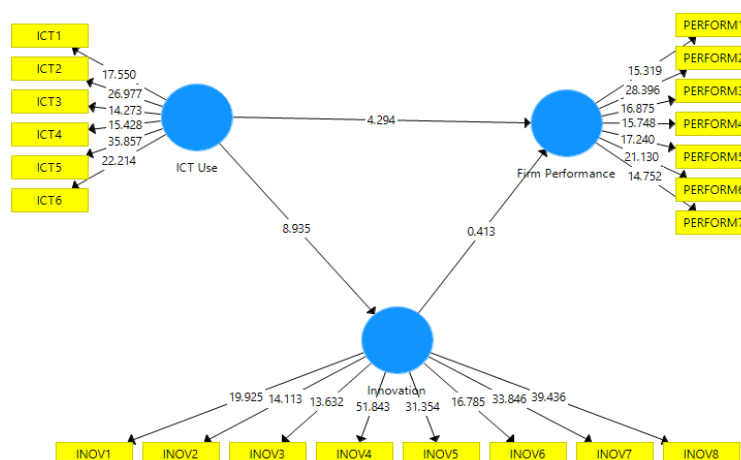


Figure 1. Structural equation modeling results

For hypothesis testing using structural model testing as shown in Figure 3 above, the image is the result of bootstrapping testing of the Smartpls 3.0 application. The picture above shows that the research has several hypotheses that will be verified through empirical data obtained directly from the field. ICT use has a direct effect on firm performance and the role of innovation in mediating the effect of ICT use on firm performance is the final hypothesis. In the bootstrapping analysis with 5000 resampling we followed (Hair et al., 2017)

Table 3. Direct Effect

	Direct Effect	Sample Mean	T-Statistic	T-Table	Result
H ₁	ICT Use → Firm Performance	0.329	4.294		Accepted
H ₂	ICT Use → Innovation	0.391	8.935	1.96	Accepted
H ₃	Innovation → Firm Performance	-0.030	0.413		Rejected

Tables 3 and 4 are the results of the research in brief, it can be explained that the direct effect of ICT use on firm performance ($t = 4.294 > 1.96$), then the effect of ICT use on innovation ($t = 8.935 > 1.96$) and the direct effect of innovation and firm performance ($t = 0.413 < 1.96$). There is one hypothesis that is not in line with expectations, namely innovation on firm performance. Furthermore, table 4 is used to determine the role of the mediating variable (innovation) in the influence of ICT use on firm performance ($t = 0.403 < 1.96$), it is concluded that the hypothesis is rejected.

Table 4. Indirect Effect

Hypothesis	Mediation
Indirect Effect (T-Statistic)	Innovation
ICT Use and Firm Performance	0.403

Discussion

As predicted earlier, ICT use can improve firm performance on SMes. This study supports several previous studies that have tested ICT use in improving organizational performance (DeStefano et al., 2018; Grant & Yeo, 2018; Kumar et al., 2020; Yunis et al., 2018). This research has succeeded in empirically proving that the optimal use of ICT is able to help SMEs more quickly transform in an uncertain situation, especially during the COVID-19 pandemic that has hit Indonesia and various countries in the world since late 2019. The pandemic conditions that led to a policy of limiting community activities made people's purchasing power decrease drastically. The challenges are even greater for small and medium-sized business owners in order to survive in the midst of uncertainty and worsening economic conditions. However, based on empirical data from the field, it can be seen that entrepreneurs have been using information, communication and

technology facilities to increase sales. One way to do this is by integrating ICT in the work process, from sales promotion, order processing to delivery, all using ICT. In promotion, business owners maximize the display of the dynamic capabilities of their website and social media as a marketing avenue to increase company value (Kindstrom et al., 2013).

The results of this study also support (Del Gaudio et al., 2020) who have found research results that ICT provides a positive role in improving performance measures. The relationship between the use of ICT on company performance is in accordance with the opinion of (Teece & Pisano, 2003) who argue related to the organization's ability to create new things, reshape, assimilate knowledge and skills, stay ahead in a rapidly changing competitive environment. The samples in this study can be said to be market winners because they show a fast and timely response from the company, flexible product innovations, supported by effective management capabilities to coordinate and disseminate internal and external competencies, which distinguish the company from other companies, are able to create something unique that is difficult to imitate. Thus, the results of this study empirically support the theory of dynamic capabilities of companies, ICT use can affect performance.

Then the mediating role of innovation in this study is rejected, this illustrates that innovation in SMEs in Malang cannot significantly improve firm performance. This is different from the results of previous research from (Chege et al., 2020; Hanelt et al., 2020; Zhang et al., 2020) which states that innovation can improve company performance. However, the results of this study support the results of research from (Darroch, 2005) who found that innovation directly had no significant effect on company performance. Conditions in the field show that some SME owners still have few innovations in the form of pursuing new knowledge, using the latest technology, demands for employees to innovate, low research and development budgets are also indicators that make innovation in SMEs unable to improve firm performance significantly. The results of this study have also filled the gaps of the research (Gerguri-Rashiti et al., 2017) by including innovation as mediation as renewal.

CONCLUSION

This study found facts in the field that ICT use can significantly improve firm performance. Furthermore, it can be seen that entrepreneurs have been using information, communication and technology facilities to increase sales. One way to do this is by integrating ICT in the work process, from sales promotion, order processing to delivery, all using ICT. In promotion, business owners maximize the display of the dynamic capabilities of the website and social media. in the field there is also a fact that innovation is not proven to improve firm performance. Some SME owners are still few who have innovation in the form of pursuing new knowledge, using the latest technology, the demands on employees to innovate, low research and development budgets are also indicators that make innovation in SMEs unable to improve firm performance. Furthermore, suggestions for SME business owners, especially in the city of Malang, are to continue trying to survive amid

the uncertainty of Indonesia's current economic conditions due to the pandemic, the researcher understands that with the restriction policy by the government, all businesses, both large and small, are affected, but based on some findings from research previously it was clear that innovation was one of the paths that each business owner could take, this innovation could be in the form of targeting employees to continue to provide their best ideas, increasing the R&D budget, besides that business owners must continue to look for the latest technology and use it in the work process, continue to pursue new knowledge from seminars, training and so on in an effort to enrich knowledge. So that business owners and employees can work together in terms of innovation, complementing each other so that innovation can significantly improve firm performance.

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