

The Role of Collaborative Strategy and Dynamic Capability in Increasing Firm Performance in Telecommunication Companies in Indonesia: Innovation Capability as Mediation

Moch. Choiril Anwar, Asep Hermawan, Robert Kristaung

Corresponding Author: Moch. Choiril Anwar

Doctoral Program in Economics, Trisakti University, Indonesia

ABSTRACT: *The aim of this study is to analyse the impact of collaborative strategy and dynamic capability on firm performance that is mediated by innovation capability based on product and process, technology, as well as business models on telecommunications companies in Indonesia. In this research project, the hypothesis test was carried out using SEM. The samples were collected using purposive sampling techniques on non-probability samples. Collaborative strategy has a positive impact on firm performance that is mediated by innovation capabilities based on technology and business models and collaborative strategy does not have a positive influence on company performance when mediated by product and process innovation capacities. From the three dimensions on innovation capability, only technology has a positive impact on firm performance while products and processes and business models have no positive impact. This research provides insights into the management of telecommunications companies regarding important variables in the company's innovation capabilities that are influenced by the collaborative strategies taken and affect the performance of the company. The research has three aspects of innovation: (1) a collaborative strategy that does not have a positive impact on firm performance when mediated by product and process-based innovation capabilities; (2) a collaborative strategy only has a positive effect on firm performances when mediated by technology and business model innovation capacities; (3) a cooperative strategy has no direct positive impact upon firm performance.*

KEY WORD: *Collaborative Strategy, Dynamic Capability, Innovation Capability, Product and Process, Technology, Business Model, Firm Performance*

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I. INTRODUCTION AND LITERATURE REVIEW

In today's competitive business environment where companies are required to constantly grow and have high competitiveness in order to improve business performance, companies must be sensitive to existing competition and a dynamic environment by doing innovation. Christensen (1997) in his research on Disruptive Technology shows how the industry is experiencing a downturn due to a lack of innovation and the emergence of new entrants through a change innovation involving technologies in which produced products can be cheaper, easy to use, and available on the market. In addition, Robbins and Judge (2017) stated that innovation is a result of ideas or solutions that are useful to stakeholders.

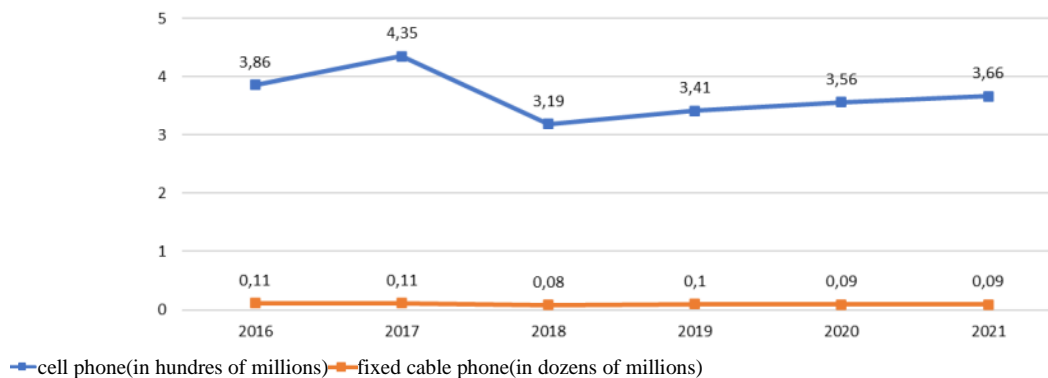
That is why often the stakeholders of the company give creative ideas to be a strategy for the future development of the enterprise and respond to the disruption that occurs. One of the companies' strategies is to implement a collaborative strategy. By doing collaboration there are several advantages among them are better management of disruption, smaller losses on company performance, as well as the ability to face higher business challenges around Collaborative Network (CN) partners (Andres & Marcucci, 2020).

Today's era of more open access to communication and information has greatly changed the life and social patterns of societies and can be felt in general. It also impacts all industries to be able to adapt to evolving lifestyle and social patterns and become trends in society, such as lifestyle learning or working from home, as well as the increasing trend of e-commerce (Mastel, 2021). These unwilling changes in life and social patterns have forced the national industry, especially the telecommunications sector, to become more sensitive to these changes and to accelerate the development of adequate infrastructure for society due to the increased volume of communication and information in society.

Figure 1 shows the rapid penetration of cell phones in Indonesia compared to cable phones where mobile phones experienced an increase in 2021 compared with 2019 while cable phones experienced a decrease. (BPS, 2021). The number of mobile phone customers in 2021 has surpassed the number of

365,872,608 customers according to data of the Ministry of Communications and Informatics, and this figure exceeds the population of Indonesia by 2020 by 270 million people (272 million people by 2021.). It can be said that all Indonesians have become mobile phone customers or have had mobile phone numbers. Data from the Association of Operators of Telecommunications Networks (APJATEL) showed that optical fibre penetration into new households reached 10% of the 40% targeted against the total territory of Indonesia by 2021. (Mastel, 2021). It is therefore necessary to accelerate the development of the telecommunications network infrastructure as soon as possible.

Figure 1: Number of Phone Customers by Type of Network Maintenance, 2016 by 2021



Source: *The Statistical Centre, 2021*

The growth of the number of telecommunications operator companies in 2021 continues to increase along with the large population and very large territory. By 2021, 1,307 companies had obtained a license to organize telecommunications services in Indonesia. (BPS, 2021). This number has increased compared to 2020, when there were only 959 companies. According to the Ministry of Communications and Informatics, the number of major telecommunications operators in Indonesia by 2021 reached 271 companies: fixed network companies and mobile network companies. In addition, since the development of network infrastructure telecommunications in Indonesia in the era of the 80s to the present, has many companies that move in this sector have experienced a downturn even not seldom undergo bankruptcy as well as changes in business models and strategies in order to survive with such rapid technological changes. The survey conducted by APJATEL among its 54 members showed 76% reduced capacity and 80% stopped service (Mastel, 2021).

Telecommunications industry companies will always innovate to find new creative ideas in response to existing disruptions. So that this company is asked to always provide a competitive advantage by continuing to innovate both internally and through technological partnerships and also by continuing to invest in infrastructure development to get added value. This can be demonstrated by the collaboration between service providers (operators) and also with OTT (Over the Top) or among device providers (vendors) and also their suppliers and even with external research institutions. The rapid and equitable growth of telecommunication network infrastructure has had a significant impact on hardware provider companies (vendors), where technological factors and business models, as well as compliance with local rules/regulations are absolute requirements to be accepted by the market. Each vendor has its own technology platform that is constantly evolving. But along With the development of technology, we need an advanced device that accommodates various platforms, is reliable, and is easy to use.

This is what encourages various companies to carry out collaborative strategies with other parties. Collaboration between equipment provider companies by combining advanced technology features is a form of collaborative strategy in terms of fulfilling local content requirements (TKDN). These are some examples of collaborative strategies at the level of telecommunications equipment provider companies. At the level of telecommunications service providers and operators (service providers), this form of collaboration places more emphasis on (sharing) resources and the scope of work for telecommunications network maintenance services in the field. In addition, companies at this level are required to be more dynamic in their capacities and skills needed, as well as on evolving business models. Along with the rapid changes in device technology, it is not uncommon for these service provider companies to go bankrupt due to the slow transformation of skills and the required business model. Therefore, telecommunications companies need to develop a collaborative strategy for creating innovation in an effort to deal with disruptive innovation.

Innovation is the only way for telecommunications companies to survive. This is shown in research on company innovation capability by Rajapathirana and Hui (2018), where the test results show that there is a relationship between company resources and innovation capability. According to him, it will be easier for

companies to find their innovations if they are able to utilize all of their resources, whether those innovations relate to the organization, products, processes, or marketing. The same research results were shown by Hanchi and Kerzazi(2020) in their research on innovation capability, which is divided into 3 things, namely Technological IC, Product and Process IC, and Business Model IC, reviewed in its Dynamic Capability. Besides that, the strong influence of flexible human resource management on innovation capability will increase power corporate innovation (Javed et al., 2017).

Dynamic Capability is a measure of a success companies in response to disruption and business competition. In addition, this dynamic capability is a major factor for companies to move beyond short-term profits and create sustainable competitive advantages where in carrying out their business, all compatibility between internal and external factors must be dynamic. Research on the relationship between dynamic capability and innovation was also carried out by Hermawati and Gunawan (2019), and this research demonstrated the role of dynamic capability as the main requirement for companies to innovate. The phenomenon of collaboration for innovation in a dynamic environment supports Christensen's theory, which is explained in more detail by Denning (2016), where the innovations that occur are aimed at sustaining innovation, namely product optimization to be better and remain competitive in a dynamic market. Of course, dynamic market conditions must be responded to by companies to then take strategic steps as proposed by Teece and Aiger (2017) regarding Dynamic Capability which focuses on sensing, taking new opportunities and reconfiguring with goal of achieving excellence competitive and sustainable competition.

The increasing collaboration of innovations carried out in this dynamic era shows how important it is for a company to have broader and more effective creative ideas both internally and externally (Jiao et al., 2019). Industry players can feel the business conditions that are currently undergoing transformations as well as creating long-term opportunities by reconfiguring existing resources, namely through exploitation and exploration (Lee & Kim, 2019). In addition, researchers Andres and Marcucci (2020) show that collaboration can prevent companies from being disrupted, reduce loss numbers, as well as having a high ability to face challenges better. Besides that, the Operating Performance will experience a better change. Liu et al. (2020) for companies that carry out a collaborative strategy.

Several empirical findings about innovation that are influenced by collaborative strategy and dynamic capability have been widely studied. Some of them are collaborations between companies and external parties that have a strong influence on product and process innovation (Radicid & Pinto, 2019; Najafi-Tafani et al., 2018; Mitrega et al., 2017; Zhi Yang, 2018; Ilmudeen et al., 2021; Rajapathirana & Hui, 2018; Hanchi & Kerzazi, 2020), as well as the influence of collaborative strategy on firm performance (Ramdani et al., 2018). While empirical findings of the close relationship between dynamic capability and innovation capability are shown by several studies with research objects in fast-growing industries, such as Rotjanakorn et al. (2020) on the automotive industry in Thailand and Ramdani et al. (2018) on the Indonesian telecommunications industry.

Although many studies show a positive effect of dynamic capability on innovation capability, especially product and process (Sasmoko et al., 2019; Yang, 2018; Ilmudeen et al., 2021; Ferreira & Coelho, 2018; Furinto & Wasono, 2018; Lubis et al., 2020), but other factors that are the focus of innovation have not been studied more broadly, such as technology (Li et al., 2018) and business models (Hanchi & Kerzazi, 2020; Arifiani et al., 2022; Wasono et al., 2018; Mihardjo et al., 2019) which will be part of this study. Other previous research explained the relationship between several research variables in general but did not explain in more detail the factors or other dimensions of the variables in the research.

Other previous researches explained the relationship between several variables of the study in general but did not explain in more detail other factors or dimensions in each of variables of the research. In addition, many researchers conduct their research on telecommunications operators (operators) only and do not conduct samples of research on other telecoms industries such as vendors (vendors) and service organizers (subcontractors), where these companies are also affected by the decline in growth due to the domino effect that occurs on the service companies (operators); even there are those who go into bankruptcy to make a massive transformation in both technology, products and processes, and business models. That is why it is necessary to have a business strategy on this national telecommunications industry that can be optimized by doing a collaborative strategy with other companies to minimize risks and dynamic conditions (Nashiruddin et al., 2019).

1.2 Research Objectives

The objective of the research is to analyse

- a. The impact of Collaborative Strategy on Innovation Capability based on product and process dimensions, technology and business model.
- b. The impact of Dynamic Capability on Innovation Capability based on product and process dimensions, technology and business model.

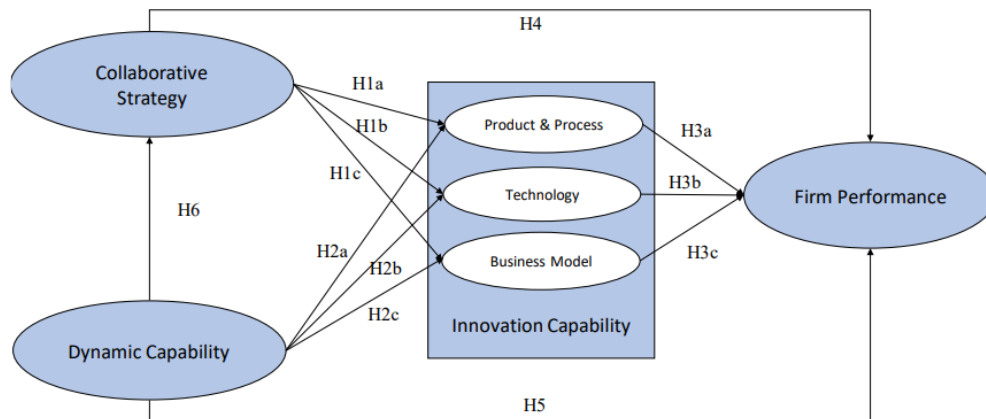
- c. The role of Innovation Capability based on the product and process, technology and business model dimensions as a mediation towards Firm Performance

1.3 Research Methodology and Data Analysis

The study uses a descriptive quantitative approach in strategic management science where the authors will examine the relationship between variables in the analytical units studied to test the hypotheses developed based on previous research as well as the testing of the relationship among variables (Creswell, 2009). This descriptive method aims to know the nature and deeper relationships between two or more variables by observing certain aspects more specifically to obtain data that corresponds to the existing problem for the purpose of research, where the data is then processed, analysed and further processed on the basis of the theories that have been studied so that the data can be drawn a conclusion.

The type of research used in this writing is causality research where between variables has a relationship that is cause-and-effect, so it can be understood that in this case there is an independent variable (variable that affects) in this study its independent variables are Collaborative Strategy and Dynamic Capability, while the dependent variable in this research is Firm Performance. In addition, there is a variable of mediation that is innovation capability. In this study will be measured how much the influence of the independent variable on the dependent variable with the mediated variable. The conceptual framework can be seen on Figure 2 is based on a lot of previous research.

Figure 2: The Conceptual Framework



Based on Figure 2 the following hypothesis can be developed:

H1a: There is a positive impact of Collaborative Strategy on Innovation Capability based on the product and process dimension.

H1b: There is a positive impact of Collaborative Strategy on Innovation Capability based on technology dimension.

H1c: There is a positive impact of Collaborative Strategy on Innovation Capability based on business model dimension.

H2a: There is a positive impact of Dynamic Capability on Innovation Capability based on the product & process dimension.

H2b: There is a positive impact of Dynamic Capability on Innovation Capability based on technology dimension.

H2c: There is a positive impact of Dynamic Capability on Innovation Capability based on business model dimension.

H3a: There is positive impact of Innovation Capability on product & process dimension on Firm Performance.

H3b: There is positive impact of Innovation Capability on technology dimension on Firm Performance.

H3c: There is positive impact of Innovation Capability on business model dimension on Firm Performance.

H4: There is positive impact of Collaborative Strategy on Firm Performance

H5: There is positive impact of Dynamic Capability on Firm Performance

H6: There is positive impact of Dynamic Capability on Collaborative Strategy

Once the conceptual framework is formed, then the questionnaire is created that will later use the Likert scale. The questionnaire will be distributed to respondents. The respondents were MASTEL member, Indonesian Telematics Society, a professional association which is a partner of the Ministry of Communication

and Informatics of the Republic of Indonesia in terms of national regulations, policies and strategies then the population in this research was 221 companies. The sampling method used was purposive sampling where this method was carried out on the basis of the researcher's considerations which focuses on specific objectives and is addressed to respondents or stakeholders who are credible in their fields. The sample size of this study refers to the sampling reference. According to Hair et al. (2010) the recommended sample size using the Maximum Likelihood Estimation (MLE) technique is 100-200 respondents so that interpretation estimates can be used with the Structural Equation Model (SEM), for this the number of samples is determined based on the results of the minimum sample calculation. In method SEM, the number of samples required is at least 5 times the number of indicator variables (Ferdinand, 2014). In addition, according to Hair et al. (2014) that the sample size guidelines depend on the number of indicators and can be multiplied by 5 to 10. Based on the collected questionnaire data, there were 132 respondents who filled out the questionnaire and were eligible to be used for further processing of data processing with SEM.

The data that has been filled in by the respondent is put together in a tabulation data type .csv (Comma Separated Values). Processing this data is to find out the shape of the model, loading factor, and the significance of each latent variable. In research using SEM-PLS data processing, running is carried out repeatedly so that the value of validity and reliability is fulfilled.

1.3.1 Descriptive Statistics Analysis

This analysis aims to explain a data on the sample that has been taken. This study uses descriptive statistics that serve to provide a description or picture of objects that have been studied through sample or population data. (Sugiyono, 2010). This descriptive statistic uses Mean and Standard Deviation (SD) where mean is the average of the total answer of the respondent while standard deviation is the spread of data on a sample to see how far or how close the data value to the average. Standard Deviation (SD) indicates the standard of data deviation from the average value. The smaller the standard deviation, the data is closer to the average, but the larger the data variation.

Collaborative Strategy data has a ratio of 4,251 which shows a positive view of the management of the company towards the application of collaborative strategy carried out on several external stakeholders such as customers, competitors, service providers (suppliers), as well as universities and other research institutions. The highest ratio with a value of 4,780 lies in the collaboration indicator with the customer that can improve the business overview in the future where the perception of employees to this indicator indicates that the high confidence of the employees in the company's business survival ahead with the presence of collaboration that occurs between the company and the customer where innovative and superior products can have a positive impact on the improvement of company performance.

The lowest rate with a rating of 3,644 is on the indicator of collaboration with competitors can improve the efficiency of the company where this indicates a doubt in the company's management of the competitor about its influence on the company's efficiency. Workers judge that competitors are not always strategic partners in innovation collaboration, but with strict enterprise competition can harm the company either on the product or service side, brand violation, price warfare even negative propaganda that is detrimental to the company.

Dynamic Capability data has a ratio of 4,417 which shows that companies are making significant efforts both internally and externally in the face of rapidly changing environments. High openness and incentive for employees to deliver ideas and innovations as well as their implementation give positive value to employees. The highest ratio with a value of 4,515 lies in the sense dimension, an indicator of the management's incentive to give employees an opportunity in delivering positive ideas that build where the workers' perception of this indicator indicates that employees are given an excellent opportunity by the management to deliver positive ideas while they work. The lowest ratio with a value of 4,303 lies in the sense dimension, an indicator of the sensitivity of management to technological changes that can threaten the sustainability of the company, which indicates good implementation in each company.

Innovation Capability data has a ratio of 4,433 which shows workers' perception of the application of Innovation capability in companies whose majority supports innovation that focuses on products & processes, technologies, and business models. The highest ratio with a value of 4,561 lies in the product & process dimension, i.e. the human resources owned by the company with the expertise needed to improve the operating process where the perception of the workers towards this indicator indicates that the workers have been equipped with sufficient expertise in their efforts to improve operational processes within the company. The lowest ratio with a value of 4,258 lies in the product & process dimension, which is an indicator of the company's ability to have better R&D than its competitors, which indicates the company's commitment to product and process development through better R & D than its rivals.

Firm Performance data has a ratio of 4,394 where positive views and support of the majority of employees for innovative products on the improvement of the company's performance. The highest ratio with a value of 4,500 lies in the financial dimension of the sale of innovative products which is an important factor in

an effort to increase sales (sales) where the perception of workers to this indicator shows that innovative products are essential in increasing sales. The lowest ratio with a value of 4,220 lies in the financial dimension, i.e., in the indicator of cost reduction by management in order to be efficient. Respondents judge that cost should be thoroughly evaluated and can be done in improving efficiency.

1.3.2 The Hypothesis Testing Analysis

The results of the hypothesis testing in this study can be seen in Table 1 for the outcome of the test of direct influence hypotheses, while in Table 2 for the result of the study of indirect or mediated influence hypotheses.

Table 1: Testing the Direct Influence Hypothesis

Hypothesis	Description	Influence Affect	T Statistics $\geq 1,96$	P Values $< 0,05$	Decision
H1a	There is a positive impact of Collaborative Strategy on Innovation Capability based on the product and process dimension	0.094	1.336	0.182	H1a not supported
H1b	There is a positive impact of Collaborative Strategy on Innovation Capability based on the Technology Dimension	0.182	2.283	0.023	H1b Supported
H1c	There is a positive impact of Collaborative Strategy on Innovation Capability based on the business model dimension	0.140	2.232	0.026	H1c Supported
H2a	There is a positive impact of Dynamic Capability on Innovation Capability based on the product & process dimension	0.705	11.342	0.000	H2a Supported
H2b	There is a positive impact of Dynamic Capability on Innovation Capability based on the Technology dimension	0.677	9.669	0.000	H2b Supported
H2c	There is a positive impact of Dynamic Capability on Innovation Capability based on the business model dimension	0.712	11.839	0.000	H2c Supported
H3a	There is a positive impact of Innovation Capability based on product and process dimensions on firm performance	0.068	0.536	0.592	H3a Not Supported
H3b	There is a positive impact of Innovation Capability based on the dimension of Technology on Firm Performance	0.443	2.619	0.009	H3b Supported
H3c	There is a positive impact of Innovation Capability based on the dimension of Business Model on Firm Performance	0.049	0.267	0.789	H3c Not Supported
H6	There is a positive impact of Dynamic Capability on Collaborative Strategy	0.600	9.502	0.000	H6 Supported

Table 2: Results of the Non-Direct Impact Hypothesis Test (Mediated)

Hypothesis	Description	Affect Coefficient	T Statistics $\geq 1,96$	P Values $< 0,05$	Decision
H4	There is a positive impact of Collaborative Strategy on Firm Performance	0.106	0.973	0.331	H4 Not Supported
H5	There is a positive impact of Dynamic Capability on Firm Performance	0.637	9,529	0.000	H5 Supported

1.4 Findings and Interpretation

The first hypothesis in this study is to test the positive impact of collaborative strategy on innovation capability based on the product & process dimension. Test results showed that such influences are not supported, so collaborative strategies do not affect innovation capabilities based on product and process dimensions. This is seen from the T-Statistics value of 1.336 smaller than 1.96 and also the P Values value of 0.182 greater than 0.05 as well as the value of the small inter-variable influence coefficient of 0.094. In general, the collaborative strategy implemented by a company depends on the type and to whom the collaboration will be carried out. According to the results of this survey, in general, the collaborative strategy focused on product & process is not recommended for some reasons and significant risks that can harm the company such as the increased termination of business relations by customers (customer churn rate), rearrangement of market segmentation, infringement of copyright (trademark), product monopoly by one side, even negative propaganda at the marketing level, as well as the failure of a product that ends in greater cost expenditure. This can be seen from indicators that emphasize collaboration on products and processes carried out with competitors with the aim of efficiency such as resource sharing, attracting more customers and strengthening the market. There are many doubts on the part of the company to collaborate with these competitors, this is reinforced by the measurement results at a fairly small coefficient value of 0.094 and also a low average value as well as a quite high standard deviation.

On the second hypothesis in this study is to test the positive influence of collaborative strategy on innovation capability based on the dimension of technology. From the test results it was found that the influence is supported, so this collaborative strategy has a positive impact on innovation capability based on the dimension of technology. This is evident from the T-Statistics value of 2.283 greater than 1.96 and also the P Values value of 0.023 smaller than 0.05 as well as the value of the large inter-variable influence coefficient of 0.182. This shows that the more collaborative strategy is implemented, the more innovative capabilities in technology will increase. The results of surveys of various telecommunications companies in Indonesia from both operators, vendors, and sub-contractors (suppliers) show that technology is a key business parameter in today's global and digital era. So the product offered does not want to have a high competitiveness with its technological capabilities, as well as the technological ecosystem that surrounds it. Respondents from the management of telecommunications companies in this study assessed that a product is not only required to have technological advantages only, but the technological ecosystem surrounding it must also be supported and advanced, as in the use of technology in marketing, the production process using the latest technologies, people development using technologies such as e-learning, as well as the agenda of meetings with online communication that today has been done a lot. Technology is viewed not only as a feature on the products offered but more to how the technology can help solve existing business problems by collaborating with external parties, for example technology as a media, or technology as the means of support that has a very important role today.

The third hypothesis in this study is to test the positive influence of collaborative strategy on innovation capability based on the dimension of the business model where from the results of the testing it was found that the influence is supported, so that collaborative strategies have a positive impact on the innovation capacity based on a dimension of a business model. This is seen from the T-Statistics value of 2.232 greater than 1.96 and also the P Values value of 0.026 smaller than 0.05 as well as the value of the large inter-variable influence coefficient of 0.140. Research with respondents from the telecommunications industry suggests that innovation capabilities on business models must have and must always adapt to dynamic market conditions. Income from voice services that is currently unable to be covered by service revenue on the part of service providers or operators (SDPPI Kominfo, 2018) has caused the domino effect of declining revenue growth on service provider (operator), device providers (vendor), and services providers. The management of the company sees the need for business transformation on the products it owns so that the company can maintain sustainable business as well as increase product penetration in the market by transforming the business model carried out. The study shows how managers of telecommunications companies emphasize the need to enhance collaboration with external stakeholders for the innovation of their business models, for example by adopting new approaches or creating new market segmentation.

The fourth hypothesis is to test the positive influence of dynamic capability on innovation capability based on the product and process dimensions. The results of the testing showed that the influence is supported, so dynamic capacity has a positive impact on innovation capability based on the product and process dimensions. This is evident from the T-Statistics value of 11.342 greater than 1.96 and also the P Values value of 0,000 smaller than 0.05 as well as the value of a fairly large inter-variable influence coefficient of 0.705. This shows that the better a company's dynamic capability, the greater the innovation capability based on product and process. The context of research on the relationship between dynamic capability and innovation capability especially on product & process in Indonesian telecommunications companies has been a lot done and generally the results of this research support this. The impact of dynamic capacity on innovation capability on product & process is 0.705 which means that the product and process innovation capacity is affected by the dynamic capability of the company at 70,5% and the remaining 29,5% is influenced by other factors. This shows that the managers of these telecommunications companies assessed that the telecoms industry is a vulnerable industry affected by the presence of rapid technological progress so that in this study the management party gave a positive response to the dynamic capability that must have in order to respond well to existing conditions.

The fifth hypothesis tests the positive influence of dynamic capability on innovation capability based on the dimension of technology. The results of the testing showed that the influence is supported, so dynamic capability has a positive impact on innovation capability based on the dimension of technology. This is evident from the T-Statistics value of 9.669 greater than 1.96 and also the P Values value of 0,000 smaller than 0.05 as well as the value of the inter-variable influence coefficient of 0.677. The higher the dynamic capability of a company, the greater the innovation capability on technology. The considerable impact of dynamic capacity on innovation capability on technology indicates that the main parameter of disruption is technology. The dynamic market conditions in which the company must have a high concentration on the products it owns then not want products should have an advantage on the focus of technology that is the basis for customers in particular the field of telecommunications technology, not only of the product but also on the processes or ecosystems that support it. In addition to the technology is a feature of the device product that is implemented on the network of telecommunications infrastructure in the field, technology is also an ecosystem both internal and external of the company to be best utilized in order to support operational activity such as the production process using high technology, marketing process using technology, and also on the improvement of the quality of workers using technology such as e-learning, and others.

The testing of the sixth hypothesis tested the positive influence of dynamic capability on innovation capability based on the dimension of the business model where from the results of the testing it was found that the influence is supported, so that dynamic capacity has a positive impact on innovation capacity based on a dimension of a business model. This can be seen from the T-Statistics value of 11.839 greater than 1.96 and also the P Values value of 0,000 smaller than 0.05 as well as the value of the inter-variable influence coefficient of 0.712. The better the dynamic capability of a company, the better the innovation capability based on the business model. Among the influences of dynamic capability on product and process-based innovation capability and technology as discussed earlier, the business model has the strongest influence coefficient, which is 0.712, meaning approximately 71.2% of business models are significantly influenced by dynamic capacity. Responses from corporate managers show that today business model innovation is urgently needed because of market changes that are so rapid and require a quick response to seize new opportunities. Unlike business models that can be done and decided immediately by management, product & processes and technology require longer transformations because of the greater impact on production processes or investments in more intensive R&D.

The seventh hypothesis is to test the positive impact of product and process-based innovation capabilities on firm performance. The results of testing on this hypothesis found that such influences are not supported, so product and process-based innovation capabilities do not have a positive impact on firm performance. This is seen from the T-Statistics value of 0,536 smaller than 1.96 and also the P Values value of 0.592 greater than 0.05 as well as the value of the small inter-variable influence coefficient of 0.068. In the context of firm performance, the management of companies in the telecommunications industry provides a positive assessment of innovation capability on product & process with an emphasis on indicators related to product development efforts on research carried out by R&D and development on processes and procedures it has to be more effective. This effort turns out to have a small impact on firm performance where in addition to a small influence coefficient instead standard deviation has a fairly large value when compared with other dimensions, where this shows not all management of the company prioritize product and process development, but management also contributes to improving firm performance in the form of product transformation and diversification so that the penetration of company products is greater. In addition, the development of innovation capability on product & process requires no small investment costs and this can affect firm performance.

The eighth hypothesis tested the positive impact of technology-based innovation capabilities on firm performance. The results of testing on this hypothesis found that the influence is supported, so innovation capability based on technology has a positive impact on firm performance. This is seen from the T-Statistics

value of 2.619 greater than 1.96 and also the P Values value of 0.009 smaller than 0.05 and the value of the inter-variable influence coefficient of 0.443. The significant impact between innovation capability on technology and firm performance shows that innovation on technology plays a crucial role in firm performance. The management of companies in the telecommunications industry sees the need for an innovative product that has the technological advantages of both function and features when compared with the products on competitors so that the product can be absorbed well by the market and of course this is able to improve the performance of the company especially sales. (sales). The high sales of innovative products of course have a positive impact internally, i.e., on the increase in revenue (growth) and also on the external penetration of products in the market. Furthermore, the management of telecommunications companies assess that the technological progress is one of the business parameters because products with high technology will improve the quality of the network infrastructure so that the benefits can be felt by customers and the community of users of this service. Technological change in this highly dynamic product brings its own challenges to the business of the company, because the products offered must always have a competitive advantage if you do not want to lose in business competition over other products.

The ninth hypothesis tested the positive impact of innovation capabilities based on business models on firm performance. The results of testing on this hypothesis found that the influence was not supported, so innovation capabilities based on business models did not have a positive impact on firm performance. This is seen from the T-Statistics value of 0.267 smaller than 1.96 and also the P Values value of 0,789 greater than 0.05 as well as the value of the small inter-variable influence coefficient of 0.049. In the current era of technology disruption where telecommunications companies experience the impact of a significant decline in revenue due to the price of data services that are not able to cover the operational cost on the network infrastructure, the management of the company assessed that to improve firm performance then innovation capability focus on the business model is not the primary priority but focus on technology that is more preferred to create innovative products that adapt to market demand with the hope of increasing market penetration. The management of telecommunications companies from operators, vendors, and sub-contractors (suppliers) believe in the transformation and diversification of more innovative products that can increase sales and cash flows. (revenue). The management of the company encourages innovation efforts on the business model in the hope that business with customers can be more attractive and will improve the firm's performance in the expected time.

The tenth hypothesis is to test the positive impact of collaborative strategy on firm performance. From the test results on this hypothesis found that the influence is not supported, so collaborative strategy has no positive impact on firm performance. This is seen from the T-Statistics value of 0.973 smaller than 1.96 and also the P Values value of 0,331 greater than 0.05 and the value of the inter-variable influence coefficient is 0.106. Research on management of telecommunications companies shows that collaborative strategies are measures that companies can take in cooperation with other parties in order to improve innovation capability based on product and process dimensions, technology, as well as business models, where innovation capabilities directly affect firm performance. The management of companies in the telecommunications industry assessed that the collaborative strategy is an option for the company to carry out transformation on the problems faced because it can increase efficiency and strengthen effective cooperation by doing reconfiguration of resources within the company, and can also do business expansion by increasing the competitive advantage of products.

The eleventh hypothesis tests the positive impact of dynamic capabilities on firm performance. The results of testing on this hypothesis found that the influence is supported, so dynamic capability has a positive impact on firm performance. This is evident from the T-Statistics value of 9,529 greater than 1.96 and also the P Values value of 0,000 smaller than 0.05 as well as the value of the large inter-variable influence coefficient of 0.637. This shows that on the impact of total effect there are other influences that originate from other variable paths on firm performance, i.e. through innovation capability on product & process, technology, and business models as mediation. Thus, this mediation strengthens the influence of both the dynamic capacity variables and the firm performance. The higher the dynamic capability the company has, the higher the innovation capability where the results can be a trigger on the increased performance of the firm. In the relationship between dynamic capability and firm performance, mediation is not only on innovation capability (product & process, technology, and business model) but also the relation between collaborative strategy and innovation capacity as mediation.

On this twelfth hypothesis is to test the existence of positive influence of dynamic capability on collaborative strategy where from the results of testing found that the influence is supported, so that dynamic capacity has a positive impact on collaboration strategy. This is evident from the T-Statistics value of 9.502 greater than 1.96 and also the P Values value of 0,000 smaller than 0.05 as well as the value of the large inter-variable influence coefficient of 0.600. This shows that the better the dynamic capability of a company, the better it will impact on the collaborative strategy. Based on data obtained from respondents, the management of the telecommunications company demonstrates attitude and sensitivity to environmental conditions that will be the trigger for management to encourage employees to interact and collaborate with external stakeholders to

provide constructive ideas, as well as to understand customer or market needs. The input obtained from various parties is an input for managers to immediately seize the opportunity by carrying out business activities that focus on product development as well as new revenue mechanisms in high-level management view and decision, for example, promoting the transformation and diversification of products on core technology, and the development of resource competencies.

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