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## How Does Dynamic Capability Affect Competitiveness? Environmental Dynamics as a Moderating Variable

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### Abstract

This study aims to determine how the influence of dynamic capability variables on entrepreneurial competitiveness is moderated by environmental dynamics variables in the association of young Indonesian entrepreneurs in Semarang City. This research is a type of quantitative research, with a sample in the study totalling 171 respondents. The data analysis technique used in this research is structural equation modelling. The results of this study indicate that adaptive capabilities, absorptive capabilities and innovative capabilities affect entrepreneurial competitiveness. On the other hand, adaptive capabilities and innovative capabilities affect entrepreneurial competitiveness moderated by environmental dynamics, but absorptive capabilities have no effect on entrepreneurial competitiveness moderated by environmental dynamics. The conclusion of this study is that adaptive capabilities, absorptive capabilities and innovative capabilities affect entrepreneurial competitiveness. Environmental dynamics are able to moderate adaptive capabilities and innovative capabilities with competitiveness, but environmental dynamics are not able to moderate the effect of absorptive capabilities with competitiveness.

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## INTRODUCTION

Entrepreneurship in disruptive innovation and the Industrial Revolution 4.0 provides new challenges, requiring business entities to be able to adapt to a rapidly changing environment. Characteristics of the dynamics of the environment in the era of the Industrial Revolution 4.0, namely increased digitalisation that has spread throughout the world and created more new competition for entrepreneurs (Bahrin, et al 2016); (Rojko, 2017); (Fukuyama & Mayumi; 2018). This change triggers and requires entrepreneurs to determine strategic steps and adjust to the conditions of the external business environment.

Entrepreneurs really need to have dynamic capabilities in a rapidly changing business environment. Dynamic capabilities must be possessed by individuals as business abilities to make a systematic problem-solving step, which lead to efforts to identify opportunities and threats, make timely decisions, and implement strategic and efficient changes (Helfat, et al, 2007). Individuals must have the capacity to recognise and make strategic decisions, the capacity to make decisions in a timely manner and the capacity to implement change (Li, D.-Y., & Liu, J., 2014). In this context, dynamic capabilities are needed to produce better performance than existing competitors (Winter, 2003).

The application of the concept of dynamic capabilities is basically an indicator of shaping entrepreneurial abilities to create competitiveness. In applying dynamic capabilities, an entrepreneur applies creativity and innovation. This is relevant to the characteristics of entrepreneurship, one of which is forming and developing a creative, innovative and adaptive spirit to environmental changes. Dynamic capability is an entrepreneurial ability to adapt to rapid environmental changes (Teece, 2009). Furthermore, entrepreneurs will be able to compete if they apply creative, innovative behaviour and are able to analyse the business environment (Rosenbusch, 2011)

The Association of Young Indonesian entrepreneurs in Semarang City is a synergised association in building and developing entrepreneurship beside that as forum for students to gain an understanding of skills, life skills, creativity, and other supporting activities by the characteristics and interests of students. Entrepreneurship development within the association of young Indonesian entrepreneurs in City aims to create new entrepreneurial students and gather or gather students who have developed.

This research is based on research gaps and needs to be more consistent between one researcher and another. The environment provides better performance indicators and has a direct effect on competitiveness (Kuivalainen, 2005), (Ambrosini, 2009) On the one hand, Power (2005) states that dynamic capability is not a determining indicator of business competitiveness.

Environmental factors are also the basis for entrepreneurship to modify dynamic capabilities. The relationship between dynamic capabilities and the environment positively moderates competitiveness (Wilden, 2016); (Wang, 2017). Under conditions of environmental dynamism, small and medium enterprises develop more internally oriented capabilities Neirotti, (2017). Furthermore, Seyed (2016) in a changing environment dynamic capability become a source of competitive advantage. However, in a relatively stable environment with no technology upgrades or only slight changes in customer preferences, high dynamic capabilities become expensive or detrimental due to maintenance costs. And then Schreyögg (2007), the link between dynamic capabilities and competitive advantage can be weaker and harmful. Based on the inconsistency of this research, there is a gap for researchers to conduct research studies related to dynamic capabilities and business competitiveness.

On the other hand, empirical studies on dynamic capability theory currently need to be improved, and more research has been

conducted on entrepreneurship and organizational culture associated with dynamic capabilities (Zahra; 2006) Meanwhile, the theory of entrepreneurship with the theory of dynamic capabilities has a strong correlation to be studied (Lundgren; 2005); (Rothaermel;2007).

Dynamic capability is a company's ability to integrate, reconfigure and shape external and internal competencies when dealing with a rapidly changing environment Naguib (2017) Definition of dynamic capabilities from an entrepreneurial perspective, is the ability to reconfigure company resources and routines with the right method (Hofer; 2015)

1 From various studies on the concept of dynamic capabilities, scientists decompose dynamic capabilities from various views, such as content and process perspectives, ontology and epistemological perspectives and so on to reveal content and multidimensionality (McKague; 2015). However, most scientists deconstruct dynamic capabilities from a process perspective (Teece, 1998) whereas some studies deconstruct dynamic capabilities into perception or search, decision, reconfiguration and so on (Schilke; 2018).

Dynamic capabilities consist of four components: (1) environmental sensing capabilities (Narayanan; 2009) (2) change and renewal capabilities, (Barreto; 2010) (3) technological flexibility capabilities by Collis, 1994; and (4) organizational flexibility capabilities by Zollo and Winter, 1999. Capability demonstrates the ability to respond sensitively and identify changes in the industry, competence to innovate and change and flexibility in technology and organizational structure. According to (Pandza; 2009) to have dynamic capabilities, companies must have three capabilities, namely adaptive capabilities, absorptive capabilities, and innovative capabilities.

12 Adaptive capabilities make companies able to adapt to environmental changes and align internal resources with external demands which are important for the survival and evolution of companies. Companies that have a high level of adaptability also show dynamic capabilities. The entrepreneurs do not

only adjust internal strategies to adapt, but must be able to develop internal capabilities. In this case, it is the ability to manage resources so that it is different from competitors. The new companies need the ability to adapt to a rapidly changing environment with increasing uncertainty in a competitive environment (Pandza; 2009).

Absorptive capabilities in terms of receiving and assessing customer satisfaction are needed to increase added value for a business. The market orientation and entrepreneurial orientation factors in terms of company strategic orientation, capturing and recognizing new information, decision making, methods, and applying in business will increase absorptive capabilities and will have an impact on competitive ability (Jiao; 2010), (Helfat; 2003); (Wang; 2007). Naguib added that absorptive dynamic capabilities affect the competitive advantage of a business (Gupta; 2015).

In terms of innovative capabilities, it is measured by the number of product or service innovations, process innovations, finding solutions to problems, new markets, new sources of supply and developing new organizational forms. Innovative capabilities can be translated into the dimensions of new product or service innovation, production methods or, risk taking by executives, and seeking new, unusual solutions Aljanabi (2015). Competencies that enable companies to create new products or processes and respond to changing market conditions and are able to innovate will create their own competitiveness (Maruta; 2017). The ability to innovate by utilizing technology will drive the business to be more successful compared to competitors (Mikalef, 2016). Dynamic capabilities facilitate various types of innovation that will improve business performance (Zhou, 2017).

The high competitiveness of a country will have implications for increasing economic growth and welfare. A company can achieve competitive advantage if it is relatively low (efficiency) and different. And a company can win a competitive advantage through different

configuration (change from centralized to divided) or coordination (from high to low) or both. A company has a competitive advantage due to the amount of production, the number of product requests, finance, distribution, advertising, economies of scale, technology ownership, brand or human resource management (Porter; 1990).

There are six main variables that shape the competitiveness of a business, including availability and conditions of the business environment, business capabilities, policies and infrastructure, research and technology, financial support and partnerships, and performance variables (Lantu; 2016). The dimensions of a company's competitiveness consist of cost, quality, delivery time and flexibility. From some of the theories put forward by the experts above, in relation to the operating function of a company, competitiveness is seen from several dimensions, which in general it can be concluded that these dimensions are quality, cost, price, time and flexibility (Muhardi; 2007).

In a relatively stable environment with notechnology upgrades or only slight changes in customer preferences, high dynamic capabilities become expensive or even detrimental due to maintenance costs. Thus the link between dynamic capabilities and competitive advantage can be weaker and negative.

In a volatile environment where opportunities pass quickly and there are threats from competitors, it will reduce the competitive position and potential value of current capabilities, thus requiring companies to make frequent and complex changes.

In an environment where competition is very high, resources are scarce, making timely adaptations efficiently and applying them dynamically with environmental changes is a tool for companies to gain short-term profits (D'Aveni, 2010). While in a highly competitive environment, companies have to deal with various uncertainties, and they also have

to seek more information to use appropriate resources, carry out more complex and sophisticated analysis, make more timely decisions and implement changes to develop capabilities dynamic (Peteraf; 2013).

Empirical research also shows that in a stable environment, the relationship between dynamic capabilities and firm performance is not significant, while in a turbulent environment it shows a positive moderating role. In this context, the higher the environmental dynamism, the stronger the relationship between dynamic capabilities and competitive advantage.

Environmental dynamics has a significant positive impact on dynamic capabilities. Dynamics as a moderator shows that increasing environmental dynamism requires companies to respond by trying to increase dynamic capabilities. This is because if it is not able to increase dynamic capabilities then environmental dynamism will actually reduce the company's competitive advantage.

## METHODS

The research used is quantitative research. This research involved students from six universities in Central Java, namely Semarang State University, Dian Nuswantoro University, Diponegoro University, Stikubank University, PGRI University and Walisongo State Islamic University. The number of samples is 171 students. Data collection techniques using a questionnaire. This study uses Partial Least Squares Structural Equation Modeling (PLS-SEM) in analyzing data and using Warp PLS 7.0.

## RESULTS AND DISCUSSION

The output of the results of the validity test, reliability test and variant extracted testing can be seen in Table 1.

**Table 1.** Validity, Reliability and Variance Extracted Testing

Constructs	Indicators	Loading Factor	Composite Reliability	Average Variance Extracted (AVE)
Adaptive capability	Ability to respond to opportunities	0.742	0.851	0.594
	Monitor the market	0.772		
	Respond to customers and competitors	0.714		
	Allocate resources	0.806		
Absorptive capability	Intensity of receiving and applying new knowledge from outside	0.710	0.763	0.532
	Conduct research	0.683		
	Doing development	0.711		
Innovative capability	Able to improve the quality of existing products	0.729	0.741	0.516
	Able to develop new products	0.737		
	Technology utilization	0.776		
Competitiveness	Competitive price	0.745	0.843	0.646
	Product quality	0.883		
	Flexibility	0.862		
Environmental dynamics	Government regulations	0.761	0.763	0.632
	Consumer demand for goods and services often changes	0.972		
	Innovation both in the internal business environment and external entrepreneurs often change	0.974		

*Note.* Factor loading > .60; Reliability > .70; AVE > .50

The results of the discriminant validity test can be seen in Table 2.

**Table 2.** Correlations Among Latent Variables

	ADC	INC	ABC	ED	COMP
ADC	0.542				
INC		0.645			
ABC			0.64		
ED				0.795	
COMP					0.804

Note: ADC=Adaptive Capability; INC= Innovative Capability; ABC=Absorptive Capability; ED=environmental dynamics; COMP=competitiveness.

In inner model which includes the model fit test, path coefficient, and R2. In the model fit test, there are 3 test indices, namely average path coefficient (APC), average

R-squared (ARS) and average variance factor (AVIF) with APC and ARS criteria accepted on condition that p-value < 0.05 and AVIF < 5.

**Table 3.** Model Fit and Quality Indices

Model Fit and Quality Indices	Result	Fit Criteria	Representation
Average path coefficient (APC)	0.242	P=0.001	Good
Average R-squared (ARS)	0.229	P<0.001	Good
Average adjusted R-squared (AARS)	0.159	P<0.001	Good
Average block VIF (AVIF)	1.038	acceptable if <= 5, ideally <=3.3	Ideal
Average full collinearity VIF (AFVIF)	1.115	acceptable if <= 5, ideally <= 3	Ideal
Tenenhaus GoF (GoF)	0.272	small >= 0.1, medium >= 0.25, large >= 0.36	Ideal
Sympson's paradox ratio (SPR)	1	acceptable if >= 0.7, ideally =1	Ideal
R-squared contribution ratio (RSCR)	1	acceptable if >= 0.9, ideally =1	Ideal
Statistical suppression ratio (SSR)	1	acceptable if >= 0.7	Ideal
Nonlinear bivariate causality directionratio (NLBCDR)	1	acceptable if >= 0.7	Ideal

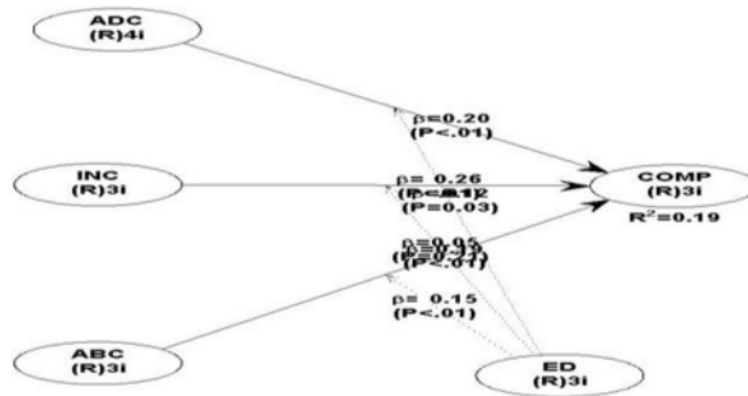


Figure 1. Results of the Hypothesis Test Model

Testing the fit and quality indices model explains that APC has an index of 0.242 with a p-value  $< 0.001$ . Meanwhile, ARS has an index of 0.229 with a p-value  $< 0.001$ . Based on the criteria, APC already meets the criteria because it has a p value  $< 0.001$ . Likewise, with the p-value of ARS, namely  $p < 0.001$ . The AVIF value which must be  $< 5$  has been fulfilled because based on the data the AVIF value is 1.038. Thus, the inner model is accepted.

**The Effect of Adaptive Capability on Entrepreneurial Competitiveness**

The ability of entrepreneurs to respond and adapt to environmental changes is very urgent. Companies need dynamic capabilities to adapt to a rapidly changing environment with increasing uncertainty in a competitive environment (Li, et al 2019). The ability to respond to the market aims to increase competitive advantage.

The results of the study state that adaptive capability has a positive and significant effect on competitiveness with a path coefficient value of 0.20 and a p-value  $< 0.001$ . Members of the association of young entrepreneurs in the City of Semarang in dealing with existing competitors are able to monitor and take action to respond to conditions that arise in the market. This action provides a positive value that the ability to adapt and adapt business conditions to market developments in increasing competitiveness capabilities is very im-

portant for entrepreneurs. This means that the ability to respond to opportunities and be able to manage the resources owned will optimize competitiveness with competitors. Adaptive capability in this study contributes to competitiveness by 4.5%.

This research is in line with research conducted which emphasizes that competitive advantage will be created by the dynamic capabilities possessed by a company. In this case, the company must have the ability to respond to opportunities or competitors that arise from the aspect of adaptive capability. One superior strategy in implementing the management capabilities of a company is that business managers must be able to respond to changing market conditions. The entrepreneurs not only adapt internal strategies to respond to environmental changes, but are also able to develop unique capabilities that do not have by competitors (Tresna; 2019).

In this context, students who join in the association of young Indonesian entrepreneurs in City creating competitiveness have something unique, namely students regularly monitor competitor markets through small research. This is a strength in itself for the development of student entrepreneurship. On the one hand, Aminu (2015) also added that in an environment, superior performance depends on creating competitiveness that rests on the company's ability to integrate and build on its resources. The combination of resources in



the business environment is an excellent strategy in increasing business competitiveness (Nicholas; 2015). The market orientation that has been mapped in adaptive capabilities by the company will create its own competitive advantage (Slater et al; 2010)

### **Absorptive Capability Affects Entrepreneurial Competitiveness**

The activity of identifying and applying new and unique information from external sources in entrepreneurial development is known as vigilant learning in terms of increasing absorptive capabilities,

which is very important for sustainable business development. A company needs absorptive capabilities so that the company runs smoothly. This condition will create a higher ability to compete when compared to other competitors.

This study states that absorptive capability has a positive and significant effect on competitiveness with a path coefficient value of 0.19 and a p-value of 0.001. Absorptive capability in this study contributes to competitiveness by 4.5%. This means that the absorptive abilities possessed by the association of young Indonesian entrepreneurs in Semarang City in terms of receiving and applying new knowledge from outside, research, and development make a very urgent contribution in forming a high competitive power. Entrepreneurial evaluation through research & development, initiation of highly innovative actions, and aggressive response to new information are components of positive action in entrepreneurial development. This will provide added value for young entrepreneurs in assessing and filtering information that is very important to be adopted in business development. Thus it will provide a strong influence in shaping competitiveness. Further, Lin et al (2014); Eisenhardt (2000) stated that in the development of absorptive capabilities in organizations from the viewpoint of dynamic capabilities, it is possible to carry out research and development of companies in forming organizations and innovation processes. With absorptive capabilities

from the research and development side, it will have its own advantages in competing. Companies will have strength and be able to read market opportunities comprehensively.

The results of other studies state that the ability to assess, design, create and apply new knowledge, one of which is the atmosphere in entrepreneurship, will guarantee adaptability in an increasingly competitive environment. It will even guarantee more, the ability of a business to move faster than competitors (Fillieri; 2015). Experimental activities, learning by doing, learning by using and other forms of experimental-based learning by means of trial and error. The knowledge gained will create absorptive capabilities that will have an impact on competitiveness (Levinthal; 2008)

Company activities are very diverse, from those that are routine and tacit knowledge, to the basic skills used to change the routine of the organization. Changes related to basic skills in terms of knowledge will have an impact on the ability for business development and competitiveness (Helfat; 2011) Capability with a combination of processes, cognition and knowledge will provide different things from other companies. In this case, the company will be able to compete in product marketing (Newey; 2012). Companies with the application of this knowledge will be able to survive and be successful (Simon; 2010) Capabilities within companies are always trying to expand, modify, reconfigure, or even completely transform their resources and knowledge to create value in the dynamics of a rapidly changing business environment. A company's competitive advantage is not only related to the knowledge repository but also comes from the company's ability to create, integrate, update, and utilize its knowledge assets (Katka; 2010).

### **Innovative Capability Affects Entrepreneurial Competitiveness**

Entrepreneurs' ability to innovate is a very urgent advantage in responding to competitors. Dynamic capabilities are part of the competencies that enable companies to cre-

ate products or innovations and respond to changing market conditions. Technology and innovation have a role in formulating market strategies, where at this time technology and various innovations continue to experience unpredictable developments and changes (Okeyo; 2014). Dynamic conditions, the ability to innovate in developing new products aims to create a competitive advantage.

This study states that innovative capability has a positive and significant effect on competitiveness with a path coefficient value of 0.27 and a p-value <0.001. Innovative capabilities in this study contribute to competitiveness by 6.6%. In this case, the ability to innovate in product development in terms of quality improvement and technology adoption is an added value in the organization of the association of young Indonesian entrepreneurs in Semarang City in increasing competitiveness. Developing the ability to innovate in terms of the entrepreneurial management process for members of the association of young Indonesian entrepreneurs in Semarang City is an act of innovation that is comprehensively integrated within the organization. Thus, the act of innovation in increasing competitiveness in entrepreneurship is a strategic and aggressive action in response to emerging competitors. Actions in responding to and adopting technological advances for the development of young entrepreneurs are positive things and will bring strength to create competitiveness.

In this study, the adoption of technology in an innovation will have a positive impact on the sustainability of an entrepreneur in the long term (Mikalef, et al; 2016). Technology adoption is important in product innovation to meet consumer needs based on certain products or services. In this case, entrepreneurs will be able to compete and have better strengths when compared to other companies. Other research also explains, innovative capability is seen as important in the context of change because it assists managers in creating value through innovation in increasing competitive ability. The existence of new products created by entrepreneurs will provide its own

added value for business development (Lieberherr; 2015). In a competitive strategy, company management is not enough to only pay attention from the side of making a new product, but must be able to find new innovations to communicate with its target market. In this case innovation capabilities are needed to increase competitive advantage with competitors (Jothi; 2011). Creating new products that are different, will ensure the achievement of sustainable competitive advantage (Dirisu; 2013).

Innovation when combined with cultural competitiveness factors can create a greater capacity to innovate which in turn results in high competitiveness. To be more specific, change-oriented companies value innovation and encourage risk-taking and creativity, making employees feel less threatened when putting their efforts into new fields (Zang & Duan; 2010).

#### **Adaptive capability influences entrepreneurial competitiveness moderated by environmental dynamics**

In an environment of superior performance and competitiveness depends on the ability of companies to integrate, build and reconfigure resources. Environmental changes can strengthen and weaken business adaptability which will lead to entrepreneurial competitiveness. This means that environmental factors moderate the ability of business entities to shape competitiveness.

This study states that adaptive capability has a positive and significant effect on competitiveness with environmental dynamics as a moderating variable. The path coefficient value is 0.12 and the p-value is 0.02. Innovative capabilities in this study contribute to competitiveness by 1.2%. Changes made by companies to adapt in the reconfiguration of their resources adapted to the environment will create a competitive advantage. In this case, the dynamics of the environment play a role in determining the direction of reconstruction of existing resources in enhancing competitive capabilities. In a competitive environment, a company that is able to quickly adjust, recon-

figure, or change as desired, can achieve success in overall company performance.

Dynamic capability is a MSME strategy in responding to dynamic and fast shifts in the environment, especially changes in market tastes, the global economy and technology by adjusting its capability base as part of the company's activities in order to be able to increase competitiveness and gain competitive advantage (Boso, 12) 16). Adaptive capabilities make companies able to adapt to environmental changes and align internal resources with external demands which are important for the survival and evolution of companies (Mohamud; 2016).

#### **Absorptive capability influences entrepreneurial competitiveness moderated by environmental dynamics**

Entrepreneurs' ability to adopt knowledge from external businesses will have an influence on the management of the company. In this case, the latest knowledge is needed which will lead to the development of the business concept being carried out. The business climate with new knowledge will have a positive effect on the development and competitiveness of entrepreneurs.

This study states that absorptive capability has no effect on competitiveness with environmental dynamics as a moderating variable. The path coefficient value is 0.05 and the p-value is 0.20. This research is in line with research conducted by Mohamud and Sarpong. Theoretical and methodological complexities in mapping routines, underlying dynamic capability processes have led to conceptual differences, which hinder the relevance and contribution of dynamic capabilities to competitiveness (Mohamud; 2016). Enterprise intellectuals are often insufficient to support significant performance in rapidly changing or uncertain environmental changes. In this case, environmental dynamics do not play a role in moderating absorptive capability on competitiveness. Dynamic and stagnant environmen-

tal changes have no impact on entrepreneurial absorptive abilities, and automatically have no effect on competitiveness.

#### **Innovative capabilities influence entrepreneurial competitiveness moderated by environmental dynamics**

Entrepreneurs need innovative strategies in product development and increasing competitiveness. Innovation is a factor of excellence for entrepreneurs to compete and dominate the market. However, in this case, the environment is a factor to consider in innovating. The ability to respond to environmental changes both internal and external to entrepreneurship will moderate the ability to innovate with competitiveness.

3 This study states that adaptive capability has a positive and significant effect on competitiveness with environmental dynamics as a moderating variable. The path coefficient value is 0.14 and the p-value is 0.01. Environmental dynamics factors become triggers in the formation of entrepreneurial innovation capabilities. Entrepreneurs who are able to respond to environmental dynamics will be able to reconstruct both in terms of products, strategy, management and other entrepreneurial components that will lead to the development of innovation. This innovation occurs as a result of the entrepreneur's responsive attitude to the environment in creating competitive advantage. A very dynamic environment will have an impact on the formation and ability to innovate in increasing the ability to compete with other businesses, while a stagnant environment will have an impact on low business development innovation activities and business competitiveness. Environmental dynamics play a role as a trigger for forming strong innovation capabilities for businesses that have internal business strengths. Innovative capabilities in this study contribute to competitiveness moderated by environmental dynamics by 2.1%. Another research, dynamic capabilities from the innovation side offers solutions for compa-

nies that require transformation in competing in response to environmental changes (Lieberherr; 2016). New capabilities in this context are capabilities that have been adapted to the environmental context after a change that will ultimately help companies to solve problems and encourage innovation and be able to provide competitiveness.

## CONCLUSION

The conclusions in this study are that adaptive capability, absorptive capability, innovative capability influence entrepreneurial competitiveness in the Indonesian young entrepreneur association in Semarang city. Adaptive and innovative capabilities influence entrepreneurial competitiveness moderated by environmental dynamics. However, absorptive capability has no effect on entrepreneurial competitiveness moderated by environmental dynamics in the association of young Indonesian entrepreneurs in Semarang City.

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