

Moderation Effect of Education to the Effect of Market Orientation and Technology Orientation on Entrepreneurship Orientation at Small-and-Medium Enterprises (SMEs) in East Java, Indonesia

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ABSTRACT

The research was aimed to uncover the effect of market orientation and technology orientation on entrepreneurship orientation with education as a moderator variable. This research used the quantitative approach and the causal relationship between variables was investigated through *Structural Equation Modeling-Partial Least Squares (SEM-PLS)*. The research population included Small-and-Medium Enterprises (SMEs) in East Java, Indonesia, and 168 SMEs were selected as the sample. The findings of the research revealed that education attainment levels could reduce the effect of market orientation on entrepreneurship orientation and could increase the effect of technology orientation on entrepreneurship orientation. Based on the findings, it is recommended that SMEs in East Java must improve their entrepreneurship orientation by intensifying the variation of the market's supply and demand, upgrading technology, and hiring workers who have the required educational background, and then training them on the latest technology.

Keywords: Education, entrepreneurship orientation, market orientation, small-and-medium enterprises of Indonesia, technology orientation

INTRODUCTION

One of the business sectors with a strong contribution to the growth of the Indonesian economy is the Small-and-Medium Enterprises (SMEs) sector (Anton et al., 2015). Small-and-Medium Enterprises had contributed to 60.3% of the growth of the Indonesian Gross Domestic Product (GDP) in 2018. The problem is that most

ARTICLE INFO

Article history:

Received: 30 October 2019

Accepted: 06 July 2020

Published: 25 December 2020

DOI: <https://doi.org/10.47836/pjssh.28.4.12>

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ISSN: 0128-7702

e-ISSN 2231-8534

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Indonesian SMEs do not understand the importance of entrepreneurship values (Octavia & Ali, 2017; Rahyuda et al., 2017). Indonesian SMEs need knowledge of entrepreneurship values, such as innovation, creativity, and risk-taking, to improve their business performance (Abdilahi & Hassan, 2017; Heslina et al., 2016; Wambugu et al., 2015).

Low entrepreneurship orientation among SMEs is caused by the decline of their market orientation and technology orientation (Hidayat et al., 2016; Hussain et al., 2016). It is not surprising to see SMEs are always faced with difficulty when competing with larger business units because their marketing still focuses on the domestic market and low-income consumers (Anton et al., 2015; Octavia & Ali, 2017). The quality of SMEs' products is not competitive because the quality of raw materials, machines, and technologies are still poor, and the consequences of this are that they are in a less favorable position. Consumer trust declines and product distribution becomes stagnant (Hadiyati, 2015; Omar & Anas, 2014). All these factors force SMEs to have low market orientation, which then leads them into difficulties in market penetration and in having a larger consumer share.

Besides low market orientation, Indonesian SMEs are less competent in technology capability and business management (Anton et al., 2015; Astutie & Fanani, 2016; Hadiyati, 2015). It is not peculiar to see SMEs refraining from adopting new technology because the adoption itself is always problematic to them

(Munizu et al., 2016). As a consequence, it is hard for SMEs to manage their resources optimally, and this, in turn, results in a bad impact; it leads to low productivity and disrupted product innovation (Ling, 2017; Pustovrh et al., 2017).

Apart from both market orientation and technology orientation, which indeed are undesirably low, the entrepreneurship orientation of SMEs is also affected by education (Nwachukwu et al., 2017; Pett & Wolff, 2016). The education system plays a vital role in developing entrepreneurship orientation because education helps individuals to develop their capabilities on innovation, creativity, and in measuring difficulties (Nga & Shamuganathan, 2010). Besides, education has had a significant moderation effect on entrepreneurs because it enables them to develop capabilities in conducting market analysis or in using technology. This would increase their intellectual capability. Education has a moderation effect on the attitudes of entrepreneurs (Bae et al., 2014; Entrialgo & Iglesias, 2016; Souitaris et al., 2007) because currently, educational institutions are required to improve the entrepreneurship orientation of their educated participants by teaching them on technology, financial science, and communication skills because all of these are considered important for success in business (Fayolle & Gailly, 2015; Nabi et al., 2015; Piperopoulos & Dimov, 2015).

Patricia and Silangen (2016) suggested that education indirectly affected someone's desire to start a business, especially if the

knowledge that was needed was related to the field of entrepreneurship (Buana et al., 2017; Ertuna & Gurel, 2011; Nabi et al., 2017). Through policies issued by the government in the form of the improvement of technological infrastructure and the provisioning of various types of facilities that support entrepreneurship, the education level, therefore, is meant to enable SMEs to increase their productivity (Chienwattanasook & Jermittiparsert, 2019; Entrialgo & Iglesias, 2016; Shah et al., 2020).

Reports from the field indicate that Indonesian workers in SMEs have low education levels. Indonesian SMEs tend to be labor-intensive, and therefore, young and lowly educated workers are preferred for employment (Anton et al., 2015). Berrill et al. (2018) indicated that education did not have a moderation effect on entrepreneurship orientation because someone who was highly educated preferred to work in companies with high salaries rather than being entrepreneurs. In the era of globalization, the presence of multinational companies in developing countries has attracted a significant portion of the workforce through a variety of offerings. This indicates that the moderation effect of education will negatively impact the entrepreneurship orientation of the community (Bae et al., 2014; Danakol et al., 2017; Kunday & Çakir, 2014).

By taking into consideration the aforesaid discussion, the author makes the early deduction that some factors have been affecting the entrepreneurship orientation of SMEs in Indonesia, and that

the factors observed in this research are market orientation, technology orientation, and education. Therefore, the objective of this research was to uncover the effect of market orientation and technology orientation on entrepreneurship orientation of SMEs in Indonesia with education as a moderator variable.

MATERIALS AND METHODS

Market Orientation

Market orientation is a process to anticipate and learn what customer demands will be at present and in the future. This process is done by disseminating market intelligence to the internal parts of the organization and also by being responsive to market intelligence received from others (Dursun & Kilic, 2017). Small-and-Medium Enterprises with market orientation are those that can understand customer demands, and this understanding shall help them to offer solutions concerning how to satisfy customer demands in better ways than their competitors (Oluwatoyin et al., 2018). Market-oriented Small-and-Medium Enterprises will emphasize their abilities in producing excellent consumer value, in changing consumer satisfaction into consumer loyalty, in anticipating competitors' moves, and also in considering marketing as an investment (Dursun & Kilic, 2017).

Market orientation is a fundamental aspect of marketing that can contribute to SMEs' business performance (Al Asheq & Hossain, 2019). Market orientation involves such activities as disseminating

market intelligence to the internal parts of the organization, being responsive to market intelligence of competitors, and learning about the market (Hinson et al., 2017). Therefore, market-oriented SMEs are those with greater capability to fulfill consumer demands. Such enterprises have a greater opportunity to see their performance increased.

Technology Orientation

Technology orientation is defined as a predisposition of firms/enterprises to introduce or use their new technology, new product, or innovation based on customer value. Therefore, the long-term success of an organization shall depend on innovation and problem-solution that involve new technology (Obeidat, 2016). Technology orientation comprises many activities, such as being proactive in developing new ideas and technology that concern new products, making integration with new technology, and using technology effectively in developing new products (Acar & Özşahin, 2017).

Small-and-Medium Enterprises with technology orientation are those that have excellent technology and also have the capability to produce more innovative products (Acar & Özşahin, 2017). Technology oriented SMEs have more leverage than their competitors. They have a stronger network with other providers of technology, better knowledge about technology, and the ability to design new products with current technology (Tarighi et al., 2017). Technology excellence will determine whether products are acceptable

or not in the market because consumers may only seek products with good quality, and if the market considers the products acceptable, then Small-and-Medium Enterprises will find their performances increased.

Education

It is necessary for Small-and-Medium Enterprises to improve human resource quality through knowledge. Indeed, knowledge is a cognitive capacity to recognize, understand, realize, and solve problems, and one way to obtain this knowledge is through education (Sembiring, 2016). Education is closely related to organizational learning in SMEs. Organizational learning is a set of organizational behavior that affects the ways the organization in using knowledge to learn about the business environment and to respond to environmental demand. It is already said by Buana et al. (2017) that education had a significant role in developing someone's ability to become an entrepreneur, because, basically, many universities prepared students directly into becoming entrepreneurs. Undergraduates develop innovative capacity and creativity while undergoing their studies (Patricia & Silangen, 2016).

Education level affects entrepreneurs' skills in analyzing business opportunities and managing resources. Even, individuals with high education consider becoming entrepreneurs as it seems to be a more attractive choice compared to working as an employee (Berrill et al., 2018; Bosma &

Schutjens, 2011). Peterman and Kennedy (2003) stated that although education was proven to have a significant role in entrepreneurship orientation, in-depth research was still needed concerning the moderation effect of education on entrepreneurship orientation.

Entrepreneurship Orientation

Entrepreneurship orientation is a strategic orientation to utilize entrepreneurship values that help the firm/enterprise in standing above competitors and to take benefits from exploiting new opportunities and innovation in an uncertain environment (Obeidat, 2016). Entrepreneurship orientation is defined as an attitude to pursue new opportunities through a combination of internal resources supported by a variety of strategies, which among others is showing innovative, proactive, and risk-taking postures (Charupongsopon & Puriwat, 2017).

Small-and-Medium Enterprises with entrepreneurship orientation are those with the courage to show themselves as business units with the capability to attain excellent performance through innovation, proactivity, and risk-taking, and with support from top management (Obeidat, 2016). Entrepreneurship-oriented SMEs that adhere to this are those with better performance (Haliq et al., 2018).

Market Orientation, Education, and Entrepreneurship Orientation

Market orientation can be regarded as a predisposition of SMEs to implement

marketing concepts in order to find new consumers and maintain the existing consumers (Amfo et al., 2018; Na et al., 2019). To own market orientation, Small-and-Medium Enterprises need to understand market demands and implement business strategies to operate their business (Ismail & Alam, 2019). Besides, Small-and-Medium Enterprises must put attention to entrepreneurship values such as business innovation, risk-taking, and competing ability (Khaleel et al., 2017; Oni et al., 2019).

Entrepreneurship values are needed by SMEs to help them in targeting the market and if a certain market is successfully targeted, the SME becomes more market-oriented (Mugambi & Karugu, 2017). Small-and-Medium Enterprises with entrepreneurship orientation tend to respond to consumer demands better than those without entrepreneurship orientation (Amin et al., 2016). Entrepreneurship capability depends on knowledge, and education is one factor supporting the attainment of entrepreneurship orientation (Mutlutürk, 2018)

Given all statements above, the two following hypotheses are formulated:

H₁: There is a positive and significant effect of market orientation on the entrepreneurship orientation of SMEs in East Java.

H₂: Education moderates the effect of market orientation on entrepreneurship orientation of SMEs in East Java.

Technology Orientation, Education, and Entrepreneurship Orientation

Small-and-Medium Enterprises need to use innovation to provide new products (Ismanu & Kusmintarti, 2019). Product innovation is only possible if SMEs use up-to-date technology (Aksoy, 2017; Diaw & Asare, 2018; Ungerman et al., 2018). Small-and-Medium Enterprises that have up-to-date technology and apply this technology to respond to consumer demands are those that have technology orientation (Ali et al., 2016; Lo et al., 2016).

Technology orientation helps to internalize entrepreneurship values, such as innovation and business strategy, into Small-and-Medium Enterprises (Ibrahim et al., 2017). In applying new technology and improving entrepreneurship orientation, Small-and-Medium Enterprises must have innovation capability and technological friendly procedure, and both factors can improve the SME's productivity (Asim & Sorooshian, 2019; Tseng et al, 2019). Knowledge about new technology and skill to use it are two factors needed to attain entrepreneurship orientation (Madu, 2016).

Taking into account all explanations in this section, the following hypotheses are developed:

H₃: There is a positive and significant effect of technology orientation on the entrepreneurship orientation of SMEs in East Java.

H₄: Education moderates the effect of technology orientation on the entrepreneurship orientation of SMEs in East Java.

Population and Sample

The research was done on the managers of Small-and-Medium Enterprises in East Java. The total number of SMEs observed in this research was 757,090, and all were obtained from the list of SMEs at the East Java Cooperative Office. Inclusion criteria used to sort SMEs were: annual turnover of 2 billion rupiahs, assets of 500 million rupiahs, and minimum age of 10 years. Based on these criteria, the research population was targeted at 288 managers. The sampling technique was *purposive sampling*. The sample consisted of 168 SME managers, and this was obtained after applying this technique to the population. The sample size was determined by the Taro Yamane Formula (Yamane, 1967):

$$n = \frac{N}{Nd^2+1} = \frac{288}{288 \times 0.05^2 + 1} = 167.44 = 168$$

In this research, there were 288 questionnaires distributed. The number of questionnaires returned was 195. The number of the questionnaire completed was 168, while that was not completed by respondents was 27. Therefore, the response rate was 86.15%.

Variable and Measurement Instrument

Variables to be analyzed are latent variables, also known as a construct or unobserved variables, and indicator variables such as *observed variables* of each latent variable. The latent variable consists of exogenous and endogenous latent variables. The exogenous latent variables in this research

are (1) *Market Orientation* (MO); (2) *Technology Orientation* (TO); and (3) *Education* (E), while the endogenous latent variable is *Entrepreneurship Orientation* (EO). Data of all four variables were collected through questionnaires. The details are given as follows:

1. Entrepreneurship Orientation (EO) is explained by: (a) new product innovation and strategy to use it (EO1); (b) proactivity in business (EO2); and (c) risk-taking (EO3).
2. Technology Orientation (TO) is indicated by technology novelty (TO1).
3. Education (E) is represented by education level (E1).
4. Market Orientation (MO) is explained by (a) activity to collect market intelligence from customers (MO1); (b) activity to draw market intelligence from competitors (MO2); (c) activity to disseminate market intelligence to internal elements (MO3); (d) activity to follow market development (MO4); (e) responsiveness to customer

complaints (MO5); and (f) responsiveness to what competitors do (MO6).

The research was designed to use the quantitative approach. *Structural Equation Modelling Partial Least Squares* (SEM PLS) was utilized to understand the causal relationship of research variables. The approach of SEM PLS run the empirical simulation by multiplying the score of each indicator in the observed variables, and also by constructing the possible interaction involving exogenous variables and moderator variables. SEM PLS can directly measure the reflection of the constructed relationship between exogenous variables and moderator variables (Becker et al., 2018; Shah et al., 2020). The hypothesis model is displayed in Figure 1.

Data analysis and hypothesis testing were conducted with *Structural Equation Modelling Partial Least Squares* (SEM PLS), and the operation was supported by SmartPLS version 3.2.7. The relationship between exogenous and endogenous latent variables was also tested with SEM PLS.

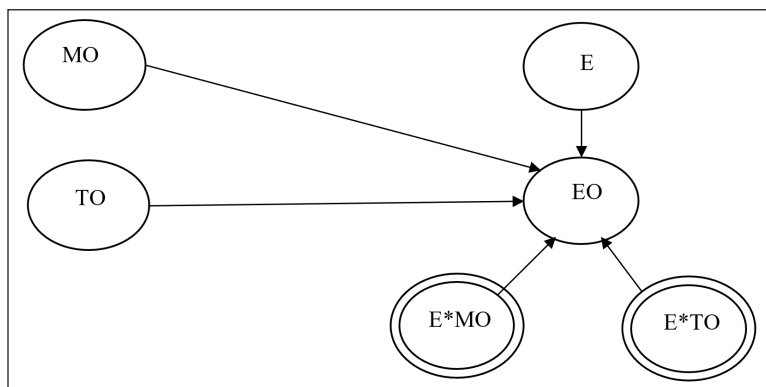


Figure 1. Hypothesis model

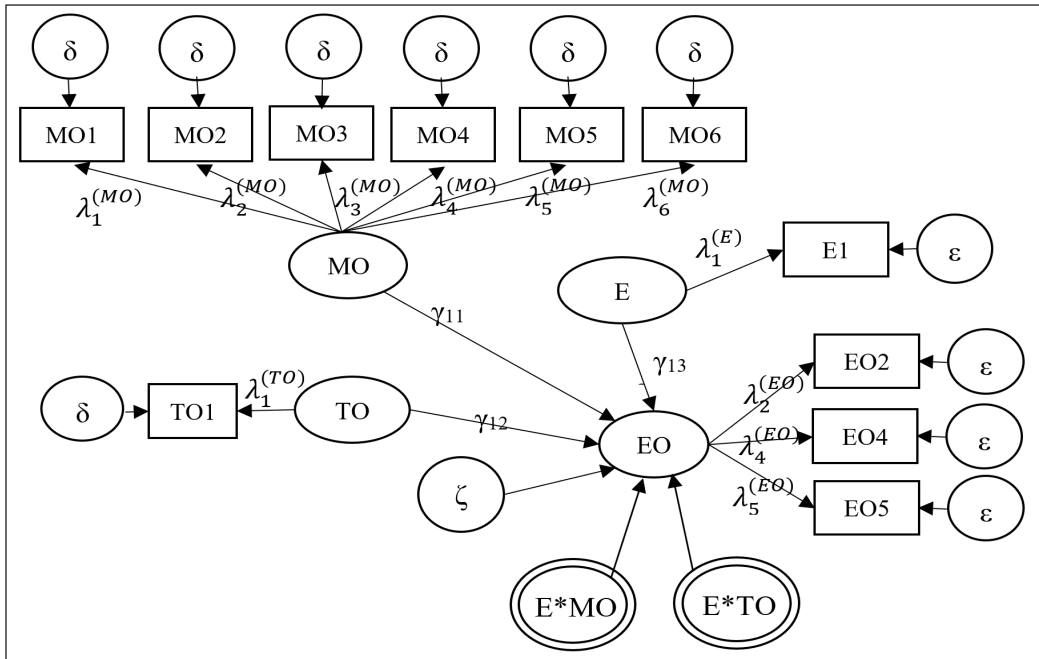


Figure 2. Research model

The research model is made of four latent variables, and each of them has its own explanatory indicators. Figure 2 displays this research model.

RESULTS AND DISCUSSION

Goodness-of-Fit Test on Outer Model

The goodness-of-fit test was conducted on the outer model by carrying out a test against convergent validity (based on factor loading rate and AVE rate), discriminant validity (based on cross loading rate), and reliability (based on composite reliability rate). Table 1 describes the factor loading rate of each indicator of latent variables.

The AVE rate of each latent variable is presented in Table 2.

Based on items shown in Table 1 and 2, all factor loading rates are higher than

0.7, while all AVE rates are more than 0.5. Referring to the principle stated by Hair et al. (2014), therefore, the outer model is fulfilling the condition of convergent validity.

Table 3 shows cross loading rate of each indicator on latent variables.

As it is revealed in Table 3, at least, in every relationship of indicator and latent variables, each indicator has the highest cross loading rate compared to the cross-loading rate of each latent variable. Based on the principle stated by Hair et al. (2014), it can be said that the outer model has successfully fulfilled the condition of discriminant validity. The description of the composite reliability rate is shown in Table 4.

As displayed in Table 4, the composite reliability rate is more than 0.7. Therefore,

Table 1
Factor loading rate

Indicator	<i>Factor Loading Rate of Indicator of Latent Variable</i>				Convergent Validity
	MO	TO	E	EO	
MO1	0.756				Valid
MO2	0.776				Valid
MO3	0.864				Valid
MO4	0.953				Valid
MO5	0.850				Valid
MO6	0.859				Valid
TO1		1.000			Valid
E1			1.000		Valid
EO2				0.831	Valid
EO4				0.708	Valid
EO5				0.760	Valid

Table 2
AVE rate

Latent Variable	AVE	Convergent Validity
MO	0.715	Valid
TO	1.000	Valid
E	1.000	Valid
EO	0.590	Valid

Table 3
Cross loading rate

Indicator	<i>Cross Loading Rate of Indicator on Latent Variable</i>				The Highest Cross Loading Rate	Discriminant Validity
	MO	TO	E	EO		
MO1	0.756	0.631	0.485	0.594	MO1 → MO	Valid
MO2	0.776	0.674	0.517	0.696	MO2 → MO	Valid
MO3	0.864	0.698	0.583	0.748	MO3 → MO	Valid
MO4	0.953	0.808	0.681	0.803	MO4 → MO	Valid
MO5	0.850	0.687	0.587	0.735	MO5 → MO	Valid
MO6	0.859	0.705	0.576	0.689	MO6 → MO	Valid
TO1	0.831	1.000	0.694	0.680	TO1 → TO	Valid
E1	0.680	0.694	1.000	0.645	E1 → E	Valid
EO2	0.681	0.596	0.480	0.831	EO2 → EO	Valid
EO4	0.547	0.563	0.471	0.708	EO4 → EO	Valid
EO5	0.705	0.606	0.533	0.760	EO5 → EO	Valid

Note: Result of Analysis with SmartPLS at a significance level of 5%

Table 4
Composite reliability rate

Latent Variable	Composite Reliability	Reliability
MO	0.937	Reliable
TO	1.000	Reliable
E	1.000	Reliable
EO	0.811	Reliable

the model is considered reliable. Based on items presented in Tables 1- 4, and referring to the principle of Hair et al. (2014), therefore, it can be said that the outer model is considered fit.

Goodness-of-Fit Test on Inner Model

The goodness-of-fit test on the inner model is done by evaluating the R^2 value. Table 5 describes the R^2 value of the inner model.

Table 5
R² value

Endogenous Latent Variable	R ²	Decision
EO	0.732	Inner Model is Good

Pursuant to Table 5, the value of R^2 is more than 0.25. In accordance with the principle stated by Hair et al. (2014), therefore, the inner model is considered fit. The summary of the goodness-of-fit test result is shown in Table 6.

As indicated in Table 6, the criteria of goodness-of-fit are fulfilled, and therefore, there is goodness-of-fit for the outer model (Hair et al., 2014) and goodness-of-fit for the inner model as well (Hair et al., 2014). Given this result, the research model is then perceived as fit and thus, can be used in the hypothesis test.

For direct effect hypotheses, the author conducted the hypothesis test by processing values derived from the bootstrapping

Table 6
Summary of the goodness-of-fit test result

Goodness-of-Fit		Parameter	Rule of Thumb	Decision
Outer Model	Convergent Validity	Factor Loading	Factor loading of all indicators must be > 0.7	Convergent Validity Fulfilled
		AVE	AVE of all indicators must be > 0.5	
	Discriminant Validity	Cross Loading	The factor loading of all indicators in one latent variable must be greater than those in other latent variables.	Discriminant Validity Fulfilled
	Reliability	Composite Reliability	Composite Reliability must be > 0.7	Reliable
Inner Model	R ² Evaluation	R ² Value	R ² > 0.25	Model considered as fit

formula. The processing was done with Smart PLS 3.2.7. Alternative Hypothesis (H_a) is accepted only if t_{count} is ≥ 1.96 (Hair et al., 2014). The t-statistic (t_{count}) values of the direct effect test are summarized in Table 7.

The hypothesis test on the direct effect relationship (Table 7) had given two results: (1) MO had a direct and significant effect on EO; and (2) TO had a direct and significant effect on EO. Baron and Kenny's Norm (Hair et al., 2014) required that the moderation effect could only be tested if the direct effect was proven to be significant. Related to the results in Table 7, where all direct effect relationships are significant, the moderation test is allowed to be conducted on the moderation relationships, such as:

(1) moderation effect of E to the effect of MO on EO; and (2) moderation effect of E to the effect of TO on EO. For these moderations (indirect effect) hypotheses, the testing process remained similar to that of the direct effect test. The similarity is in the use of Smart PLS 3.2.7 to process the values obtained from bootstrapping formulation. The summary of t-statistic (t_{count}) values from the moderation effect test is displayed in Table 8.

The summary of the factor loading, path coefficient, and t-statistic (t_{count}) values shown in the hypothesis model is indicated in Figure 3.

Each result of the hypothesis test, as indicated in Figure 3, will be explained in separate sections.

Table 7
Summary of t_{count} values from direct effect test

No	Direct Effect	Hypothesis		Path Coeff.	t_{count}	Decision	Remark
		H_0	H_a				
1.	MO on EO (MO \rightarrow EO)	$H_{0(1)}:$ $\gamma_{11} = 0$	$H_{a(1)}:$ $\gamma_{11} \neq 0$	0.596	5.942	H_0 is rejected; H_a is accepted.	The effect is positive and significant.
2.	TO on EO (TO \rightarrow EO)	$H_{0(3)}:$ $\gamma_{12} = 0$	$H_{a(3)}:$ $\gamma_{12} \neq 0$	0.191	2.162	H_0 is rejected; H_a is accepted.	The effect is positive and significant.

Table 8
Summary of t_{count} values from moderation effect test

No	Moderation (Indirect) Effect	Hypothesis		Path Coeff.	t_{count}	Decision	Remark
		H_0	H_a				
1.	MO on EO moderated by E (MO*E \rightarrow EO)	$H_{0(2)}:$ $\gamma_{11} = 0$	$H_{a(2)}:$ $\gamma_{11} \neq 0$	-0.092	0.691	H_0 is rejected, H_a is accepted.	The effect is negative, but not significant.
2.	TO on EO moderated by E (TO*E \rightarrow EO)	$H_{0(4)}:$ $\gamma_{12} = 0$	$H_{a(4)}:$ $\gamma_{12} \neq 0$	0.047	0.454	H_0 is rejected, H_a is accepted.	The effect is not negative, and also not significant

Source: Result of analysis with SmartPLS at a significance level of 5%

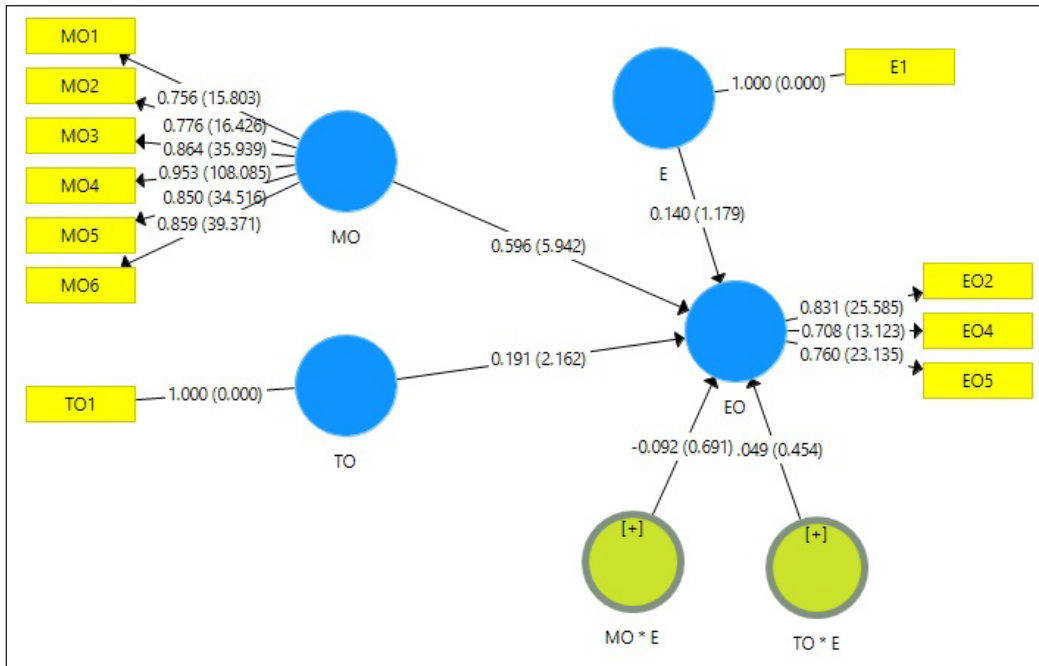


Figure 3. Summary of hypothesis model calculation results
 Source: Result of analysis with SmartPLS at a significance level of 5%

Effect of Market Orientation on Entrepreneurship Orientation

Market orientation of Small-and-Medium Enterprises in East Java has a positive and significant effect on entrepreneurship orientation. In other words, market orientation significantly increases entrepreneurship orientation.

Whether Small-and-Medium Enterprises are still active in the market depends on how they grow and compete with others in fulfilling market demand (Frishammar & Hörte, 2007). Small-and-Medium Enterprises may survive in the business competition if they have the capability to translate properly their market demand and strategic orientation (Acosta et al., 2018). Small-and-Medium Enterprises with market orientation should have better

performance because they respect and apply entrepreneurship values such as innovation, risk-taking, and being aggressive in competing for market shares (Jangl, 2015). Indeed, Small-and-Medium Enterprises with entrepreneurship orientation do always need market orientation to effectively drive their innovative action on target markets (Amin et al., 2016). Pursuant to these statements, it can be said that Small-and-Medium Enterprises' entrepreneurship orientation increases after they apply market orientation.

Effect of Technology Orientation on Entrepreneurship Orientation

The technology orientation of Small-and-Medium Enterprises in East Java has a positive and significant effect on

entrepreneurship orientation. As the results showed, technology orientation increased entrepreneurship orientation.

Technology orientation is a key factor for the success of Small-and-Medium Enterprises (Zhai et al., 2018). The job environment has been affected by the fast growth of technology, and therefore, both values and effects of technology become apparent during the presentation of new products (Ali et al., 2016). The use of new technology needs to be supported by entrepreneurship values, such as innovation and that of being proactive in applying business strategy (Zhai et al., 2018). In other words, the SMEs' entrepreneurship orientation can be increased by improving technology orientation.

Moderation Effect of Education in the Relationship of Market Orientation on Entrepreneurship Orientation

Education acts as a moderator variable in the relationship of market orientation on entrepreneurship orientation. Education reduces the effect size of this relationship, but the level of this reduction is not significant statistically. There are two immediate causes for this situation. First is the low level of market orientation among Small-and-Medium Enterprises in East Java. Second is the low level of education among SMEs' workers which has prevented them from applying entrepreneurship values. Indeed, the further consequence of both low situations is the less optimality of entrepreneurship orientation.

Small-and-Medium Enterprises with entrepreneurship orientation are usually

good at responding to market demands. Their market orientation tends to be responsive and proactive. The marketing strategy of SMEs, thus, always involves the exercise of market orientation supported by entrepreneurship values (Amin et al., 2016). If SMEs do have a good strategy and it is successfully executed, then it should improve performance (Acosta et al., 2018), especially when they innovate to empower market orientation.

The capability of being innovative and exercising other aspects of entrepreneurship is determined by knowledge, and regarding this matter, education can be an impelling factor that enforces entrepreneurship orientation. Education is a factor that determines the success of Small-and-Medium Enterprises (Nawawi et al., 2017). The strength of market orientation depends on the capacity of SMEs to understand market situations, and the effective use of knowledge may help them to sell their newly created innovative products (John et al., 2016). Within the context of East Java, the education level of the majority of SME workers is not very high, and most of them only graduated from high schools. Organizational learning at SMEs in East Java is only apparent among managers and secretaries (Al Idrus et al., 2018). This limited learning scope results in less optimality on the application of market orientation and entrepreneurship values because almost none of the lower-level workers has enough knowledge about entrepreneurship, and this surely will affect the SMEs' road to success.

Moderation Effect of Education in the Relationship of Technology Orientation on Entrepreneurship Orientation

Education is a moderator variable in the relationship of technology orientation on entrepreneurship orientation. In this situation, education increases the relationship of technology orientation on entrepreneurship orientation, and its moderation effect is not significant statistically. The reason is that the technology currently used by Small-and-Medium Enterprises in East Java is less up-to-date. As a result, the workers of these SMEs always find it difficult to apply entrepreneurship values such as innovation and lack of enthusiasm to learn new things. The majority of SME workers have low education levels and therefore, they will have difficulty in benefiting from the use of new technology.

To develop new products, Small-and-Medium Enterprises always need sustainable capabilities and should work to improve on innovation and also to adjust its production lines to provide room for the adoption of recent technology (Kamal et al., 2016). Small-and-Medium Enterprises must predict the growth of technology and keep track of it in order to make technology usable in their products and production process. This predicting capacity and the skill of using current technology should help SMEs to improve their business performance (Ali et al., 2016). In other words, a high level of technology orientation can affect the entrepreneurship orientation of Small-and-Medium Enterprises. However, they must still embrace education to develop

individuals with skills and capabilities relevant to the use of current technology. Human resource is one of the determining factors for the success of SMEs, especially when workers are capable of using current technology. Workers with high education find it easier to adapt to new technology (Carruth & Carruth, 2013), and this knowledge of technology helps them to be more innovative.

CONCLUSION

It can be concluded that the market orientation of Small-and-Medium Enterprises (SMEs) in East Java can significantly increase their entrepreneurship orientation. Market orientation and entrepreneurship orientation are strategies that enable SMEs to increase their business growth (Miles & Arnold, 1991). If the business carried out by SMEs is not oriented to market tastes, there would be a mismatch between demand and supply in the market. The compatibility between SMEs and the market can be realized by ensuring that the capital structure and the marketing system of SMEs are running well. But, it must be noted that it always becomes a problem if there is no solid base that can be used by SMEs to satisfy market desires. The education level can reduce the effect of market orientation on entrepreneurship orientation of SMEs in East Java, but the reduction is not statistically significant as revealed in this study. In the era of globalization, entrepreneurship orientation does not only rely on the level of education but also involves experience, emotional intelligence, organization, and analysis of

consumer behavior, because all of these are considered as a necessity, especially when it involves competition (Yaghoubi & Naroei, 2011). Also, education levels can increase the effect of technology orientation on the entrepreneurship orientation of SMEs in East Java. However, in this study, the increase is not statistically significant. The effect of technology orientation on entrepreneurship orientation is not actually intended to facilitate operations but to help entrepreneurs in deciding production outputs. The use of technology must still involve innovation in marketing in order to improve performance. Despite the importance of this innovation, however, education cannot guarantee the implementation of innovation because educational institutions in current days are often designing curricula that are oriented more to office jobs rather than to entrepreneurship (Bae et al., 2014; Kunday & Çakir, 2014; Saqib et al., 2018).

This research provides input and considerations concerning the moderation effect of education on the effect of market orientation and technology orientation on entrepreneurship orientation among Small-and-Medium Enterprises. The suggestion is that market orientation should be increased by intensifying the variation of the market's supply and demand and by enhancing marketing targets. Technology orientation must be improved by upgrading the technology currently used by Small-and-Medium Enterprises. This upgrading process can be achieved by giving employees training on recent technology. The education level of human resources at

Small-and-Medium Enterprises can also be improved by hiring candidates who have adequate educational backgrounds and then providing them with on-the-job training to increase their knowledge about the expected performance, the latest technology, and the importance of market orientation.

ACKNOWLEDGEMENTS

Many thanks to colleagues for their suggestions to improve the quality of this article.

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