

Manufacturing Coordination Analysis: The Role of Market Intelligence Quality and Supply Chain on Product Innovation Performance

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Abstract

This study examines how the role of market intelligence quality and supply chain intelligence quality moderates the relationship between manufacturing coordination (manufacturing-market coordination and manufacturing-supply chain coordination) and product innovation performance in Micro, Small and Medium Enterprises (MSMEs). The population in this study were MSME business practitioners in Yogyakarta. The sample is 50 respondents with purposive sampling technique, where the researcher determines the criteria from the sample to collect information related to this research from specific targets that meet these criteria. Hypothesis testing in this study uses multiple linear regression analysis and Moderated Regression Analysis to test the moderator variable hypothesis using a tool in the form of the IBM SPSS 21 application. The results of this study indicate that manufacturing coordination with the market and manufacturing coordination with the supply chain has a positive effect on innovation performance. product. This study also finds that the quality of market intelligence moderates the relationship between manufacturing and market coordination on product innovation performance. In addition, this study also shows that the quality of supply chain intelligence moderates the relationship between manufacturing and supply chain coordination on product innovation performance. The findings of this study contribute to MSMEs that the quality of market intelligence and supply chain intelligence plays an important role in achieving innovation performance, especially in terms of coordinating manufacturing with markets and supply chains.

Keywords

Intelligence quality, manufacture coordination, product innovation performance

1. Introduction

The current condition is a tough test for entrepreneurs, including micro, small and medium enterprises (MSMEs). In order for businesses to survive, they must be able to adapt quickly, innovate, such as changing marketing patterns and changing products. Companies large and small have enormous pressure on new products to be developed. This is due to the increasing competition and the rapid development of the industry (Hobday 1998; Katzy et al. 2013). According to Hobday (1998), the complexity and cost of a product have an important role in product innovation and coordination in the industry. Coordination between the external and internal environment of a company increases drastically in order to gain knowledge. This knowledge is then used for the development of a company's innovation (Mostaghel et al. 2019). Internal coordination between marketing functions (Henard and Szymanski 2001; Swink and Song 2007)

and manufacturing (Tatikonda et al. 2001; Alegre-Vidal et al. 2004) is integrated to achieve innovation goals. Manufacturing coordination with marketing is related to a tendency, willingness, shared process, and mutual understanding to achieve collective goals (Kahn 1996).

External coordination in the supply chain is also key to developing market-related understanding, improving product quality, increasing competitiveness, and reducing costs and product life cycles (Mostaghel et al. 2015; Chang 2017). Supply chain coordination is linked to innovation (Atuahene-Gima 1996; Bellamy et al. 2014), improved market orientation (Tsai et al. 2008), and increased integrated knowledge (Mostaghel et al. 2019). Several studies highlight the benefits of internal and external coordination in designing and developing a product.

Based on the research results of Baker and Sinkula (2005), coordination between the marketing and manufacturing fields can increase market knowledge, which allows a company to manage complex customers and be able to improve alignment with manufacturing capabilities. Coordination of manufacturing and supply chain activities increases design-related insights and accelerates the speed of product development (Bellamy et al. 2014).

Manufacturing-supply chain coordination facilitates timely product launches, provides a strong position for new products, and ensures better product specifications (Alegre-Vidal et al. 2004). Based on the main journal, (Mostaghel et al. 2019) put the quality of market intelligence and the quality of supply chain intelligence to increase and improve the coordination of the manufacturing-supply chain to improve product innovation performance. The performance is defined as the degree to which innovation can meet the company's sales targets, shares, and customer satisfaction (Li and Atuahene-Gima 2001). There are several aspects as follows that motivate the impact of intelligence quality on coordination but there are still some shortcomings.

First, based on previous research related to innovation performance, although the results of this study indicate a relationship between supply chain integration and product innovation performance (Olson et al. 2001; Chang 2017), coordination between marketing and manufacturing may not lead companies to create innovation because it is only limited to current customers and can disrupt the company's focus due to changes in technology and markets (Augusto and Coelho 2009). One empirical study explains that manufacturing-supply chain coordination does not improve product innovation performance, for example, in a study using a sample of manufacturing companies in the Netherlands (Belderbos et al. 2004). In addition, other studies have shown that at a higher level, manufacturing-supply chain coordination only improves design performance and not market performance (Wong et al. 2011).

Second, related to intelligence quality, market intelligence quality is defined as the extent to which a person interprets market intelligence from a sender in an accurate, relevant, clear, and timely manner (Deshpandé et al. 2014). The quality of market intelligence is able to facilitate all knowledge regarding competitors and market activities (Rothschild 2006) and provide an understanding of customer needs (Zhang and Duan 2010). Research shows that the quality of market intelligence mediates the relationship between marketing-supply chain coordination and new product development performance (Bendoly et al. 2012). However, the moderating role of market intelligence quality in the relationship between marketing-supply chain coordination and product innovation performance has not been investigated previously (Mostaghel et al. 2019).

Third, the quality of supply chain intelligence can be an important factor to explain the findings regarding the effect of manufacturing-supply chain coordination on product innovation performance. The quality of supply chain intelligence reflects an accuracy, relevance, timeliness, and freshness of the information that the company has collected through the company's supply chain network of partners (Bendoly et al. 2012). Several existing studies emphasize the importance of the quality of supply chain intelligence in explaining the superiority of company performance (e.g., Hult et al. 2006). However, the findings regarding the quality of supply chain intelligence and product innovation performance are still unclear. For example, Bendoly et al. (2012) show that the quality of supply chain intelligence does not mediate the impact of manufacturing-supply chain coordination on new product development performance. To expand on previous research, the researcher also has an assumption that the quality of intelligence, both market and supply chain intelligence, is more suitable and better served as a moderator than a mediator which is in line with research (Mostaghel et al. 2019).

Fourth, although in the research of Mostaghel et al. (2019) has proven that the quality of intelligence will strengthen the positive relationship between manufacturing coordination and product innovation performance, but in this study the subjects studied were large companies and not MSMEs. In fact, MSMEs in the national economy have a very

important role for a country. Sofyan (2017) explains that MSMEs play a role in absorbing labor and contributing to national income, so it is very important for MSMEs to continue to survive and thrive in intense competition.

1.1 Objectives

Based on this background, this study aims to fill and complete the research gaps described above by examining the role of intelligence quality (market intelligence quality and supply chain intelligence quality) which is able to strengthen the relationship between manufacturing coordination (manufacturing-market coordination and manufacturing-supply chain coordination) on the performance of product innovation in D. I. Yogyakarta manufacturing MSMEs.

2. Literature Review

Integration or coordination of manufacturing-marketing can be defined as a form of coordination between the timing and substance of functional strategies and development activities carried out by manufacturing and marketing in an effort to create new products (Swink and Song 2007). Meanwhile, according to Mostaghel et al. (2019), manufacturing-marketing coordination is the extent to which manufacturing and marketing parties have the same understanding of each other's capabilities and capabilities and the degree to which they are able to plan and align goals and activities based on a common understanding.

Coordination between marketing and manufacturing is an important part of unifying efforts and visions among the various subsystems related to innovation (Mentzer et al. 2001; Barki and Pinsonneault 2005). A coordination carried out by the manufacturing and marketing departments in a company is able to provide important information from consumers regarding various things to the company. This information can be used as a solution for the creation of new products according to what is needed by customers. Thus, the company's product innovation performance is able to increase as a result of this coordination which is able to create company product innovations in accordance with what consumers want and need (Tuli et al. 2007). Based on this description, the first hypothesis of this research is:

H1: Manufacturing coordination with the market has a positive effect on product innovation performance

According to Bendoly et al. (2012), manufacturing and supply chain coordination is the extent to which a manufacturing company and its external supply chain partners develop an understanding of each other's capabilities and align the goals and activities of each party. Leaders and managers jointly seek to improve supply chain coordination with the aim of dealing with uncertain and dynamic situations related to the development and creation of innovative new products (Bodas Freitas and Fontana 2018).

Manufacturing-supply chain coordination, which complements and enhances the functional strengths of a company's suppliers, is one of the important keys to a company's successful innovation performance (Hult et al. 2006). Companies that coordinate with their suppliers from the start will be able to improve the company's product innovation performance (Petersen et al. 2005). It is not surprising that today, company managers are trying to improve their coordination with suppliers to create new products to deal with market uncertainty (Bodas Freitas and Fontana 2018). Based on this description, the second hypothesis of this research is:

H2: Manufacturing coordination with the supply chain has a positive effect on product innovation performance

According to Deshpandé et al. (2014), the quality of market intelligence is defined as the extent to which a person is able to interpret market-related information from a sender in an accurate, relevant, clear, and timely manner. The quality of market intelligence is able to provide information about competitors, consumers, and activities in the market (Zhang and Duan, 2010). The quality of market intelligence is a factor that must be considered by a company because many researchers have proven that the quality of market intelligence will affect a company's innovation and will have an impact on its success (Luca and Atuahene-Gima 2007; Bendoly et al. 2012).

Several studies have confirmed that the quality of market intelligence mediates, partially and fully, the relationship between manufacturing-marketing coordination and product innovation performance (Luca and Atuahene-Gima, 2007; Bendoly et al. 2012). However, there are some researchers such as Mostaghel et al. (2019) who do not agree that the quality of market intelligence acts as a mediator. The quality of market intelligence, with good manufacturing-marketing coordination, is able to give the company a different product offer to consumers than its competitors. Thus,

the company will be able to manage dynamic demand through improving the company's product innovation performance. (Zhang et al. 2009; Bendoly et al. 2012).

In this research hypothesis, the quality of market intelligence will act as a moderating variable. The logical reasoning that helps in formulating research hypotheses comes from Venkatraman's (1989) research which is based on contingency theory, where the quality of intelligence moderates not mediates. Contingency theory suggests that the company's strategy and internal and external environmental conditions will affect the course of the company's performance (Atuahene-Gima and Janet Y. Murray 2004). Based on contingency theory, it supports the moderating role of quality intelligence on the relationship between manufacturing coordination and product innovation performance. Some researchers also state that the quality of intelligence plays a role in moderating the relationship (Atuahene-Gima 1996; Atuahene-Gima and Janet Y. Murray 2004; Zhang and Duan 2010; Mostaghel et al. 2019). Based on this description, the third hypothesis of this research is:

H3: The quality of market intelligence moderates the positive role of market-manufacturing coordination on product innovation performance

The quality of supply chain intelligence reflects the accuracy, relevance, timeliness, and novelty of information obtained by a company through its supply chain partnership network or external parties (Bendoly et al. 2012). Handfield et al. (1999) explained that the best way to accelerate product development and make it successful is because it is based on the exchange of information, both directly and indirectly, which is carried out with suppliers and companies or customers. So that the quality of supply chain intelligence must be considered by the company.

Previous research has proven that manufacturing-supply chain coordination, such as information exchange activities of each party, has an important role in firm performance (Handfield et al. 1999; Hult et al. 2006). Currently, many companies are trying to improve manufacturing-supply chain coordination as well as the quality of supply chain intelligence to deal with uncertainty through the development of new products (Bodas Freitas and Fontana 2018). This will increase knowledge and increase communication and trust of each party in creating product innovations (Hippel 1994; Bodas Freitas and Fontana 2018). The quality of supply chain intelligence contributes to product innovation performance by increasing understanding of customer needs and directing this intelligence in line with the capabilities and capabilities of suppliers to improve innovation performance (Im and Rai 2008).

Köhler et al. (2012) conducted research on 5000 companies in five Western European countries, they proved that the quality of supply chain intelligence only has an impact on product innovation performance when the company's innovation is relatively new and is not the result of product imitation. Apart from them, Bendoly et al. (2012) proved that the quality of supply chain intelligence does not mediate the relationship between manufacturing-supply chain coordination and new product development performance. Although some researchers say so, in the study of Mostaghel et al. (2019), the quality of supply chain intelligence has a relationship with manufacturing coordination and product innovation performance. This is because in their research, Mostaghel et al. (2019) makes the quality of supply chain intelligence a moderator and not a mediator. Based on the description above, the fourth hypothesis of this research is:

H4: The quality of supply chain intelligence moderates the positive role of manufacturing-supply chain coordination on product innovation performance

Figure 1 below is a research model that is able to describe the role of manufacturing coordination on product innovation performance and the role of intelligence quality which moderates the relationship between manufacturing coordination on product innovation performance.

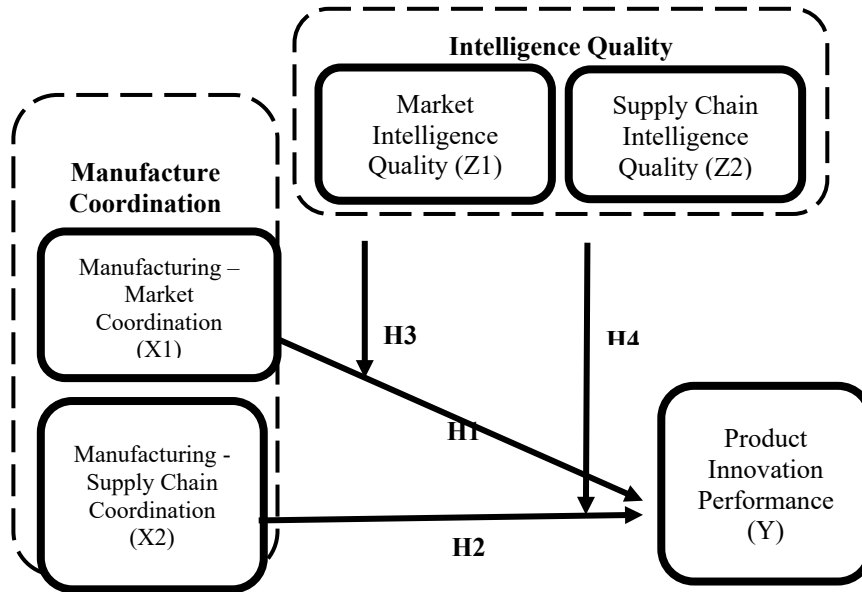


Figure 1. Research Model

3. Methods

According to Sekaran and Bougie (2016), in conducting research, the population is all members, events, or something that the researcher wants to investigate. The population in this study are Micro, Small and Medium Enterprises (MSMEs) which are engaged in manufacturing, especially in the city of Yogyakarta. Sampling in this research uses a non-probability sampling approach with purposive sampling technique, where according to Sekaran and Bougi (2016), the sample used has certain criteria or conditions that are able to provide specific information related to research. The sample size in this study is based on the presentation of Roscoe (1975), in the book Sekaran and Bougie (2016), namely in multivariate research, such as multiple regression analysis, the sample size must be several times larger, usually ten times or more, than the number of variables. in research. Because this study has five variables, the sample size used in this study is 50 Yogyakarta manufacturing MSMEs.

The measure was developed based on a comprehensive investigation of the existing literature. The survey is divided into two parts: the first part is designed to collect information on the demographic profile of the respondents, while the second part contains the theoretical constructs for this study. All constructs were measured reflectively and participants were asked to determine their level of agreement/disagreement with each statement using a five-point Likert scale, where "1" indicates strong disagreement and "5" represents strong agreement. The items that make up the survey include five constructs, namely Market Intelligence Quality (Z1), Manufacturing-Marketing Coordination (X1), Supply Chain Intelligence Quality (Z2), Manufacturing-Supply Chain Coordination (X2), Product Innovation Performance (Y). The constructs and items used in the questionnaire were adopted from research conducted by Mostaghel et.al. 2019.

4. Data Collection

Below are the respondents' demography with characteristics as listed in the following table 1. Of the 50 MSMEs who became respondents, 16% in the textile and garment sector, 6% in the food and beverage sector, 70% in the handicraft sector, and 8% in other fields. Based on the respondent's status in the company, 68% are owners, 16% are managers, and 16% are representatives. Based on company location, 66% in Bantul district, 2% in Gunung Kidul district, 4% in Kulon Progo district, 6% in Sleman district, and 22% in Yogyakarta city. Based on the company's net assets, 14% have assets of Rp 50 million, > Rp 50 – 500 million as many as 84%, and > Rp 500 million as much as 2%. Based on the number of employees, MSMEs that have less than 20 employees are 76% and 20 to 99 employees are 24%. And based on the implementation of innovation, all MSMEs have made innovations (100%).

Table 1. Respondent Characteristics

Characteristics	Frequency	Percentage
Occupation by industry		
Textile and Garment	8	16%
Food and Beverages	3	6%
Hand craft	35	70%
Others	4	8%
Job Title		
Owner	34	68%
Manager	8	16%
Representation investor	8	16%
Location		
Bantul	33	66%
Gunung Kidul	1	2%
Kulon Progo	2	4%
Sleman	3	6%
Yogyakarta	11	22%
Assets		
≤ Rp 50 juta	7	14%
> Rp 50 – 500 juta	42	84%
> Rp 500 juta	1	2%
Number of employees		
< 20	38	76%
20 – 99	12	24%
≥ 100	0	0%
Innovation implementation		
Finished	50	100%
Unfinished	0	0%

5. Results and Discussion

5.1 Validity and Reliability Testing

According to Ghozali (2018), a validity must be possessed in research. Test the validity of this research using Pearson Correlation where the data is said to be valid when the p-value < a certain level of significance. In this study using a significant level of 5%. Meanwhile, the reliability test carried out in this research is by using a one-shot method that looks at the Cronbach Alpha (α) of a construct.

From Table 2, the results of the validity test on all variables show that the statement correlation coefficient contained in each variable is significant with an p-value in each statement item of 0.000 (less than 0.05). These points indicate that each statement item on each variable is valid. In other words, the statement items are able to represent or form the construct of the variable in question. Likewise, the results of the reliability test show that all variables have a Cronbach Alpha value of more than 0.70, namely manufacturing-market coordination of 0.911, manufacturing-supply chain coordination of 0.931, product innovation performance of 0.972, quality of market intelligence of 0.956, and the quality of supply chain intelligence is 0.968. Thus, it can be concluded that all research variables are reliable and can be used as research instruments.

Table 2. Validity and Reliability Testing Result

Variable	Code	Coef. Correlation	<i>P Value</i>	Cronbach Alpha
Manufacturing-Market Coordination (X1)	X1.1	0.892	0.000	0,911
	X1.2	0.764	0.000	
	X1.3	0.851	0.000	

	X1.4	0.815	0.000	
	X1.5	0.82	0.000	
	X1.6	0.876	0.000	
Manufacturing - Supply Chain Coordination (X2)	X2.1	0.882	0.000	0,931
	X2.2	0.881	0.000	
	X2.3	0.873	0.000	
	X2.4	0.781	0.000	
	X2.5	0.895	0.000	
	X2.6	0.878	0.000	
Product Innovation Performance (Y)	Y.1	0.941	0.000	0,972
	Y.2	0.894	0.000	
	Y.3	0.909	0.000	
	Y.4	0.804	0.000	
	Y.5	0.96	0.000	
	Y.6	0.951	0.000	
	Y.7	0.851	0.000	
	Y.8	0.908	0.000	
	Y.9	0.797	0.000	
	Y.10	0.922	0.000	
Market Intelligence Quality (Z1)	Z1.1	0.922	0.000	0,956
	Z1.2	0.841	0.000	
	Z1.3	0.866	0.000	
	Z1.4	0.864	0.000	
	Z1.5	0.857	0.000	
	Z1.6	0.868	0.000	
	Z1.7	0.893	0.000	
	Z1.8	0.884	0.000	
	Z1.9	0.762	0.000	
Supply Chain Intelligence Quality (Z2)	Z2.1	0.871	0.000	0,968
	Z2.2	0.879	0.000	
	Z2.3	0.886	0.000	
	Z2.4	0.871	0.000	
	Z2.5	0.916	0.000	
	Z2.6	0.912	0.000	
	Z2.7	0.918	0.000	
	Z2.8	0.889	0.000	
	Z2.9	0.896	0.000	

5.2 Hypothesis Testing

The H1 test aims to measure or determine the effect of manufacturing-market coordination on the company's product innovation performance, while the H2 test aims to measure or determine the effect of manufacturing-supply chain coordination on product innovation performance. As previously explained, testing H1 and H2 in this study uses multiple linear regression analysis with the help of SPSS version 21 application. The following is a Table 3 of multiple linear regression test results for H1 and H2:

Table 3. Multiple Linear Regression Test Results

Model 1	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	10.011	5.479		1.827	.074
Manufacturing-Market Coordination (X1)	.579	.203	.358	2.845	.007
Manufacturing-Supply Chain Coordination (X2)	.643	.221	.365	2.909	.006

a. Dependent Variable: Product Innovation Performance

Based on the table above, it can be seen that the significance probability value for manufacturing-market coordination (X1) is 0.007. This value is smaller than 0.05, meaning that product innovation performance (Y) is influenced by manufacturing-market coordination (X1). So it can be concluded that H1 is accepted. In addition, it is known that the significance probability value for manufacturing-supply chain coordination (X2) is 0.006. This value is smaller than 0.05, meaning that product innovation performance (Y) is influenced by manufacturing-supply chain coordination (X2). So it can be concluded that H2 is accepted.

The results of this study indicate that the higher coordination between manufacturing and the market and the coordination between manufacturing and the supply chain will significantly strengthen the performance of product innovation. This finding strengthens the results of previous research conducted by Tuli et al.(2007) where the company's product innovation performance was able to increase as a result of coordination between the manufacturer and market. The results of this study indicate that companies that have the latest understanding and information related to the market can create company product innovations according to what consumers want and need. Good fulfillment of consumer needs and desires will improve the company's product innovation performance.

Likewise, the level of coordination between manufacturing and supply chains will significantly strengthen product innovation performance. The results of this study are in line with the research results of Petersen et al.(2005), they suggest that companies that coordinate with their suppliers from the start will be able to improve the company's product innovation performance. This is because manufacturing coordination with the supply chain can complement and improve the functional strength of the company's suppliers and will be able to improve the quality of products desired by customers. Thus it has a further impact on the successful performance of the company's product innovation (Hult et al. 2006).

The H3 test aims to measure or determine the moderating effect of market intelligence quality on the relationship between manufacturing coordination with the market and product innovation performance. The H3 test in this study uses Moderated Regression Analysis (MRA) with the help of the SPSS version 21 application. Based on table 4, it can be seen that the significance probability value for manufacturing-market coordination with market intelligence quality (X1*Z1) is 0.035. This value is smaller than 0.05, meaning that product innovation performance (Y) is influenced by manufacturing-market coordination (X1) which is moderated by market intelligence quality (Z1). So it can be concluded that H3 is accepted.

Table 4. 1st Moderation Regression Test Results

Model 2	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	43.466	17.071		2.546	.014
Manufacturing-Market Coordination (X1)	-.816	.749	-.504	-1.089	.282
Market Intelligence Quality (Z1)	-.782	.527	-.688	-1.484	.145
Manufacturing-Market Coordination * Market Intelligence Quality	.050	.023	1.453	2.170	.035

a. Dependent Variable: Product Innovation Performance

The results of this study are in line with the research results of Mostaghel et al.(2019), where the quality of market intelligence acts as a moderator in the relationship between manufacturing-market coordination and product innovation performance. The quality of market intelligence with good manufacturing-marketing coordination can provide companies with different product offerings to consumers compared to their competitors. This is because the

market information received by the company can relate to completely new things and the information is not yet owned by other companies. Thus, the company will be able to manage and meet dynamic demands by improving the company's product innovation performance. (Zhang et al. 2009; Bendoly et al. 2012).

This study also found that hypothesis H4 which aims to measure or determine the moderating effect of supply chain intelligence quality on the relationship between manufacturing-supply chain coordination and product innovation performance proved significant, as listed in Table 5 below.

Table 5. 2nd Moderation Regression Test Results

Model 3	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	52.723	23.081		2.284	.027
Manufacturing-Supply Chain Coordination (X2)	-1.131	.939	-.643	-1.204	.235
Supply Chain Intelligence Quality (Z2)	-1.011	.643	-.878	-1.572	.123
Manufacturing-Supply Chain Coordination * Supply Chain Intelligence Quality	.059	.026	1.639	2.237	.030

a. Dependent Variable: Product Innovation Performance

Based on the table above, it can be seen that the significance probability value for manufacturing-supply chain coordination with supply chain intelligence quality (X2*Z2) is 0.030. This value is smaller than 0.05, meaning that product innovation performance (Y) is influenced by manufacturing-supply chain coordination (X2) which is moderated by supply chain intelligence quality (Z2). So it can be concluded that H4 is accepted.

The results of this study are in line with the research results of Mostaghel et al. (2019) where the quality of supply chain intelligence has a relationship with manufacturing coordination and product innovation performance. They have proven that the quality of supply-chain intelligence plays a role in moderating the manufacturing-supply chain coordination relationship with product innovation performance rather than mediating it. Apart from them, Bendoly et al. (2012) proved that the quality of supply chain intelligence does not act as a mediator. The quality of supply chain intelligence contributes to product innovation performance by increasing understanding of customer needs and directing this intelligence in line with the capabilities and capabilities of suppliers to improve innovation performance (Im and Rai 2008).

6. Conclusion

Based on the results of the study, it can be concluded that there is a positive influence of MSME manufacturing coordination, both manufacturing coordination with the market and manufacturing coordination with the supply chain, on the performance of MSME product innovation. Manufacturing coordination has an important role for MSMEs. The higher company manufacturing coordination will improve the company's product innovation performance. This is because MSME manufacturing coordination will increase the mutual understanding of each party regarding product development so that they can align common goals in product development and can provide the desired value to their new products in the future.

In addition, the results of this study also show that the quality of MSME intelligence, both the quality of market intelligence and the quality of supply chain intelligence, can moderate the positive relationship of MSME manufacturing coordination on the performance of MSME product innovation. Similar to manufacturing coordination, intelligence quality also plays an important role in the success of MSME innovative products. With good intelligence quality, MSMEs will be able to have various information related to markets and customers, both information provided

by marketing parties or from MSME supply chain partners. The information must contain novelty and interesting elements to contribute to the creation and development of new products. Thus, MSME's innovative products can offer completely new features and benefits for consumers compared to their competitors. This will increase consumer interest in MSME innovative products which has an impact on improving MSME product innovation performance.

This study has several limitations. First, the research focuses on MSMEs. Future research can examine really large companies and perhaps the impact of manufacturing coordination and intelligence quality will be more visible than in MSMEs. Second, this research focuses on the manufacturing sector. Future research can investigate non-manufacturing sectors such as service companies. Third, this research is quantitative. Further researchers can use qualitative methods with the same context or even by adding some constructs such as the use of technology to obtain more complex and in-depth results.

The results of this study provide managerial contributions to MSMEs in product development, to improve manufacturing coordination with the market as well as manufacturing coordination with the supply chain and the quality of market intelligence and the quality of supply chain intelligence. When these things can be continuously improved, the performance of product innovation owned by MSMEs or companies will also continue to increase and will bring long-term benefits and competitive advantages for the related companies.

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