

# **Improving MSMEs Operational Performance: the Role of Knowledge Management and Product Innovation**

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## **Abstract**

In recent years, the fashion industry has experienced high-intensity changes that require innovation activities to support operational performance. Although there have been many studies on operational performance, studies on operational performance involving small businesses, especially in the fashion industry in developing countries, are very limited. This study aims to examine the role of knowledge management and product innovation in improving the performance of MSMEs in the fashion industry. Through a hierarchical regression analysis involving 100 MSMEs in Yogyakarta, Indonesia, this study finds that knowledge management and product innovation positively affect MSMEs' performance. In addition, this study also finds the role of product innovation in mediating the effect of knowledge management on the performance of MSMEs. In general, this study has two contributions. First, in light of the scant literature relating product innovation to the connection between knowledge management and performance, theoretically, this study investigates how product innovation mediates the relationship between these two variables. Second, this study provides empirical evidence that can be used to develop policies, to encourage the increased operational performance of MSMEs in the fashion industry, through the implementation of knowledge management and product innovation.

## **Keywords**

Operational Performance, Knowledge Management, Product Innovation, MSMEs, and Fashion Industry.

## **1. Introduction**

Over the last few years, the changing business environment has impacted all industries, including fashion. In the fashion industry, change challenges include changes in customer tastes that are getting faster and product life cycles getting shorter. Gonzales and Chacon (2014) argue that the product life cycle in the fashion industry is concise, so businesses in this industry are required to understand changing customer preferences in developing new products. Consequently, businesses in such industry characteristics are necessary to utilize knowledge-based resources to improve operational performance and support competitiveness. In this context, Dahiyat (2015) argues that knowledge management (KM) and innovation are critical strategic factors in improving organizational performance when facing business environment changes.

In Yogyakarta, Indonesia, the fashion industry is one of the fastest growing industries, especially Batik clothing (a typical Indonesian cloth that has been designated as a cultural heritage by UNESCO) which has become an icon for souvenirs typical of Yogyakarta. Fashion has become the backbone of the creative economy industrial sector in Indonesia. According to the Minister of Tourism and Creative Economy, the contribution of the fashion industry is nearly 20 percent of all creative economy industry sectors in Indonesia (Ananda 2021), with a gross regional domestic product (GRDP) value of IDR 180.22 trillion in 2021 (Kusnandar 2022). Unfortunately, as the backbone of the creative economy, the fashion industry in Indonesia cannot escape from the negative impact of the Covid-19 pandemic, especially the fashion industry in the MSMEs sector (Ananda, 2021), as a result of changes in people's consumption patterns during the pandemic (Kusnandar 2022). The decline of the fashion industry in Indonesia can be seen in the negative growth of GRDP in the apparel and textile industry, which has continued to fall for two consecutive years, namely -8.88% in 2020 and -4.08% in 2021 (Kusnandar 2022).

In the literature review, several previous studies have found that KM is an essential factor in predicting performance (Mazdeh and Hesamamiri 2014; Lin and Kuo 2007). This relationship describes the ability to manage knowledge resources to improve organizational operational performance. Furthermore, in the context of the relationship between innovation and performance, previous studies explain that innovation plays a vital role in supporting performance through operational efficiency that supports competitiveness (Choi et al. 2008; Gunday et al. 2011).

Although several studies on the role of KM and innovation in improving performance have been conducted, gaps in the literature remain. First, there is a research gap related to the link between the two variables' indirect effects (López-Nicolás and Meroño-Cerdán 2011). Second, previous studies have shown some inconsistent results (Hashi and Stojic 2013), so further studies are needed to ensure the consistency of the relationship between innovation and performance. Third, there are deficiencies in the context of using certain types of innovation in previous studies, in examining their relationship to operational performance (Abdallah et al., 2016). Finally, studies on the role of KM and innovation in improving operational performance in developing countries are very limited (Al-Sa'di et al. 2017), so similar studies conducted in developing countries, especially in the MSMEs sector, are urgently required.

### **1.1 Objectives**

Based on the explanation in the introduction, this study aims to examine the effect of KM on the operational performance of MSMEs in the fashion industry, with product innovation as a mediating variable carried out in Yogyakarta, Indonesia, as a developing country. In the context of the limited literature linking product innovation in the relationship between KM and performance, this study theoretically examines the mediating role of product innovation in the relationship between these two variables. Empirically, this study provides empirical evidence that can be utilized to develop policies to encourage the increased operational performance of MSMEs in the fashion industry through implementing knowledge management and product innovation.

## **2. Literature Review**

Manikas and Terry (2010) define operational performance as the result of internal performance processes related to effectiveness, flexibility, product output, and productivity, as well as process quality and product quality. Tan et al. (2007) argue that operational performance results from the organization using its unique operational capabilities. Furthermore, the operational performance also refers to an organization's response to an ever-changing competitive environment (Flynn et al. 2010).

KM is a process, activity, technological foundation, or operational culture used to manage a company's valuable assets and knowledge (Pauleen et al. 2007). KM is helpful in reducing production cycle times, speeding up product creation, raising employee performance and productivity levels, and enhancing the quality of products and services, modifying or reengineering production processes, providing innovative services and products, and increasing flexibility (Slavković and Babić 2013; Dahiyat and Al-Zu'bi 2012; Abdallah et al. 2009).

Product innovation is a process involving design improvements that significantly alter how a product is used or has features (OECD 2005). In the context of commercialization, product innovation is also related to efforts to introduce new products to the market (Chang et al. 2012). Utilizing new technology and expertise or fusing them with existing technology and knowledge can lead to product innovation (Gunday et al. 2011). An essential goal of product innovation is to increase the product's value and achieve higher efficiency levels (Polder et al. 2010).

The role of KM in supporting operational performance rests on its ability to share knowledge (Al-Sa'di et al. 2017). The higher the KM level of an organization, the higher the tendency to learn things related to improving the ability to respond to change, develop creative ideas, and improve overall performance (Lee et al. 2005). Therefore, knowledge sharing in KM practices greatly improve organizational performance and competitive advantage (Ndlela and du Toit 2001). Previous studies found that knowledge has an important relationship with organizational performance (Mohrman et al. 2003), whereas KM positively influences organizational performance (Mazdeh and Hesamamiri, 2014). In particular, Al-Sa'di et al. (2017) found that KM is an important factor that can predict operational performance.

H<sub>1</sub>: KM has a positive effect on the operational performance of MSMEs

In addition, KM is also an antecedent for innovation (Dahiyat 2015), through its ability to develop and utilize new ideas as intellectual capital (Huang and Li 2009). KM enables organizations to acquire new knowledge, providing

opportunities to increase innovation (Dahiyat and Al-Zu'bi 2012). Darroch (2005) argues that KM has potential benefits related to increasing employee creativity, encouraging the emergence of creative ideas, and increasing product innovation. Previous studies found that KM positively influences product innovation (Bas et al. 2015; Al-Sa'di et al. 2017; Lee et al. 2013). Lee et al. (2013) argue that the positive influence of KM on product innovation is through KM practices, in the form of knowledge sharing, application, and documentation.

H<sub>2</sub>: KM has a positive effect on product innovation of MSMEs

In previous studies, product innovation is an important predictor of organizational performance. Tan et al. (2007) argue that organizations focusing on product innovation can achieve superior operational performance. Therefore, innovative organizations tend to have better growth rates and productivity than less innovative organizations (Cainelli et al. 2004). In this context, product innovation can provide operational benefits to the organization (Evangelista and Vezzani 2010), through its ability to respond effectively to changes that impact operational excellence (Lloréns-Montes et al. 2004). Al-Sa'di et al. (2017) found that operational performance is influenced by the organization's ability to innovate products.

H<sub>3</sub>: Product innovation has a positive effect on the operational performance of MSMEs

From the explanation of the formulation of the hypothesis above, it can be interpreted that KM practices can increase product innovation, which in turn impacts operational performance. Schiuma and Carlucci (2008) argue that KM practices enable companies to innovate, which contributes to improving the organization's operational performance. Further, Inkinen et al. (2015) explained that effective KM practices could affect operational performance indirectly through product innovation. For this reason, the study suspects an indirect effect between KM and operational performance explained through product innovation.

H<sub>4</sub>: Product innovation mediates the effect of KM on the operational performance of MSMEs.

### 3. Methods

In this study, a non-probability sampling approach, namely convenience sampling, that is, selecting samples based on the easiness of finding them, is applied (Sekaran and Bougie 2016). There are no set standards for selecting the sample, hence this sampling method was adopted. The sample of this research is the fashion industry MSMEs located in Yogyakarta, Indonesia. Data was collected through the distribution of a questionnaire compiled by adopting indicators derived from previous studies using a 1–5 Likert scale (strongly disagree-strongly agree) to measure each indicator. This study involved 100 respondents whom owners and managers of MSMEs represented.

The direct and mediated effects outlined in the research hypothesis are estimated in this study using SPSS. Hierarchical regression, specifically linear regression testing, which is tested hierarchically, was used to test hypotheses. In this hierarchical test, several linear regression tests are conducted in stages by adding predictors or variables between the first stage of the test and the next stage of testing (Sweet and Grace-Martin 2011).

The hierarchical regression test is divided into three stages (models) in this study. In the first stage, simple linear regression was used to test the effect of KM on product innovation (H<sub>2</sub>). Subsequently, in the second stage, simple linear regression was also used to test the impact of KM on operational performance (H<sub>1</sub>). Multiple linear regression was employed in the last stage to examine the impact of KM and product innovation on operational performance (H<sub>3</sub> & H<sub>4</sub>).

Table 1. Respondents Profile

Categories	Frequencies (%)
<i>Position</i>	
Owner	50
General Manager	32
Operational Manager	18
<i>Revenue (per year)</i>	
< IDR300 million	77
IDR300 million-IDR2.5 billion	20
>IDR2.5 billion	3

#### 4. Data Collection

The profile of the responders to this survey is shown in Table 1. Based on position category, the majority of respondents (50%) are owners of MSMEs, and the rest are general managers (32%), and operational managers (18%). Furthermore, in the category of annual income, the majority of respondents have incomes below IDR300 million (77%), while the rest have revenues between IDR300 million to IDR2.5 billion (20%), and more than IDR2.5 billion (3%). Based on the laws in force in Indonesia, this category also represents the types of small and medium enterprises, namely micro businesses (< IDR300 million), small businesses (IDR300 million-IDR2.5 billion), and medium enterprises (>IDR2.5 billion).

Table 2 displays the findings of the validity and instrument reliability tests to measure the KM variables, product innovation, and operational performance. Bivariate correlation was conducted to test the relationship between each indicator's score and the overall score for each construct. Based on Table 2, the validity test results show that all items have a significant correlation at a significance level of 1%. This indicates that all items used to measure these variables are valid. In addition, each variable's reliability is assessed using Cronbach's Alpha coefficient. Table 2 also shows that all variables have Cronbach's Alpha coefficients above the minimum standard of 0.7. This result indicates that the instrument used in this study has consistency and reliability as a measuring tool for each variable. The Cronbach's Alpha coefficients are respectively 0.861 (KM), 0.788 (product innovation), and 0.730 (operational performance).

Table 2. The Instrument's Validity and Reliability

Variables	Correlations	$\alpha$
<i>Knowledge Management (adapted from Pérez-López, S. and Alegre, 2012)</i>		
MSMEs regularly meets with customers to find out their future needs	0.638**	
MSMEs have processes in place to find out about their suppliers	0.585**	
MSMEs have a framework that enables businesses to find out about other businesses' successful methods	0.612**	
MSMEs has a process for acquiring new knowledge by using current knowledge	0.641**	
Performance-related ideas and methods will continue to evolve	0.598**	
Meetings are held regularly for employees to inform the latest innovations within the company	0.688**	
MSMEs has a mechanism to ensure the sharing of good practices to all departments	0.697**	
There are individuals who join several teams and serve as liaisons between them	0.638**	
There is an individual tasked with collecting and distributing employee suggestions in the MSMEs	0.600**	
MSMEs has a flexible system to make modify apply new knowledge immediately	0.717**	
The MSMEs' management emphasizes the importance of new knowledge	0.596**	
MSMEs can discover and apply knowledge so as to increase competitiveness	0.637**	0.861
<i>Product Innovation (adapted from Gunday et al., 2011)</i>		
MSMEs develops new products with specific and different functions from the previous	0.754**	
MSMEs develops new products by consider the easiness to use and customer satisfaction	0.755**	
MSMEs create new products with novel elements that differ from earlier products	0.820**	
MSMEs develops new product with better component's quality compare to the previous	0.816**	0.788
<i>Operational Performance (adapted form Flynn et al, 2010)</i>		
On time delivery to customers	0.759**	
Short lead times in delivering products to customers	0.762**	
Prioritize customer service	0.765**	
Flexibility in responding to changing customer demands	0.700**	0.730

Note: \*\* indicates a significance level of 1%

## 5. Results and Discussion

### 5.1 Results

Table 3 summarizes the correlation test to show the correlation relationship among variables. The correlation test results prove a significant relationship among variables in this study at a significance level of 1%. The relationship between KM and product innovation is 0.544, followed by the correlation between operational performance and KM of 0.542, while the relationship between product innovation and operational performance is 0.474.

Table 3. Correlations Among Variables

		Mean	SD	1	2	3
1	Knowledge management	4.033	0.544	1		
2	Product innovation	4.152	0.681	0.544**	1	
3	Operational performance	4.227	0.604	0.542**	0.474**	1

Note: \*\* indicates a significance level of 1%

Table 4 shows that the value of Adjusted R square in the first model in testing the effect of KM on product innovation is 0.288. This means that KM can measure 28.8% of the variation of the product innovation variable, while other factors outside the first model of this study explain the rest. The result of the estimate (coefficient) of the effect of KM on product innovation is positive, namely 0.543. Further, the impact of KM on product innovation is significant at the level of  $p < 0.01$ . This result means that KM positively affects product innovation, thus,  $H_2$  is accepted.

Moreover, in the second model, Table 4 indicates the value of Adjusted R square from the test results of the effect of KM on operational performance is 0.287. This result means that KM can measure 28.7% of the variation of operational performance variables, while other factors outside the first model of this study explain the rest. The results of the estimate of the effect of KM on operational performance are also positive, namely 0.543, and significant at the level of  $p < 0.01$ . This finding indicates that KM positively impacts operational performance, hence,  $H_1$  is accepted.

Table 4. Hierarchical Regression Test Results

	Model 1 PI		Model 2 OP		Model 3 OP	
	Estimate	t	Estimate	t	Estimate	t
KM	0.543*** (0.035)	6.400	0.543*** (0.031)	6.397	0.289*** (0.036)	2.988
PI					0.206** (0.082)	2.228
Adj R <sup>2</sup>	0.288		0.287		0.411	
F	40.961***		40.924***		24.051***	
df	99		99		99	
n	100		100		100	

Note: \*\*\*, \*\* indicate significant levels of 1% and 5% respectively

Furthermore, in the third model, the value of Adjusted R square from the test results of the effect of KM and product innovation on operational performance in Table 4 is 0.411. This result means that KM and product innovation can measure 41.1% of the variation of operational performance variables, while other factors outside the first model of this study explain the rest. The estimation results of the test of the effect of KM and product innovation on operational performance are also positive, namely 0.289 (KM) and 0.206 (product innovation). The value of estimate KM in the third model is significant at  $p < 0.01$ , while the value of estimate product innovation in the third model is significant at  $p < 0.05$ . This result means that product innovation positively affects operational performance, so  $H_3$  is accepted. Additionally, KM positively and significantly impacts operational success in the second model ( $\beta = 0.543$ ), as well as in the third model ( $\beta = 0.289$ ). By comparing the second and third models, the study found that the positive influence of KM on operational performance in the second model weakened in the third model ( $\beta = 0.543$  Vs.  $\beta = 0.289$ ). Hence,

this study proves that product innovation partially mediates the effect of KM on operational performance, so H<sub>4</sub> is accepted.

## **5.2 Discussion**

The positive influence of KM on product innovation in MSMEs in the fashion industry means that product innovation is the result of KM practices within the organization. These results confirm previous studies' findings that KM is an antecedent for innovation (Dahiyat 2015). This is possible given the ability of KM to develop and utilize new ideas as significant intellectual capital for product innovation (Huang and Li 2009). Organizations gain opportunities to increase innovation through new knowledge gained from KM practices (Dahiyat and Al-Zu'bi 2012). In addition, through KM practices, organizations obtain benefits related to improving employee creativity, encouraging the emergence of creative ideas, and increasing product innovation (Darroch 2005). These results are consistent with earlier studies, which found that KM positively influences product innovation (Bas et al. 2015; Al-Sa'di et al. 2017; Lee et al. 2013).

The ability of product innovation to influence operational performance also means that apart from KM, product innovation is also an important predictor of the operational performance of MSMEs in the fashion industry. This means that the organization can achieve superior operational performance through the concentration of resource utilization in product innovation activities. Tan et al. (2007). Therefore, an innovative organizational environment could support the mission of organizational growth and productivity (Cainelli et al. 2004). Through its ability to respond to change effectively, product innovation can provide benefits to the organization (Evangelista and Vezzani 2010; Lloréns-Montes et al. 2004). This result is aligned with the study of Al-Sa'di et al. (2017), who found that product innovation affects operational performance.

Furthermore, product innovation is also proven to mediate the influence of KM on the operational performance of MSMEs in the fashion industry. This result means that product innovation can better explain KM's influence on operational performance. These results explain that KM practices enable companies to innovate, which improves organizational, and operational performance (Schiuma and Carlucci 2008). Statistical results in this study indicate that product innovation partially mediates the effect of KM on operational performance. This result means that apart from a direct effect, KM also indirectly impacts operational performance. In addition, these results also explain that effective KM practices can affect operational performance indirectly through product innovation (Inkinen et al. 2015).

## **6. Conclusion**

Although previous research on KM, product innovation, and operational performance has been conducted, there are still some research gaps, as explained in the introduction. Research proves theoretically that KM and product innovation are essential predictors in improving operational performance in the fashion industry in Indonesia. In addition, this study also demonstrates that product innovation has a vital role in explaining the effect of KM on operational performance through a partial mediation effect. Empirically, this study provides empirical evidence that owners and managers can utilize in developing policies to encourage the increased operational performance of MSMEs in the fashion industry through implementing knowledge management and product innovation.

Based on the results of this study, owners and managers of MSMEs need to develop KM practices and product innovation to be able to respond to the rapid changes that occur in the fashion industry, related to the shortening of product life cycles due to changes in customer tastes and trends in this industry. Consequently, MSMEs need to invest in things that can improve KM practices and product innovation to respond to market changes with adjustments required by customers.

Although the objectives of this study have been met, the study has several limitations. First, the number of respondents in this study is relatively small (100 respondents). Second, this research only focuses on MSMEs in the fashion industry in Yogyakarta, Indonesia. These two things are certainly an issue in the generalization of the results of this study. For this reason, it is necessary to execute similar studies conducted in other areas in developing countries with a more significant number of samples to strengthen the generalizability of this study's findings in the future. In addition, this research only focuses on the fashion industry, so it is essential to conduct similar research in other industries to strengthen the theory and simultaneously give a thorough analysis of the impact of KM and product innovation on MSMEs' operational performance.

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## **Biography**

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