

# SME's Innovative Performance in Indonesia: The Linkage between Innovation Culture and Production Performance

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# SME's Innovative Performance in Indonesia: The Linkage between Innovation Culture and Production Performance

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**Abstract**— In a rapidly changing environment, fostering innovation plays a critical role for SME's to enhance performance. The study investigates the linkage between innovation culture, process innovation, product innovation, innovative performance, and production performance in Indonesian SME's creative industry. An empirical insight using quantitative method was conducted by distributing the data from a field survey. A cross-sectional data from 153 SME's owners as the respondents have done to fill out the form of questionnaires. Data were analyzed by Structural Equation Modeling with smartPLS software. The result of this study found that not all hypotheses proposed are supported. Innovation culture has a significant and positive influence on process innovation and product innovation, while process innovation also has a significant and positive influence on product innovation. Moreover, process innovation affects innovative performance which ultimately influences towards production performance. However, product innovation had no significant effect on innovation performance. The results of this study make both theoretical and practical implications. Theoretically, the novelty of this research related to the innovation culture approach by focussing on the configurations of SME's innovation activities and their performance implications was elaborated. Thus, it provides a model to demonstrate these configurations. Practically, through this study, SME's owner has a critical role to encourage and support the new initiatives of employees in creating a unique product.

**Keywords**— *Innovation culture, innovative performance, production performance*

## 1. Introduction

SME's crafts performance in Indonesia is considered as one of the economic spearheads during the global economic crisis. National

handicraft products become the largest contributor of export commodities in Indonesia. The number of export goods in handicrafts sector increased by 3,8% in 2017 (\$776 million)

compared to the previous year of \$747 million [1]. In 2018, it is targeted that Indonesian handicraft exports will grow 10 percent from 2017 to US \$776 million. The largest export market of Indonesian handicraft products in 2016 is European Union, which is as much as 40% and followed by US approximately 25%.

The Indonesian handicraft industries are expected to be able to compete in the global market with differentiated product, the sufficient availability of raw materials, and a unique local product design. In order to survive in the market, SME craft companies must have an innovation-based strategy. The SME craft industry must produce the innovative goods to increase the volume of sales. Hence, it needs to improve the skills of human resources in design and standardization, and improve the innovation process. As the results, these things can have an effect on innovation culture.

Rather, the practice of innovation culture has received considerable theoretical and empirical attention in many kinds of literature, research about how innovative performance influence firms' production performance due to process and product innovation in SME's craft industry holistically remains underdeveloped. Reference [2] found that firm's innovation implementation in Indonesia to enhance the working practices can utilize the competitive advantage. These results manifested through employees training regularly, creating new different products from competitors, product modifications, developing new ideas regularly and supporting the emergence of initiatives from employees.

Organization needs to foster the culture of innovation in its daily business activities. Indeed,

SMEs with innovation culture will encourage the employees to become alert, creative and innovative in maneuvering the organization [3]; Halim, Ahmad, and Ramayah 2015). SMEs with a great innovation capability may achieve better response from the environment and improve the capabilities required to enhance organizational performance and competitive advantage. Moreover, the study of [2] showed that modifying products, developing new ideas, creating new products, training employees regularly and supporting employee initiatives have become a common value for SMEs.

The handicraft industry in Indonesia is expected to strive to improve the production performance that is marked by the number of production related to the needs, faster production process, more timely delivery of products, efficient production costs and produce a high-quality product. Thereby, this industry needs to start renewing the administrative system, introducing innovation as a process and method of working, quality of new products and services, developing new products and services, increasing the percentage of budgets to develop new products, government support and increasing the number of innovative achievements under intellectual property protection. In addition, product innovation by introducing products with new attributes to the market and adopting new ideas in new product development are also continuously done by the handicraft industry.

Reference [5] revealed that a commercial value innovation is the creation, development and implementation of a new product or service with the aim of improving efficiency, effectiveness, or competitive advantage in the business or industry context. In line with [6], SME's productivity in West Sumatera will increase if SME's take a priority for customers as the main actor, the existence of funding information as a form of government support and innovation orientation. The development of a culture of innovation in the handicraft industry in Indonesia is characterized by managers who have the spirit to innovate and take risks, companies encourage creative ideas in the organization, appreciates the initiative to try the new ideas in the organization, build teamwork to implement new and innovative processes. The uniqueness characteristics of West Sumatra (Minangkabau culture) which are slightly different from other regions in Indonesia have an impact on the ability to innovate. Innovation culture done by handicraft industry can push product innovation and process innovation. Reference [7] explicitly shows that innovation culture influence on product innovation and process innovation.

In accordance with customer's demand on a unique handicrafts' product from West Sumatera, [2] suggest that handicraft industry is necessary to

encourage employees in order to make product modifications. The uniqueness of the SMEs' organization will lead to organizational innovation. Reference [8] argue that an innovative culture can support the creation and implementation of new ideas. Furthermore, the study of [4] clarified that the practice of innovation is not easy to adopt without encouraging the organization to innovate. More specifically, innovation culture refers to the shared common values, beliefs and assumptions of organizational members that could facilitate the product innovation process [9].

According to reference [10], product innovation can simply be defined as the successful introduction of new products or sales from innovative products. The study of [11] found that product innovation and process innovation are more likely influence toward innovative performance. In line with these arguments, the objectives of this study consist of four investigations in SME's creative industry: (1) The influence of innovation culture on process and product innovation; (2) the influence of process on product innovation; (3) the influence of process and product innovation on innovative performance; and (4) the influence of innovative performance on production performance.

Innovation plays a significant role for the companies competitiveness. Innovative companies have a higher market share, total sales and exports if they concern with product innovation, process innovation, and innovative performance. SMEs managers must provide something differences emphasis on innovation to achieve sustainable competitive strength. Innovative performance will improve depends on the level of implementation of innovation. The SMEs that have the resources to develop innovative capabilities, encourage and implement the high-level of innovation activities, they will increase production and market performance [12].

Companies have the opportunity to improve their innovation capabilities when they are able to expand, disseminate, and utilize organizational knowledge internally. And also when companies share, transfer, and receive knowledge from external partners. Moreover, it is strengthened by the positive effects of information sources from R&D institutions on the company's innovative capacity. When new product innovations are implemented, there will be adjustment process. Without the adjustment process most of product innovations cannot be applied effectively [13].

## 2. Literature Review

### 2.1 Innovation Culture

The findings in the literature indicated a significant relationship between culture and innovation [14]; [15]; [16]. However, the application of innovation is not easy to embrace without having a culture that encourages the organization to innovate [4]. Innovation occurs when firms motivate their employees to share their skills with the rest of the organization [17]. Thus, values, beliefs, and behaviors are shared by members of the organization in ways that build a culture of innovation [18]. It can empower company development and gain new knowledge that improves the innovation [19].

Innovation culture is a frequently used and yet insufficiently-defined concept [20]. Reference [21] suggests that the most appropriate framework for analyzing such institutions is through the concept of workplace or organizational culture. As reference [21] stated, culture can be used by industrial management as a mechanism to control the desired behavior (and skills) of students and their future work. The study of [22] argued that innovation culture is an intangible strategic resource that can be assessed by the following four dimensions: an orientation towards technological innovation, a learning orientation, a willingness to take risks and a future market orientation.

Reference [23] considered a culture of innovation as an important aspect for companies in promoting market orientation and organizational learning, supporting openness to new solutions, technology, markets and risk taking, as well as tolerating failure. In general, the definition of a culture of innovation involves several dimensions related to the encouragement of new ideas and employee innovation capacity, market orientation, organizational learning and risk taking [24].

### 2.2 Product Innovation and Process Innovation

Product innovation is a resource-consuming activity and poses many challenges to manufacturers who lack financial and technical resources, have poor management skills and capabilities, and uncertain business and institutional environments [25]; [26]. Product innovation associated with products to access market demand and increase profits [13]. According to [27] product innovation usually requires continuous research and development in order to compete in the market.

Reference [28] believed that a product innovation is introducing new products or making

significant improvements in the current products. Meanwhile, [29] assumed that product innovation as a form or feature of value creation that is built in various company resources. Product innovation is a process driven by the complexity of technological progress, changing customer needs, shortening the product life cycle and increasing global competition [12].

As noted by [30] product innovation outcomes are determined by the type of market stimuli that firms select and attend to, as well as the interpretation frame of the firm, which determines how the stimuli are processed. In turn, these will influence the product innovation responses. According to reference [27], product innovation can be easily recognized by company stakeholders. It usually required continuous research and development to be competitive in the market. Product innovation can be deemed as relative to a certain product, enterprise, industry, or nation, any conditions different from the original [31]. The study of [32] stated product innovation as the company's ability to create, develop, and implement the new, unique and attractive product or service offerings in an effort to improve brand efficiency, effectiveness, and build sustainable competitive advantage.

Furthermore, [27] argued that a process innovation is a tool to improve organizational efficiency. A firm may adopt new technologies, buy new machinery, train the employees and reorganize the processes strategy to encourage innovative processes. Meanwhile, [28] assumed that a process innovation is improving logistics and manufacturing methods such as accounting, information technologies, purchasing, and maintenance. Process innovation can be defined as the new techniques and processes introduced into operations that help to promote efficiency or effectiveness, and lower the costs of production and delivery [33]; [12].

Process innovation is a complex and risky activity that requires tacit knowledge and experienced employees [33]; [13]. Meanwhile, [34] also agreed with the study of [33] and [12]. They stated that the innovation process is the right method to improve efficiency or effectiveness, and lower production and shipping costs in operation. Reference [35] argued that process innovation encompasses the envisioning of new work strategies, an innovative process design and change implementation in its entire complex technological, human and organizational dimensions.

Process innovation is a long term strategic decision dealing with core firm foundations. In comparison, a product or a marketing innovation can be often seen as a more tactical short term

decision or even a consequence of good process innovation management in the past [36]. The study of [37] defined process innovation as the cumulative improvements to the entire (production) process, which is applied to create a product or service.

### 2.3 Innovative Performance

Reference [38] defined innovative performance is the combination of overall organizational achievements as a result of renewal and improvement efforts done considering various aspects of firm innovativeness (i.e. processes, products, organizational structure, etc). Innovative performance contains new products and new projects which are leading to these: new products and services, improving the quality of goods and services, and adopting organizational structure with competitive [39]. Moreover, [37] defined innovative performance in the context of an output factor as the accumulated results of innovative activities in an industry or product category.

High-quality talents with good education and sophisticated skills can develop the increasing of cognitive abilities and lead to more productive and efficient activity, which will improve their job performance. It will facilitate the enterprises to have better entrepreneurial judgment, run business more smoothly and ultimately improve the firm's innovative performance [9]. Reference [39] argued that innovative performance contains new products and new projects which are leading to these: new products and services, improving the quality of goods and services, and adopting organizational structure with competitive environment requirements. All of these activities are totally representing the entrepreneurship activities.

### 2.4 Production Performance

The study of [38] argued that the production performance is the combination of the achievements in such performance indicators as speed, quality, flexibility and cost efficiency. Production performance as a combination of organizational success in improving speed, quality, flexibility and cost efficiency in the daily operations would lead logically to the betterment of market position and financial returns. Elements of production or operations performance, i.e. speed, quality, flexibility and cost efficiency, seem to be highly related to the firm performance in administrative, process, and product innovations according to the past literature [40].

Production performance, as a combination of achievements done in of all its elements cost efficiency, quality, flexibility and speed – is also

seen as one of the direct drivers of profitability. Production performance is manifested by production effectiveness and production efficiency, where production effectiveness measures the percentage of goal achievement in production output and production efficiency measures how efficient raw material is utilized to produce output [41].

### 2.5 Previous Studies and Hypotheses Development

#### 2.5.1. *The influence of innovation culture towards product innovation and process innovation*

In this regard, a great deal of academic interest in the effects of an innovative culture on firm and product performance was shown [42]; [43]. An innovative culture can improve the performance of the firm and enable the development of new products which need creativity, teamwork, open communication, and good employee relationships. Furthermore, SMEs can employ innovation culture as a strategic tool to improve the performance and facilitate the development of new products [44].

The innovation process refers to the modification of a routine such as changes in the operations and material exchange [45], and it is linked to the technology application in order to improve development efficiency on product quality and on production flexibility [46]. Thus, it will support the development of second hypothesis of this research.

Research conducted by [9]; [43]; and [42] says that the culture of innovation (innovation culture) has a positive effect on product innovation in SMEs. In line with that, reference [48] showed a positive influence between these variables. The company's innovation climate was clearly expressed in the experience of innovation barriers. The study of [7] study also showed the influence of innovation culture on product innovation. Based on these justifications, we proposed:

H1a: Innovation culture has a significant and positive effect on the product innovation  
H1b: Innovation culture has a significant and positive effect on the process innovation

#### 2.5.2. *The influence of process innovation towards product innovation*

An important relationship exists between process innovation and product innovation [48]. The conditions favoring efficient and high-volume process innovation are different from those stimulating product innovations. Process innovation

emphasizes efficiency with cost savings being of particular interest; product innovation is more about effectiveness with an objective to develop new offerings and not efficiency because new products often require additional resources, force new procedures, and cause changeovers in manufacturing processes. Organizations overly focused on process innovation can restrict opportunities for product innovation because process innovation only enables cost reductions. This illustrates a tension between the efficiency orientation of process innovation and the effectiveness orientation of product innovation.

Reference [49] study on Chinese firms showed us that process and product innovations were significantly correlated to each other. However, recent literature does not provide us with explicit empirical results for the direction of this relationship. Still, some indirectly related recent findings may exist. For instance, the study of [11] study on British firms revealed that developing formal implementation processes was necessary to pursue incremental product or service innovations, implying that the improvement of the processes is a driving force for the success of the output (product and/or service) innovations. Thus innovative solutions providing the steps of the production processes with newly improved advantages – such as production quality, value, speed and low cost can increase the chance of the product's new components, technical specifications, as well as functionalities to meet the needs and desires of the customers better than before. Hence, the following hypothesis follows:

H2: Process innovation has a significant and positive effect on the product innovation

### 2.5.3. *The influence of product innovation and process innovation toward innovative performance*

The study of [38] are generally conceptual in nature and/or focus only on a single type of innovation rather than considering all four innovation types already defined, and then explore its impact on performance. Process and product innovations are the most common innovation types examined. The studies by [50], [51], [52], [53], [54], [55], and [56] focused merely on process innovations while studies of [57], [58], [59], and [60] reported on product innovations.

Moreover, [11] in a recent empirical study on British firms showed that different types of innovations were found to be related to innovative performance. Reference [38] revealed that innovative performance is the combination of overall organizational achievements as a result of

renewal and improvement efforts done considering various aspects of firm innovativeness, i.e. processes, products, organizational structure, etc. Based on previous studies, we propose that all the different types of innovations have positive effects on firm innovative performance. In the conclusion, innovative performance plays the role of an effective hub that carries the positive effect of innovations to the various aspects of firm performance.

Innovations can actually enhance the firm performance in several aspects. Particularly, four different performance dimensions are employed in the literature to represent firm performance. These dimensions are innovative performance, production performance, market performance and financial performance. Innovative performance is the combination of overall organizational achievements as a result of renewal and improvement efforts done considering various aspects of firm innovativeness. All the different types of innovations have positive effects on firm innovative performance [38]. Then the indirect effects of these four types of innovations can be expected to lead to improvements in production and market performances through the mediation of innovative performance. Accordingly, the basic hypotheses on the influences of process and product innovation toward innovative performance are as follows:

H3a: Product innovation has a significant and positive effect on the innovative performance

H3b: Process innovation has a significant and positive effect on the innovative performance

### 2.5.4. *The influence of innovative performance towards production performance*

Innovative performance can exert the positive effects on firms' production, market and financial performance in the long term; however, in the short run initiated investment and internal resources changes might cause possible losses at first [38]. Beside the speed and quality aspects, innovative performance is also related to the two other elements of production performance; namely, flexibility and cost efficiency. Innovations are done in general to meet such production and marketing goals as improvement in product quality, reduction in production cost, increase in market share, creation of new markets and increase in production flexibility [40]. Impacts of innovative performance are firstly associated to the non-financial aspects of corporate performance, such as increased customer

satisfaction or production speed, which will lead to higher financial returns later on.

The study of [61] found that technologically innovative products have a positive effect on operating performance. In brief, once the innovative performance improves, production and marketing performances will also ameliorate and then through their mediation the financial performance will start to improve. Therefore, we can argue that the production performance, which is the combination of the achievements in such performance indicators as speed, quality, flexibility and cost efficiency, is positively affected by the innovative performance. Thus, the following hypothesis follows:

H4: Innovative performance has a significant and positive effect on the production performance

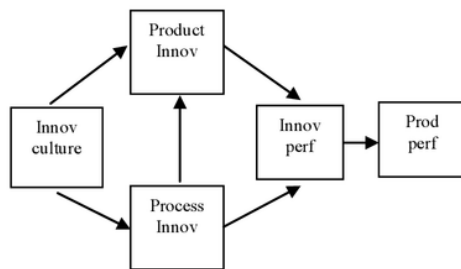


Figure 1. Research Model

### 3. Methods

This research is an explanatory research through an investigation type of causality. A quantitative method through the hypotheses testing had been selected to collect the primary data using questionnaires. All of data were collected directly to 153 respondents. The purposive sampling technique was conducted follows the criteria, such as: (1) the respondents are both of owners and managers, and (2) the SMEs done the marketing as well as production process simultaneously.

The data obtained was analyzed using Structural Equation Modeling (SEM) with SmartPLS program to test the outer model (convergent validity, discriminat validity, and reliability). Lastly, the results of this study were processed by bootstrapping to test four hypotheses proposed.

All indicators rate each statement on a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The operationalization of variables followed by the study of many previous researches, e.g. [7] to measure the innovation

culture using 6 indicators; [12] to measure the innovative performance using 7 indicators and the production performance using 4 indicators. Moreover, product innovation and process innovation consists of each four indicators were adapted from [62] and [34]. Table 1 exhibited the questionnaires design.

Table 1. Questionnaires design

Constructs and items
<b>Innovation Culture</b> CULTINV1: Courage to innovate and take risks CULTINV2: Encourage the creative ideas in organization CULTINV3: A willingness to experiment with new ideas CULTINV6: The most important success factor in our business is to be innovative
<b>Innovative Performance</b> INVPERF1: Renewing the administration system INVPERF2: Renewing the mind set INVPERF3: Innovations for work processes and methods INVPERF4: Quality of new products and services introduced INVPERF5: Number of new products and services projects INVPERF6: Percentage of new products in the product portfolio INVPERF7: Innovations under intellectual property protection
<b>Process Innovation</b> PROCINV1: Learning more about the newest processes PROCINV2: The first to deploy new processes PROCINV3: Keep up with the latest process developments PROCINV4: Introduce processes that radically different from existing processes in the industry
<b>Product Innovation</b> PRDINV1: Attributes that are completely new to the market PRDINV2: Very innovative in meeting customer needs PRDINV3: Adopts new ideas in new product development PRDINV4: Introduces new products fast to the market
<b>Production Performance</b> PRDPERF1: Production (volume) flexibility PRDPERF2: Production speed PRDPERF4: Production cost

### 4. Result and Finding Analysis

#### 4.1 Demographic Profile of Business Characteristics

The descriptions of the business characteristics will be described in Table 2.

Table 2. Demographic profile of business characteristics

Category	Description	%
Firm's age	Less than 5 years	19,6
	6 - 20 years	49
	More than 21 years	31,4
Type of business	Craft Embroidery	39,2
	Embroidery Craft	7,2
	Craft Weaving	15,7
	Handicraft Product Wedding / Wedding Dress	7,8
	Leather Crafts	2,6
	Craft Accessory	4,6
Number of employees	Less than 10 people	49
	11 – 30 people	39,9
	31 – 300 people	11,1
	More than 300 people	-
Gross Profit Margin	Less than IDR 50.000.000	75,1
	IDR 50.000.000 - IDR 500.000.000	20,9
	IDR 500.000.000 – IDR 10.000.000.000	3,3
	More than IDR 10.000.000.000	0,7
Assets Held	Less than IDR 50.000.000,00	40,5
	IDR 50.000.000 - IDR 500.000.000	46,4
	IDR 500.000.000 – IDR 10.000.000.000	13,1
	More than IDR 10.000.000.000	-
Accepting Orders with Contract	Yes	26,8
	No	73,2

Based on Table 2 business characteristics, we can see the firms' age dominated by companies those already 6-20 years established (75 industries, 49%). The handicraft industries that dominated are the craft embroidery industries by 39.2% with the size of employees less than 10 people. Because the industry is still in the small scale, the gross profit margin (GPM) of industry per year is still below IDR 50.000.0000.

According to the results, the handicraft industries which their assets between IDR 50,000,000 – IDR 500.000.000 becomes the majority with 71 industries (46.4%). Lastly, the

largest part of the handicraft industries did not accept orders on a contract and did not export the products.

#### 4.2 Testing of Measurement Model (outer model)

According to reference [63], outer loadings, Average Variance Extracted (AVE), and Composite Reliability (CR) were the parameters to assess the convergent validity. Convergent validity was used to test whether the indicator of the variables actually measures the research variables. AVE depicts the overall amount of variance in the indicators accounted for by the latent construct, while CR reflects the consistency of the variables used.

Table 3 denoted that many reflective indicators in this study were deleted (e.g. CULTINV4, CULTINV5, PRDPERF3, PRDPERF5) because of the invalid values which does not meet the rule of thumb value of 0,5 for outer loadings and AVE. After deleting the lower outer loadings which indicate that the particular indicators have less in common, the composite reliability value must be considered.

Table 3. Convergent Validity

Items	Outer loadings	AVE	CR
CULTINV1	0.840	0.553	0.830
CULTINV2	0.786		
CULTINV3	0.747		
CULTINV6	0.576		
INVPERF1	0.807	0.562	0.899
INVPERF2	0.769		
INVPERF3	0.861		
INVPERF4	0.599		
INVPERF5	0.777		
INVPERF6	0.735		
INVPERF7	0.668		
PROCINV1	0.799	0.639	0.876
PROCINV2	0.730		
PROCINV3	0.830		
PROCINV4	0.834		
PRDINV1	0.764	0.620	0.867
PRDINV2	0.781		
PRDINV3	0.854		
PRDINV4	0.745		
PRDPERF1	0.605	0.605	0.818
PRDPERF2	0.856		
PRDPERF3	0.846		
PRDPERF4	0.846		

Furthermore, discriminant validity used to identify whether the indicator's correlation score to its own variable is greater than other variables. In this study, discriminant validity was assessed by Fornell and Larcker's criterion and Heterotrait-Monotrait Ratio



(HTMT). Fornell and Larcker's criterion which suggested that the square root of the AVE of each construct should be higher than its highest correlation with any other construct [63]. The value in the diagonal line is obtained by the square root of each AVE ( $\sqrt{\text{AVE}}$ ) value. Meanwhile, if Heterotrait-Monotrait Ratio (HTMT) value is below 0,9, discriminant validity has been established between two reflective construct [64]. Table 4 presents all  $\sqrt{\text{AVE}}$  is already greater than the other correlations value in the construct correlation matrix. Table 5 presents HTMT value is below 0,9.

Table 4. Discriminant Validity

Var	IC	IP	PCI	PDI	PP
IC	<b>0,744</b>				
IP	0,335	<b>0,750</b>			
PCI	0,348	0,733	<b>0,799</b>		
PDI	0,695	0,353	0,380	<b>0,787</b>	
PP	0,456	0,436	0,409	0,369	<b>0,778</b>

Table 5. Heterotrait-Monotrait Ratio (HTMT)

Var	IC	IP	PCI	PDI	PP
IC					
IP	<b>0.423</b>				
PCI	<b>0.445</b>	<b>0.868</b>			
PDI	<b>0.808</b>	<b>0.427</b>	<b>0.472</b>		
PP	<b>0.692</b>	<b>0.520</b>	<b>0.469</b>	<b>0.557</b>	

### 4.3 Testing of Structural Model (inner model)

The result of *R-square* examined how the predictor variables explained the respective construct. Table 6 showed the value of *R-square*.

Table 6. *R Square*

	<i>R Square</i>
Innovation Culture (IC)	
Innovative Performance (IP)	0.544
Process Innovation (PCI)	0.121
Product Innovation (PDI)	0.506
Production Performance (PP)	0.191

The result of *R-square* examined how the predictor variables explained the respective construct. Based on Table 6, the value of R Square for innovative performance variable is 0,544, this means innovative performance can be explained by product innovation and process innovation of 54,4%. The rest is explained by other factors not described in this study. Variable process innovation has R Square value of 0,121, this value indicates that process innovation can be explained by

innovation culture of 12,1%. The rest is explained by other factors not described in this study.

Variable product innovation has R Square value of 0,506, this value indicates that product innovation can be explained by innovation culture and process innovation equal to 50,6%. The rest is explained by other factors not described in this study. And the variable production performance has R Square value of 0,191, this value indicates that the production performance can be explained by innovative performance of 19,1%. The rest is explained by other factors not described in this study. In addition, hypothesis testing or significance test of research seen from output path coefficients with significant condition that is p value < 0,05. This study uses a significance level of 0,05 ( $\alpha = 5\%$ ). The final result of the significance test for each hypothesis exhibited in Table 7.

Table 7. Testing of Structural Model

Hypotheses	Beta	t-values*
H1: IC $\rightarrow$ PDI	0,641	12,110
H2: IC $\rightarrow$ PCI	0,348	4,147
H3: PCI $\rightarrow$ PDI	0,157	2,183
H3a: PDI $\rightarrow$ IP	0,087	1,259
H3b: PCI $\rightarrow$ IP	0,700	13,184
H4: IP $\rightarrow$ PP	0,437	6,962

Note: \* $p < 0.05$  (two-tailed)

Based on table 7 above, it can be seen that the p value of hypothesis 1a, hypothesis 1b, hypothesis 2, hypothesis 3b, and hypothesis 4 lower than 0,05. It showed that the relationship between variables tested are significant. However, hypothesis 3a with the p value higher than 0,05, presented that the hypothesis 3a was not significant.

The original value of positive estimate samples indicated that the direction of the relationship between variables is positive. And the original value of negative estimate samples showed that the direction of the relationship between variables is negative. Based on the results presented in table 6, it can be concluded that the influence of innovation culture on product innovation, the influence of innovation culture on process innovation, the influence of process innovation on product innovation, the influence of process innovation on innovative performance, the influence of innovative performance on production performance is positive and significant. Thus, hypotheses 1a, 1b, 2, 3b and 4 are accepted. Meanwhile, the influence of product innovation on innovative performance is not significant, thus hypotheses 3a is rejected.

All these statistical findings proved that innovation culture has a strong influence on product

innovation of handicraft industry. It implied that SME managers with a strong and innovative innovation culture (such as having the courage to innovate, having the courage to take risks, encouraging creative ideas within the organization) show significant influence on product innovation.

Also, the innovative performance has a strong effect on production performance. It can be seen from the business capabilities, managers can manage an updating administrative systems that are suited to the business environment, renewing thoughts appropriate to the business environment, introducing process innovations and work methods, introducing new product and service quality, increasing number of new product and service development programs, increasing number percentage of investment to develop new products, and increase the number of achievements of law-protected innovations.

This result implied that the innovative performance efforts involving the handicraft industry stakeholders in West Sumatra has a significant effect on the production performance of the handicraft industry. It indicated that firms effort to strengthen the innovative performance including increasing the amount of production that suitable to the market needed, making the production process faster and expense production more efficiently.

## 5. Conclusion and implications

This study examined the influence of innovation culture on product innovation and process innovation, the influence of product innovation on innovative performance, the influence of innovation process on innovative performance, and the effect of innovative performance on production performance. This study used 153 respondents through field survey using questionnaires. Modeling of Partial Square Structural Equations (PLS-SEM) was used to analyze empirical data.

The theoretical implication is to extend previous research which examined the influence of innovation culture on product innovation [7] and the influence of innovation culture on process innovation. The ability of managers in innovating so high that influential in the formation of a strong product innovation, such as able to introduce product innovation with attributes that really new to the market. This means that product innovations created such as new motifs in embroidery, embroidery or weaving is really a new thing and has never been on the market. In addition, the ability of managers to innovate is also seen in creative ideas that appear in the organization, such as learning more about the development of the latest process than competitors.

All hypotheses show a significant relationship. This is similar to previous study from [12] which suggested that innovation process has an effect on innovative performance, innovation process influencing product performance and innovative performance influencing production performance. In addition, reference [7] also found a significant relationship between innovation culture and product innovation. As a result, this study explains that innovation culture, product innovation, and process innovation enhance innovative performance, which ultimately affects production performance.

Derived from the results, the variable innovation process that has the highest average variance extract (AVE) value has a strong influence in the research model. The first indicator of learning about developing the latest process more than a competitor is a good step for managers to gain control of the market. The implementation of this latest process can be done through the provision of training on creative motives or ideas to employees so that the craft industry becomes the first in carrying out a new process. Not only that, new processes that have been created in the handicrafts industry, embroidery, and weaving should be maintained. As well as the evaluation decisions should be paid attention to the manager of the new process, which considers the existing process with preexisting processes.

Based on the result, process innovation was more important rather than product innovation. The product innovation did not influence on innovative performance due to the uniqueness of Minangkabau crafts. In order to keep the Minang philosophy, the SMEs have limited efforts to modify or create the new design.

Although innovation culture, product innovation, process innovation, and innovative performance are interesting topics related to production performance, some limitations have been identified as a consideration for further research. This research was conducted in several cities in West Sumatra as one of the province in Indonesia. In addition, this study focused only on production performance. Therefore, it can be recommended to investigate other variables.

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