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The Effect of Productivity and Innovation on the Competitiveness of Batik SMEs in West Java Indonesia

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ABSTRACT

Objective – This research aims to test the effect of productivity and innovation toward competitiveness of batik SMEs in West Java.

Methodology/Technique – The study uses Partial Least Square (PLS) for data analysis, as well as an explanatory method and simple random sampling.

Findings – The results of the data testing show that competitiveness is effected by productivity and innovation by 71.7%.

Novelty – The objective of this study is to analyse the gap in productivity and innovation and its effect on the competitiveness of batik SMEs in West Java Indonesia. Batik centre in West Java was developed by the government in collaboration with the private sector to increase the level of production of batik SMEs. In reality, there is a gap in productivity between written batik and stamped batik. Written batik design innovations and production methods need to be improved to compete and survive in the batik industry. Porter (1995:5) describes competition as the core of the success or failure of firms. Productivity of written batik has declined in the past 5 years. From recent BPS data, processed by the Pusdatin Ministry of Industry 2017, the industry has declined by around 10% per year between 2012 and 2017.

Type of Paper: Empirical
JEL Classification: M10, M11, M19.

Keywords: Productivity; Innovation; Competitiveness; Batik; Small and Medium Enterprises.

1. Introduction

The concept of productivity was first developed by Taylor and applies scientific methods to solve problems within a company. The results of that research led to the development of several principles which replaced the old principle, namely the trial and error principle. To be successful with this principle requires a "complete mental revolution" on the part of management and labour.

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Thus, Taylor believed that profits would rise to the point that labour and management would no longer have to fight for it (Taylor in Stoner, 1995:34). The advantages and disadvantages of competitiveness and productivity in the Indonesian batik industry since ancient times can be clearly seen. The batik business in Indonesia is made up of, for the most part, SMEs. Prior to the fiscal emergency in 1998, the SMEs industry had developed rapidly.

Nurainun, Heriyana and Rasyimah (2008) conducted research on the batik industry in Indonesia. The results of that study show that the growth of the batik industry has slowed; this can be seen from the reduction in batik production efforts and movement to other businesses, such as SMEs batik artisan from Java. The results of other studies by Luthfi (2017) concludes that the productivity of batik craftsmen in Java Indonesia has increased from year to year. In 2009, the revenue of batik businessmen increased 50%, meanwhile.

Research by Sunarya and Syarief (2011), in line with Luthfi (2017), concludes that there is batik activity (or production) developed in the Priangan (West Java) areas among others: Ciamis (Cikoneng), Tasikmalaya (Sukaraja, Cihideung, Cipedes), Garut (Tarogong), and Sumedang. However, batiks of these areas have been widening themselves into a number of meanings within the meaningful dimensions, principles of aims, and this can be considered as the influence of heterogeneity of Indonesian cultures in the constellation of modern aesthetics, but its development is limited to stamped batik and printed batik, in the type of hand-painted batik experiencing production decline due to competition. The main problem lies in the fact that the production of batik has increasingly faded along with the development of the era. Handmade written batik is unable to compete with stamped batik and printed batik. Therefore, innovation for this industry is needed to ensure its long term sustainability.

Table 1. Number of Handmade Written SMEs Batik in West Java

Years	Amount
2012	296
2013	282
2014	217
2015	205
2016	180
2017	125

Source: BPS, Processed by Pusdatin Kemenperin 2017

Having regard to previous research and supporting data, this study examines the effect of productivity and innovation on the competitiveness of batik SMEs in West Java Province of Indonesia.

2. Literature Review

Companies that are able to produce good quality products or services are companies that are typically better equipped to compete in the market effectively. Porter (1990) states that competitiveness is the ability of an economy to provide its residents with a rising standard of living and high employment on a sustainable basis. D'Andrea (1992) states that competitiveness is the ability to produce goods and services that meet the test of international competition while our citizens enjoy a standard of living that is both rising and sustainable. Hung and Chang (2010) describe a firm's competitiveness as its economic strength against its rivals in the global marketplace where products, services, people and innovations move freely despite geographical boundaries. Another definition by Muhardi (2007:39) states that operational competitiveness is an operating function that is oriented internally and externally, which proactively responds to the target business market. The dimensions of a company's competitiveness as stated by Ward et. al. (1998:1036-1037)

consists of costs, quality, delivery time and flexibility**.** From the above definitions of competitiveness, it can be conclude that there is a link between productivity, innovation and competitiveness.

Krugman (1994) defines productivity as a proportion between the yield volume and the volume of data sources. As such, it quantifies how productively generation inputs, for example, work and capital, are being utilized in an economy to create a given dimension of yield. Profitability is viewed as the key to monetary development and intensity and, in that capacity, is fundamental for global correlations and national execution evaluations. Kussrianto (2001) argues that productivity is a comparison between the results achieved with the participation of labor unity time. The role of labor here is the use of resources, efficiency and effectiveness. Ravianto (2003) supports this opinion in stating that productivity, at its most basic level, includes mental attitudes.

There are distinctive proportions of profitability and the division between them depends either on the reason for the profitability estimation or potential information accessibility. Krugman (1994) states that a standout amongst the most generally used proportions of efficiency is Total National Output (GDP) for every hour worked. This measure catches the utilization of work input to yield per worker. Stevensons (1999) describes productivity as a required tool in evaluating and monitoring the performance of an organization, particularly a business organization. When directed at specific issues and problems, productivity measures can be very powerful. In essence, productivity measures are the yardsticks of effective resource use. Sedarmayanti (2009) states that the dimensions of productivity are: (1) Efficiency, (2) Effectiveness, (3) Quality. The indicators used in supporting these dimensions are: (1) Efficiency Dimension, which consists of four indicators namely; (a) The work relationships of fellow subordinates, (b) Relationship of work with superiors, (c) Guarantees of health care, (d) Social security of employment, (2) Dimensions of Effectiveness which consists of two indicators namely; (a) Work ethics, (b) Work discipline, (3) Quality dimension which consists of two indicators namely; (a) Skills, (b) Work experience.

Hubeis (2012: 67) defines innovation as a change or a big idea in a set of information related to input and output. From these definitions, two things are obtained, namely: product innovation and process innovation which in an economic sense is known as innovation if the product or process is improved, where it can then be sold in the marketplace. According to Kotler and Keller (2016:454), the dimensions of product innovation include: a) New products for the world, b) New product line, c) Addition to existing product lines, d) Repair and revision of existing products. d) Determination, e) Cost reduction.

The variables above are interconnected; productivity and innovation are expected to improve competitiveness in business and this is supported by several previous studies. Previous research conduct by Pramayani (2018) concludes that empowerment contributes to the success of a company. Having innovative behaviour is also important for developing innovation in increasing productivity. In addition, productivity can be increased by giving encouragement that is able to motivate employees. Another study conducted by Rondonuwu, Kawatu dan Malonda (2016) states that there is a relationship between work motivations and work productivity on Labor Day in the Environmental Management Agency District of North Minahasa. In this research, competitiveness among handmade-written batik artisan SMEs with printed batik SMEs, productivity and innovation in handmade-written batik SMEs in West Java, Indonesia.

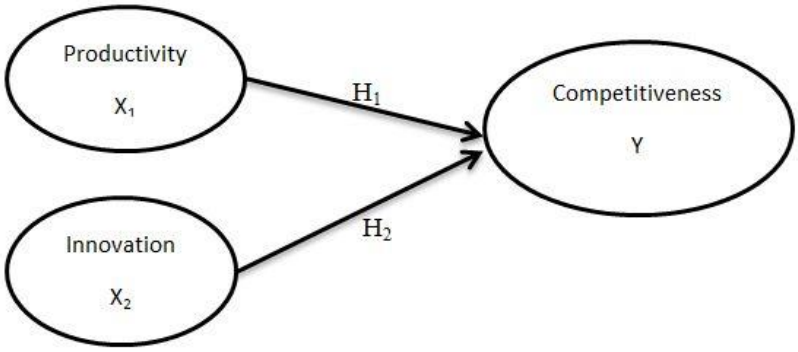


Figure 1. Theoretical Framework

3. Research Methodology

The population is the speculation region which comprises of articles or subjects that have certain qualities and certain attributes connected by scientists to reach an inference (Sugiyono, 2009). This exploration is quantitative to depict the conduct of buyers purchasing batik. The technique used in this investigation is the study strategy. The information is gathered using a few strategies including surveys, meetings and perceptions. Information acquired through inquiries submitted to respondents through surveys, enhanced by meetings with some respondents who are viewed as important, and by mentioning direct observable facts of the question under examination. The information utilized in this examination is sourced from essential information and optional information. Essential information is information acquired in the field through polls and direct meetings with chosen respondents. Optional information is acquired from different sources that are pertinent to the exploration subject, for example, from writing, as writing, diaries, daily papers and from the web.

This study was conducted in the West Java district, with the choice of a constrained zone, in particular around the city of Bandung. The example in this examination was dictated by non-likelihood inspecting strategies, in particular by a purposive testing technique, where the example of research was picked abstractly dependent on specific criteria and contemplations applicable to the exploration. The contemplations utilized in this examination are respondents who are shoppers of handmade-written batik items, who are in the area of batik deals in the territory around West Java, have bought handmade-written batik items and can settle on obtaining choices freely being 21 years or older. The number of samples taken is in accordance with the theory of Malhotra (2006: 291) which suggests that the number of samples must be at least four or five times the number of indicators in the research. From the table operationalization variables below, there are 12 indicators used in this research, hence, the number of respondents is 60. The method of data analysis (validation, reliability and hypothesis testing) is Partial Least Square Method, run by XLSTAT Software.

Table 2. Operationalisation Variable

No.	Variable	Dimension	Measuring Scale
1	Competitiveness (Sedarmayanti:2009)	Costs Quality Delivery Time Flexibility	ordinal
2	Innovation Ability (Hubeis, 2012: 67)	New products for the world New product line Addition to existing product lines Cost reduction	ordinal

No.	Variable	Dimension	Measuring Scale
3	Productivity (Ward et al, 1998: 1036-1037)	Repair and revision of existing products	ordinal
		Efficiency	
		Effectiveness	
		Quality	

The researcher proposes the following statistical hypotheses:

1. Ha_1: $r \neq 0$: Productivity has an effect on SMEs Competitiveness.
   $H0_1$: $r = 0$: Productivity does not have an effect on SMEs Competitiveness.
2. Ha_2: $r \neq 0$: Innovation has an effect on SMEs Competitiveness.
   $H0_2$: $r = 0$: Innovation does not have an effect on SMEs Competitiveness.

4. Result

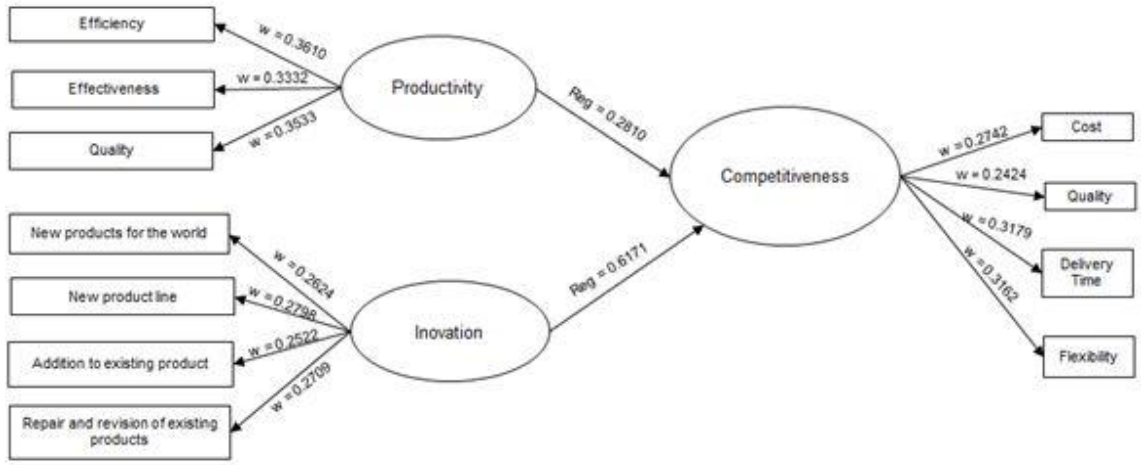


Figure 2. Hypothesis Testing Using PLS Method

4.1 Questionnaire Validity and Reliability

Table 3. Cross-loadings (Monofactorial manifest variables/1):

	Productivity	Innovation	Competitiveness
Efficiency	**0.9534**	0.7452	0.7295
Effectiveness	**0.9533**	0.7356	0.7140
Quality	**0.9575**	0.6451	0.6734
New products for the world	0.6573	**0.8775**	0.7629
New product line	0.6944	**0.9598**	0.8135
Addition to existing product lines	0.7012	**0.9535**	0.7332
Repair and revision of existing products	0.7390	**0.9624**	0.7875
Cost	0.6530	0.6291	**0.8260**
Quality	0.5322	0.6011	**0.8589**
Delivery Time	0.6978	0.7883	**0.9360**
Flexibility	0.6645	0.8137	**0.8469**

Table 3. Cross-loadings (Monofactorial manifest variables/1):

	Productivity	Innovation	Competitiveness

Source: Data Running By XLSTAT Software

From Table 3 above, the results of data processing from the questionnaires using XLSTAT software indicate the indicator has convergent validity. The value of each variable has a factor loading more than 0.50 which means that the statement in the questionnaire is valid and can be used to represent the variables of productivity, innovation and competitiveness in this study; the higher the factor loading, the higher the validity.

Table 4. Composite Reliability

Latent variable	Dimensions	Cronbach's alpha	D.G. rho (PCA)
Productivity	3	0.9515	0.9687
Innovation	4	0.9547	0.9675
Competitiveness	4	0.8903	0.9245

Source: Data Running By XLSTAT Software

From Table 4 above, the results of data processing from the questionnaires using XLSTAT software indicates that the construct of each variable has a Cronbach Alpha more than 0.70 which means the statements in the questionnaire is reliable and can be used to represent the variables of productivity, innovation and competitiveness in this study.

Table 5. Inner Model Measure R2 (Competitiveness/1)

R^2	F	Pr > F	R^2(Bootstrap)	Standard error	Critical ratio (CR)	Lower bound (95%)	Upper bound (95%)
0.7177	73.7276	0.0000	0.7232	0.0971	7.3928	0.4736	0.8872

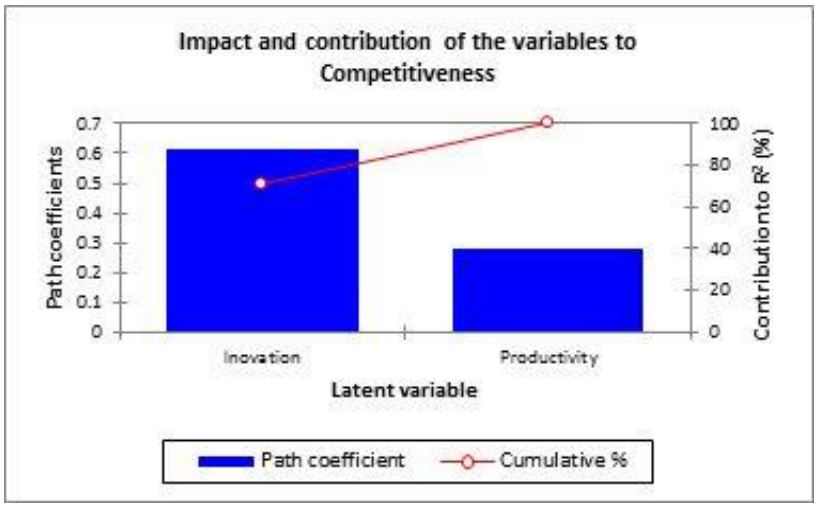
Source: Data Running By XLSTAT Software

Table 5: Path Coefficients (Competitiveness/1)

Latent variable	Value	Standard error	t	Pr > |t|	f^2	Value (Bootstrap)	Standard error (Bootstrap)
Productivity	0.2810	0.1044	2.6920	0.0093	0.1249	0.2948	0.1185
Innovation	0.6171	0.1044	5.9116	0.0000	0.6025	0.6016	0.1337

Source: Data Running By XLSTAT Software

From Table 4 and 5 above, it can be seen that H1 is accepted from t statistic> t table, where t table for n = 60 (df-2) and Alpha 0.05 is 2.0017. Meanwhile, the t statistic of 2.6920 means that H0 is not accepted and Ha1 is accepted. The P Value is <0.05 which is 0.0093> 0.05. For H2, the t statistic is 5.9116 and probability is 0.0000, meaning Ha2 is accepted and both alternative hypotheses are accepted. This means a significant variable of productivity and innovation has an effect on the competitiveness of SMEs, for the impact magnitude as seen in Table 4 value of R2 equal to 0.717 or 71.7%.



5. Discussion

The results above support the findings of previous research and the theory of competition by Porter, which states that innovation and productivity can be used to improve the ability to compete or survive in the marketplace. From the perspective of SMEs, competitiveness needs to be supported by external factors, namely government intervention in preserving the culture of batik and capital strength to innovate the design and technology of batik so that it can compete with printed batik.

The results of this research also support Taylor's productivity management theory, which promotes the strict division of labour whereby workers do physical work which is planned and directed by management. Thus, Taylor's scientific management system is one of the scientific methods used to determine the best way to do each job. Once the best way to perform the task is determined, scientific workers are selected and trained in methods that are considered the most appropriate. The results of this research support prior research conduct by Pramayani (2018) which states that innovative behavior is important for developing innovation in increasing productivity, and productivity can be increased by motivating employees. These results are also supported by Sunarya (2011) who states that innovation and creativity of handmade written batik is needed to improve the competitiveness of the batik industry in Indonesia. It can be said that innovation effects a company’s ability to complete with other SMEs in Indonesia. Research by Lutfi (2017) yielded similar results, concluding that productivity can be increased when cost effectiveness and efficiency in tools and machines are implemented in written batik.

6. Conclusion

Based on the results of the analysis and discussion in this study, it can be concluded that productivity has a significant effect on the competitiveness of batik entrepreneurs in the West Java Province of Indonesia, meaning that if the productivity possessed by small and medium business entrepreneurs in batik in the West Java Province of Indonesia is good, then the competitiveness of small and medium business entrepreneurs in the West Java Province of Indonesia will also be good. Innovation has a significant effect on the competitiveness of small and medium-sized entrepreneurs in handwritten batik in the West Java Province of the State of Indonesia, meaning that if there is good product innovation, competitiveness will increase. The most suitable approach to gauge the dimension of competitiveness is by using multidimensional or composite markers (lists) of competitiveness. Development of composite markers could, be that as it may, be related with the difficulty of choosing fitting factors and loads speaking to their relative significance. Further research on the competitiveness of countries, locales, areas, enterprises and singular ventures or ranches is alluring as it can uncover the aggressive position of applicable articles and track changes of their execution

after some time. Such data can be helpful in the plan and usage of future approaches by firm supervisors and governments.

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