



## EFFECTIVENESS OF INCREASING PRODUCTIVITY AND PRODUCT QUALITY THROUGH EFECIENT TECHNOLOGY APPLICATION OF SMES IN TROWULAN DISTRICT, MOJOKERTO COUNTY OF INDONESIA

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### Abstract

The moment batik as the world cultural heritage from Indonesia, used by the batik makers all over Indonesia, is no exception batik makers in the city and distric of Mojokerto East Java, Indonesia. Chosen city and district Mojokerto, because when it has many Batik's entrepreneurs, promising enough and very potential. Batik that produced in Mojokerto more than 40 motives. The problems faced by SMES Batik Mojokerto is limited production capacity because of several things are: (1) the productions of Batik's handmade are very limited (2) a laundering/ tub bags of a color strikingly simple, (3) limited place boiling cloth batik of a pan or griddle and furnace or stove to boiling it and the table for printing . This research are using qualitative descriptive with data collection method through observation and interview. The problem solving of this research are as follows: (1) procurement BLCP machine. (2) procurement the equipment of electric pan cooker, (3) training tool and maintenance, (4) assistance marketing and business management. By procuring the equipment, it is hoped that SMES batik: (1) able to meet consumer demand, the more motives of handmate and stamp Batik, (2) may be adding the batik production therefore time workmanship product more rapid and consumer demand fulfilled (3) by the presence of a BLCP machine can conducted simultaneously by the time efficient enough.

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**Keywords:** Increased Productivity, Product Quality, Efficient Technology, Batik

## Introduction

Determination moment of batik as a world cultural heritage of Indonesia, are fully utilized by batik artisans in all regions of Indonesia, including batik artisans in the City and County of Mojokerto, East Java. Batik was originally only used on Friday, but because of the convenience and beauty of batik making is now used in almost every daily, whether for work, school uniforms, official time or when relaxing. Similarly, areas that previously did not have a motif, in the presence of the moment began to search for a motif - the motif that would represent the area. Likewise, the City and County Mojokerto in East Java, which today has had some batik entrepreneurs in order to develop and preserve the culture and peculiarities of the City and County Mojokerto as many cities and counties inherit the Mojopahit kingdom culture. Batik business in Mojokerto is quite promising. Mojokerto population data is a potential market that can reasonably be considered for batik entrepreneurs.

Data of Employees in Mojokerto as many as 3215 people, not to mention the data Employees and Students in Mojokerto vast territory includes 18 districts.[4]

The population is quite a lot, while batik entrepreneurs in the City and County of Mojokerto only about a few people only, two of whom are Ernawati an SME owners of Batik ERNA that have historically had inherited the expertise batik from his parents in the Surodinawan sub district, Prajurit Kulon district, Mojokerto and Supriyadi the Bagaskara batik owners with Mojopahit's motif is a batik artist and entrepreneur in Bejjong village, Trowulan District, Mojokerto. Both of the mare batik entrepreneurs were quite successful and managed to produce and market products of Mojokerto batik in some cities and regions in East Java. Mojokerto batik motifs are as follows:[10]

Problems faced by Mojokerto batik SMEs is limited production capacity due to several things including:

1. Lack of equipment owned by the batik SMEs including leaching equipment/dye bath, the colors are very simple (dye batch from the very narrow and simple wall) so that the leaching process to remove Soga/or wax of batik material after the boiling process is done per piece, so that the leaching process, sinking and draining takes time long enough.
2. Place the boiling pot of batik cloth form of Pan or Wok as well as a furnace or stove for boiling and table printing are very limited.
3. The quality of batik products produced are still not optimal in terms of both design and motif.

## Statement of the Problem

- a. How effectiveness of government grant in the form of batik production equipment in order to increase the production quantity and product quality at Erna and Baghaskara batik?
- b. How the effectiveness of training for improving product quality at Erna and Baghaskara batik?



## Research Objectives

The purposes of this study was to investigate and analyze:

1. The effectiveness of government grant in the form of batik production tools.
2. The effectiveness of training to improve the products quality.

## Research Methodology

This research used qualitative descriptive approach.

Steps of research are: [4]

1. Arrange the instrument
2. Collecting Data
3. Entry Data
4. Data Analysis
5. Draft Report Discussion
6. Final report

Data Collecting are used interview and secondary data.

## Theoretical Background

### 1. Definition of Batik

Batik is a fabric decorating techniques or textile use wax in color dyeing process, which all of these processes by hand. Batik is a fabric made traditionally and especially also used in traditional dimensions, has a variety of decorative patterns and specific pattern in its making use of *celup rintang* techniques with wax batik dye as the color barrier material.[10] Therefore, a batik cloth can be called batik when it contains two basic elements, namely if it has barrier dye technique that uses wax as the color barrier and a variety of decorative patterns of batik. Definition of Batik is a painting or drawing on mori cloth that created using a tool called a *canting*. People who paint or draw on mori wear *canting* called batik. By batik produces batik resulting in variety of motifs and have special properties possessed by batik itself. [12]

Batik art and how to make it well known in Indonesia since ancient times. But the origins of batik is still debatable. There are some people who agree that batik was originated from Indonesia, but there are others who disagree. Those who do not agree with the opinion that the batik from Indonesia suggested that batik was brought by our ancestors when population migrating or it may also be introduced by our ancestors on immigrants. Proponents of this idea say that batik originated from Egypt and Persia. That's why creating and batik decorating is not only known in Indonesia, but there were also in Thailand, Japan, India, Sri Lanka and Malaysia.

While the parties who agree to say that batik in Indonesia is an art form that stands alone and has nothing to do with batik developed in other countries. How to manufacture or motifs and ways of decoration on Indonesian batik no resemblance to foreign ways of making batik. Tools and Indonesian batik ornament pattern actually reflects the creativity, taste and intention of the Indonesian nation. If the pattern-shaped ornaments, the ornament is ornament found in Indonesia.

Apart from those two opinions, in fact batik has a strong background with the nation and the people of Indonesia in all fields and forms of culture and everyday life. Batik in Indonesia continues to change along with the influence and the times. This influence will bring consequences motifs and patterns on batik.

## 2. Types of Batik

There are 3 types of Batik : [1]

### a. Written Batik

Written batik, which is considered the best and the traditional one, the manufacturing process through the preparation stages, patterning, batik, coloring, sinking dan refinement. At written batik is very difficult to find patterns that worked exactly the same, there must be a fleeting differences, for example: arch line or amount of points. The shortage is an advantage of this handiwork. In the batik process frequent spontaneous movement occurred, countless or taken into account in more detail. Mass-made Batik is made with the same standard provisions of the factors of human hands.

### b. Modern batik

Modern Batik divided into Printed Batik, Combination Batik and Motif Textile Batik. **Printed Batik** is batik which manufacturing process through the preparation stages, coloring, and refinement. Implementation of printed batik-making is easier and faster. Weakness in printed batik that motifs can be made is limited and cannot make large motifs. In addition to the printed batik there is no graffiti art and subtlety motifs considered decisive motif.

**c. Combination Batik** (written and printed) is a batik made in order to reduce the weaknesses found in batik products, such as large motifs and graffiti art that cannot be produced by hand. In the process of this combination batik-making requires elaborate preparations, particularly on the incorporation of the written motifs and the printed motifs, so efficiency is low (almost the same as the written batik) and the value of art products compared with batik. As for the manufacturing process through the preparation phase, patterning (for a large motif), batik (motifs that unable to be printed ), coloring, washing, sinking and refinement.

Motif textile is a motif that grow in order to meet the needs of batik is quite large and unable be met by the usual batik industry. This batik motif textile was produced by the textile industry to use as a design motif on its textile. The production process is done by printing system, so that the product is known as batik printing and can be produced on a massive scale. However, typical characteristics that support traditional batik identity not found in the batik printing, but the price is relatively cheap so it can reach all levels of society is needed.

## 3. History of Batik in Indonesia [12]

History of batik in Indonesia is closely linked with the development of the Majapahit kingdom demand the spread of Islam in Java. In some records, the batik development is mostly done in Mataram kingdom times, then during the Solo and Yogyakarta kingdom. So batik art in Indonesia has been known since the Majapahit kingdom times and growing the kingdom and later kings. As for starting the spread of batik art belongs to the people of Indonesia and Java tribe in particular is after the end of the eighteenth century or early nineteenth century. Batik produced is all written batik until the early twentieth century and printed batik is known only after First World



War over or around 1920s. As for the connection with the spread of Islam. Many areas of the centrals of Java batik are Muslim students area and later became a tool of economic struggle by the Muslim merchant leaders against the Dutch economy.

Batik art is the art of drawing on the fabric for clothing which became one of the cultural of Indonesia royal families in old times. Batik initially worked confined in the palace and the result for the king's clothes and his families and his followers. Because many of the followers of the king who lived outside the palace, the art of batik was brought out by the palace and carried them out in place of each. Over time the art of batik was imitated by the people nearest and subsequently expanded into women's work in the household to fill her spare time. Furthermore, batik clothes that used only the royal family, then became a popular folk clothes, both women and men. White fabric that is used when it is self-woven. While coloring materials used consist of plants native to Indonesia made themselves among others: noni tree, tinggi, soja, nila, and soda materials made from ash soda, as well as salts made from mud.

#### **4. The development of batik in Mojokerto of East Java. [7]**

Mojokerto is located in East Java, Mojokerto is a special city in the history of Indonesia. The city that used to be the capital of the Majapahit Kingdom, that great empire that united the archipelago. No wonder here found a lot of historic relics, both discovered and is still hidden and scattered throughout over the Mojokerto region. Along with the development of the Majapahit kingdom in East Java it is not surprising that at this time there are still many centers of batik which continues to grow in East Java as one of the historical and cultural heritage are inscribed by the Majapahit kingdom. One of the areas in East Java that still retain and continue to develop batik of the Majapahit kingdom was Mojokerto. It is unfortunate that the batik Mojokerto in the past developed rapidly, now only a few people who still carry on the tradition of batik.

The uniqueness of Mojokerto batik are the names of pattern heard alien and strange to some people. For example gedeg rubuh, matahari, mrico bolong, pring sedapur, Grinsing, atausuryamajapait. Batik Mojokerto now has 6 motifs which has been patented, namely pring sedapur, mrico bolong, sisik gringsing, Koro renteng. The batik design, Mojokerto take natural pattern about human life. For example sedapur pring motif represents bamboo clusters with dangling leaves. There is peacocks perch. Basic color is white with blue bamboo stalks. While the leaves in blue and black. Similarly gedeg rubuh motifs, much like oblique bamboo plait. If mrico bolong motif in the form of perforated pepper.

Batik Mojokerto also have other fairly well-known that is Batik Kalangbret, characteristic of this batik lies in the motif is almost similar to Yogyakarta batik, the white base color with the color shades of brown and dark blue.

#### **5. Definition of the Product, Definition of the Product Quality and Product Quality Dimensions. [16]**

##### **Definition of product**

Definition of the product is anything that can be offered to the market to get attention, purchased, used, or consumed to satisfy the desires or needs.[16]

### Product attributes

Some of the attributes that accompany and complement the product (characteristics of the product attributes) are : [17]

1. Brand

Brand is a name, term, sign, symbol, or design, or a combination of all of these are intended to identify products or services of one seller or group and distinguish it from competitors' products. [17]

2. Packing

Packing is the activities of designing and making containers or packaging of a product. Packaging involves designing and making containers or packaging of a product.

3. Product Quality

Product Quality is the ability of a product to perform its functions include, durability, reliability, ease of operation and improved accuracy, as well as other valuable attributes. To improve product quality the company can implement a program "Total Quality Management (TQM)". In addition to reducing product defects, the main objective of total quality is to improve the consumer value.

### Product innovation and Business Strategy [17]

Product innovation is a process that seeks to provide solutions to existing problems. Problems often occur in business is a good product but it is expensive or cheap product but unqualified. As a businessmen, we must be sensitive to the desires of our clients are sometimes difficult to accept. The desire is the most common client wants a good product at a cheap price. To create a quality product with affordable price we must be observant see the opportunities to make it happen.

The opportunities that may occur are:

1. Trying to reduce production costs, this can be done, such as adding the quantity of raw material purchase to get a discount. Another thing is to outsource to other companies to prevent higher human resource costs. Or we can also look for cracks that could optimize the production process.

2. Provide other services that can give price subsidies. Each company also seeks to make innovations to meet the needs of their clients. The innovations that have resulted, among others, make the qualified website of product with affordable price by all companies in Indonesia, to develop infrastructure to increase customer satisfaction and continue to do research for a better future.

Business will not grow optimally if they use the normal way, need to make new breakthroughs to make consumers more interested in your business and win the competition in the business world. Any product you sell, any service you offered, businesses need a touch of innovative ideas to make a step ahead of competitors.

To grow the business more quickly and easily, can implement eight innovative strategies and creative as following:

1. Give Special discount is often used to increase product sales.
2. Create a product more attractive. Make the product more attractive than before.



3. Make a new innovation. Never stop to deliver new innovations to consumers
4. Give excellent service to make customers loyal. Any business can thrive for consumers treated properly.
5. Get partner with other businesses. To grow your business, you need to establish mutually beneficial cooperation with other businesses.
6. Apply a different marketing strategy. Counterculture is one way to attract attention.
7. Do not be afraid to face any challenge. Business is always synonymous with challenges.
8. Make a website. The website is the main condition for doing business in the information age. Help customers to find your business on the internet.

### Findings

Based on interviews and observations in the field, the problems faced by Mojokerto batik SMEs are limited production capacity due to several things include production limitations due to workmanship is quite long, a very simple means of leaching and place for boiling batik cloth is very limited.

As a result of these problems is the inability craftsmen meet consumer demand quite a lot and batik-making process takes a long dye begin start process to finish, this raises the potential loss of customers and a lot of customers switch to other artisans outside the city/county of Mojokerto.

To overcome these problem the government has provided batik equipment grant with efficient technology, namely:

1. Procurement of BLCP Sinking Dye Bath Machinery and wetting with specifications
  - Bath Material: 304 Stainless steel, thick= 2mm
  - Frame: Iron square 5 x 5 cm, thick: 3 mm
  - Driving: induction motor 3/4 PK, 220 V, 1 phase, 1450 rpm
  - Capacity prod: 2 meters/minute Full Capacity 30 Meter
  - Number of bath: 3 units

This tool is equipped with two roll structure to facilitate the stretching batik cloth working. Also equipped with a roll cleaners are equipped with rubber to help speed up clearance of remnants of the wax on a cloth that has not been peeled off, thus saving processing time and were able to increase the sinking intensity without damaging the fabric.

2. Procurement of angsang/saranganfor stoves and Electric Pan.
3. Provide training on printed batik-making and make batik dye dosage that will mixed and practiced in BLCP machine.
4. Provide training for using BLCP (dye sinking bath and wetting) machine.
5. Provide training about product innovation and product quality improvement.

Product innovation is done by making products more attractive than ever. Batik motifs propagated by adding motifs and designs. Also create a design that showed the hallmark of the region as a special quality.

## Conclusion

The results of this study concluded that with the grant of equipment, mentoring assistance and training produce positive effect of increasing the productivity and quality of batik production in Mojokerto, this is evidenced by the growth of batik SMEs in Mojokerto city, increasing the number of motif variations, increased batik quality, the breadth of marketing batik of Mojokerto covering the entire territory of Indonesia so that the number of requests either from the batik Mojokerto either from Mojokerto city itself and requests from all over Indonesia and also shows the increasingly showed interest in batik of Mojokerto.

This study has limitations because it is a case study so that the research findings is not public. Differences objects, form of assistance, or other types of small businesses (including small business boundaries are different) can produce different conclusions. The implication of this research is a model of assistance should be adjusted to the characteristics and needs of existing businesses to be effective in achieving its goals.

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**Tabel 1.** Batik Motifs Mojokerto

The motif that already get Copyright (HAKI) :	Variety of other motives
Motif Mrico Bolong Motif Sisik Grinsing Rawan Inggek Matahari Pring sedapur Koro Renteng Alas Mojopahit Suryo Mojopahit Daun Talas Teratai Surya Mojopahit Lerek Kali Batik Mojo Rawan Kloso	Gedeg Roboh, Rawan Kloso, Kembang Soroh,Ukel cambah, Boto ditoto, Tiga serangkai, Sekar jagat, Batik erzan, Merakmanis,Sido Mukti,Kembang dilem, kapal kandas, Satriomanah, Kembang pacar, Kawung Rambutan, Ondo Indi, lerek, sidoluhur, Kisang bali, Mawar telasih, Takir Pontang, Ombak Samudro, Lompong, Kembang bayem, lerek kali, Bin Pecah, Tlaso, alas kobong, Alas Mojopahit, Paran seling, Batik Mojo,Sisik Moro doro, Krokot, Beras Kipas, pecah kopi.

Source : [10]

**Table 2.** Before and after assistance and procurement of equipment at SME

Before mentoring and procurement assistance	Before mentoring and procurement assistance	The effects on the SMEs development in Mojokerto
1. Results of production is very limited, only one or two products per day per person.	1. The products could be 4 to 6 per day per person	1. Growth in Mojokerto batik SMEs increased significantly year
2. Limitations of the tool so unable meet consumer demand	2. The result of increased production so that it can meet customer demand	2. Consumer demand for school uniforms and office can be met from SMEs in Mojokerto
3. Working time in the old product because of limited equipment.	3. Processing time is shortened because of the availability of an adequate tool	3. The development of batik industry marketing extends to the area of East Java
4. Variations batik motif is only 4	4. Product variation of more than 40 motifs	4. Batik motif ofMojokerto increasingly in demand by the large number of requests from outside the city and county of Mojokerto
5. The quality of production is less good results	5. Quality products increased	