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Product Development for Competitive Advantage of Micro, Small, and Medium Enterprises of Ikat Woven Fabric in Kediri

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ABSTRACT

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Based on the problems that often occur in Micro, Small, and Medium Enterprises (MSMEs) related to the fulfillment of customer satisfaction, researchers aimed to provide the solutions to the method of selecting product development strategies based on competitive advantage criteria including quality, cost, delivery, service, and morale. The research was done in MSMEs of Ikat woven fabric. The collecting data method used was questionnaires for customers in MSMEs of Ikat woven fabric. This questionnaire was about the criteria for competitive advantage for MSMEs of Ikat woven fabric in Kediri. The analysis methods were Importance-Performance Analysis (IPA) and Quality Function Deployment (QFD) based on the criteria of competitive advantage for MSMEs of Ikat woven fabric in Kediri. Based on the data analysis, the results show that the MSMEs of Ikat woven fabric should replace plastic materials into recyclable materials, ensure that raw materials do not contain dangerous and poisonous materials, choose coloring materials that do not contain dangerous and poisonous materials, choose the third parties to deliver products, weigh dye materials according to their composition and measurement, and utilize domestic raw materials.

Keywords: product development, competitive advantage, Ikat woven fabric industry, Micro Small Medium Enterprises (MSMEs)

INTRODUCTION

The development of a dynamic industrial environment in the global era has become a trigger for many companies to explore their

potential (Moon, Hur, Yin, & Helm, 2014). They must identify the key factors to excel in increasingly competitive competition, including Micro, Small, and Medium Enterprises (MSMEs). The rapid technology is also in line with a competitive business. The

efforts carried out, in the end, are to provide the best products to consumers (Hoe & Mansori, 5)18). The product offered by the company to consumers in terms of production and operations management is a combination of goods and services (Minar & Safitri, 2017). MSMEs will not be able to compete if the products offered are purely goods. Vice versa, the service company cannot compete if the product offered does not care about the service factor (Sharma & Kharub, 2014). The success of MSMEs in providing the best products to consumers includes a combination of goods and services in the ideal portion according to the company (Kaleka & Morgan, 2017). The presentation of the product in a broad sense is a challenge as well as an opportunity for operating production systems that must be carried out by MSMEs (Gupta & Nanda, 2015). It is starting from identifying consumers' tastes to seeking all input requirements from suppliers to produce and distribute these products according to the expectation of targeted consumers (Kumar Singal & Kumar Jain, 2014). Consumers expect to obtain products that have benefits at an acceptable price. To realize the desires of these consumers, each company strives optimally to use all its assets and capabilities to provide additional value to consumers' expectations. The implementation of this effort certainly has different cost consequences for each MSME, including its competitors.

Approximately, about 20 woven industry homes at Bandar Kidul Kediri are done by the three family generations. The woven fabrics produced are starting from Gombyor sarongs, Misris (ordinary) fabrics, semi silk to silk. The fabric is colorful with Kediren motifs such as Ceplok to Lung. Kediri's unique woven fabric can be found easily in the Bandar Kidul woven industry center, Kediri. The community works together to produce and market the woven fabric. The motifs used are Salur, Kuncup, and Brantas river.

Another woven competitor is woven from Bojonegoro, which is so popular with its batik. The motif is adopted from Jonegoroan batik. It is batik with a distinctive Bojonegoro motif. There are also motifs used for common Bojonegoro woven fabrics such as Sekarjati

and Oxen Sekar Rinambat. One of the Jonegoroan woven centers is in Kedungrejo, Sumberejo. There is also Lamongan ikat woven fabric produced in Parengan. The color is brighter and firmer with distinctive features called Milkfish and Catfish. This woven is also combined with Songket and batik to enhance its appearance.

The weaving process uses fine threads through two processing stages with 15 steps. The process of making warp or *keteng* through four stages called dyeing, spinning, skeering or rolling threads in the boom, and graying process or connecting threads. The second process is spinning white yarn, re-arranging threads at *bidangan*, designing, binding, dyeing, plugging, releasing straps, breaking threads, spinning in pallets, and weaving.

The strength of the woven handicraft industry in Bandar Kidul is the business activity that has been going on for generations. It also has its uniqueness in the patterns and motifs displayed, and most of them have gained the trust of banking capital. The production capacity of 139 *Alat Tenun Bukan Mesin* (ATBM - non-mechanical loom) units in Bandar Kidul Kediri neighborhood is approximately 278 meters of woven fabric per day. It is equivalent to 8.340 meters per month, or 100.080 meters a year. The woven production capacity is 300 meters in a month or equivalent to 3.600 meters in a year. Whereas, the market opportunities still open to absorbing the production up to 12.520 meters of woven fabric per month or 150.240 meters a year.

The current marketing range of Ikat woven fabric has reached cities throughout the country, such as Jakarta, Palembang, Jambi, Toraja, Makassar, Denpasar, Malang, Surabaya, and others. The results of the analysis show that the opportunities for developing the woven handicraft industry are still open by considering the increasing requests. Meanwhile, the optimum production capacity is still two meters of fabric per machine per day so that to meet the high market demand. It is necessary to increase the number of machines, labor, and capital.

The consumers tend to choose MSMEs that offer the most competitive prices with quality standards that meet customer needs (Sharma & Kharub, 2015). Therefore the criteria of Quality, Cost, Delivery, and Services are known or commonly called QCDS (Ambarwati, 2018a). As time goes on and the demands of global business increases, companies need other criteria to support their competitive advantage (Taie, 2014). Consumers' awareness regarding safety and green manufacturing requires companies to change the paradigm of competitive advantage criteria by adding aspects of safety and morale that are strictly related to the company's obligation to maintain the environment in every business process (Jie, 2017). Because of these demands, the mechanism of market competition and competitive advantage can be explained in five keywords, namely Quality, Cost, Delivery, Safety, and Morale (QCDSM) aspects. In the beginning, the company only pays attention to the quality aspects of its products. However, due to the development of the era and the tight competition of the business aspects of costs, delivery accuracy, and service, the company needs to be further studied (Ocampo & Estanislao-Clark, 2014). The success of the company in the long term depends on product development strategy (Sudarmiatin & Suharto, 2016). These criteria are factors that influence customer satisfaction and support in winning the market competition.

In the scope of business competition, every company must pay attention to aspects of the main concern of the competition. Those are quality, features, functions, product reliability, services provided, product stock availability, image and company reputation, mastery of the knowledge in the marketing team of its products and technology, and competitive prices (Išoraitė, 2018).

Competitive advantage grows from the value or benefits of the company to its buyers. The value is more than the costs that the company must incur to create (Asmayadi & Hartini, 2015). It is the value or benefit that the buyer is willing to pay. It can be the superior value coming from offering a lower price than the competitor's price with equal benefits or

unique benefits that exceed the price offer (Kharub & Sharma, 2017). The competitive advantage is the superiority of competitors obtained by offering lower value or by providing greater benefits because the price is higher (Soloduchko-Pelc, 2014).

This research uses the consumers' opinion in determining measurement criteria based on QCDSM. Meanwhile, previous research only uses criteria based on QCDS in manufacturing industries (Ambarwati, 2018). In this study, it measures competitive advantage with QCDS using AHP in determining the priority of competitive advantage based on customer perceptions. Few studies have focused on the QCDSM. These criteria can be used for developing the product and measuring the competitive advantage of a product. In addition, many previous studies only use Quality Function Deployment (QFD) in building House of Quality like Ionica and Leba (2015), De Fátima Cardoso, Casarotto Filho, and Miguel (2015), and Zaim *et al.* (2014).

The research using ANP weighted and fuzzy QFD for product development (Zaim *et al.*, 2014) aims to rank the technical characteristics of a product or service in implementing QFD. The methodology feasibility proposed by the use of ANP weighted QFD and fuzzy ANP weighted QFD methods is that the development of new equipment for squeezing polyethylene pipes to stop the flow of gas without damaging the pipe, was developed. The ranking of technical characteristics of products is calculated using both crisp and fuzzy weights for illustration and comparison purposes. The decision-making approach presented in this work can easily be extended to other real-world applications of customer-driven product development activities to make planning decisions and evaluate the product characteristics.

In the study of The Application of Quality Function Deployment for the Development of Organic Products (Cardoso *et al.*, 2015), the conceptual model of QFD consisting of four

matrices was built to develop organic fruit jelly. The main adaptation is in the first matrix, which includes key players in the supply chain. Because food ingredients have a variety of natural compositions, interactions between ingredients must be considered. In addition, the effect of the production process on the functional properties of the product and the effect of the supply chain on the material ensures that this type of product development has different variables compared to other QFD applications for non-food products. Therefore, the conceptual model used in this study can function in the development of other food products. This study confirms that the element of social-environmental responsibility is very important for developing organic products because this dimension covers one third of the relative weight of the planned quality. Food that will be certified as organic must meet certain demand criteria, such as special legislative requirements, inclusion of the seeds types to be used, production, transportation, addition of ingredients during the manufacturing process, and processing of final products. In this sense, QFD can benefit relationships with consumers by identifying the quality required of organic products, linking them with productive chains, extracting quality characteristics and building relationships with productive processes and raw materials. In this study, the values and parameter values have not been tested. The values presented in this study are only for reference. This study highlights the market for this type of product that is growing, and it makes sense for companies to develop products from a consumer's perspective. The implementation of QFD reflects the customer's voice in developing the production phase.

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In the study of QFD Integrated in New Product Development (NPD) - Biometric Identification System Case Study (Ionica & Leba, 2015), the results are presented after applying the methodological focus in the first phase of

capture requirements for both the design phase and for the development of the actual product phase. The research methodology is an interdisciplinary, multi and across-disciplinary approach to innovative product development. In our research context, NPD is a pathway to follow research steps, and QFD is a glue of logic among specialists from various fields, such as quality management, electronics, computer programming, and medicine. The methodology follows the general steps of QFD formalism and consists in developing a mathematical model quantified by the overall index, i.e. offset, the level of achievement of customer requirements with the technical characteristics of innovative products designed or developed

However, in this research, the researchers use a combination of two methods of data analysis, Importance-Performance Analysis (IPA) and QFD. IPA is needed in determining the level of satisfaction and interest according to consumers' perceptions based on the established criteria. This research is carried out in MSMEs of Ikat woven fabric that uses safety criteria both in the processing of raw materials without using hazardous raw materials and packaging of products without using plastic. The other focus of research is product development that focuses solely on the processing and packaging of products that are effective and efficient without paying attention to hazardous waste caused.

Ikat Woven Fabric Industry Center⁴ one of Ikat woven craftsmen associations in Kediri, East Java. In the center of the woven industry, 20 weavers have 270 workers. The product of Ikat woven fabric at Bandar Kidul Kediri uses a non-machine loom that has been handed down from generation to generation. Thus, the price of this product is more expensive compared to factory woven fabric. It makes the weaving craftsmen cannot compete with machines.

Based on the problems faced by these MSMEs, this study will try to solve the problem of how product development is made using the

QCDSM concept to maintain the suitable competitive advantage for the survival of the MSMEs of Ikat woven fabric in Kediri. The research on measuring consumers' needs in MSMEs in Indonesia, especially the level of quality and customer loyalty has not been carried out much. However, the research related to the development of new products that meet the market expectations of the MSMEs industry in Indonesia, especially for textile MSMEs, has never been done. This study aims to develop the products of MSMEs of Ikat woven fabric in Kediri to survive in the era of global industrialization in Indonesia. By using QCDSM as the basis for forming competitive advantage criteria which later become input for QFD, it is expected that this research can provide a positive contribution to textile MSMEs, especially for Ikat industry in Kediri.

METHODS

There are several steps in conducting this research as seen in Figure 1. The first step of

the data collection stage is determining the attributes of market competition that will be used. Attributes are the objects in research observation. The factors that are considered to affect the quality of woven products are used to determine the attributes of the research. The attributes are woven attributes that are important to consumers to determine the quality characteristics of woven products. These attributes are obtained from several literature reviews and direct interviews with customers and distributors. The determination of weaving product quality attributes refers to several existing theoretical frameworks, namely the theoretical framework presented by (Kotler & Keller, 2016) and (Wijaya, 2018).

The selected attributes are based on QCDSM. In determining these indicators, the basic quality criteria that Kotler and Keller (2015) conveyed were combined with the suitability of the paradigm and business market environment of the Ikat woven fabric in Kediri. Determination of product quality attributes is explained in Table 1.

Table 1 Competitive Advantage Attributes of Ikat Woven Fabric

Indicator	Criteria	Explanation
(1)Price Conformity	C+Q	The price offered is according to the quality of the product
(2)Endurance	Q	The durability of the product
(3)Product Packaging	Q+D	The product packaging is attractive to consumers
(4)Trademark	D	The symbols and writing of MSMEs trademarks
(5)Product Size	Q	The size of the product
(6)Dyes	S	The dye is harmful to consumers
(7)Product Color	Q	The color of the product is attractive to consumers
(8)Packaging Material	M	The packaging material is environmentally friendly plastic
(9)Product availability	D	The products are always available at outlets
(10)Product Safety	S	The products are safe to use for consumers
(11)Product Delivery	D	The product delivery is always on time
(12)Dangerous waste	M	The production system produces dangerous waste
(13)Environmentally friendly	M	The business system of MSMEs is friendly to the environment

The next step is determining the number of samples that are used in the study. The target population is the users of the Ikat woven fabric in Kediri. The average number of MSME

consumers per month is 50 people so that that minimum sampling can be set.



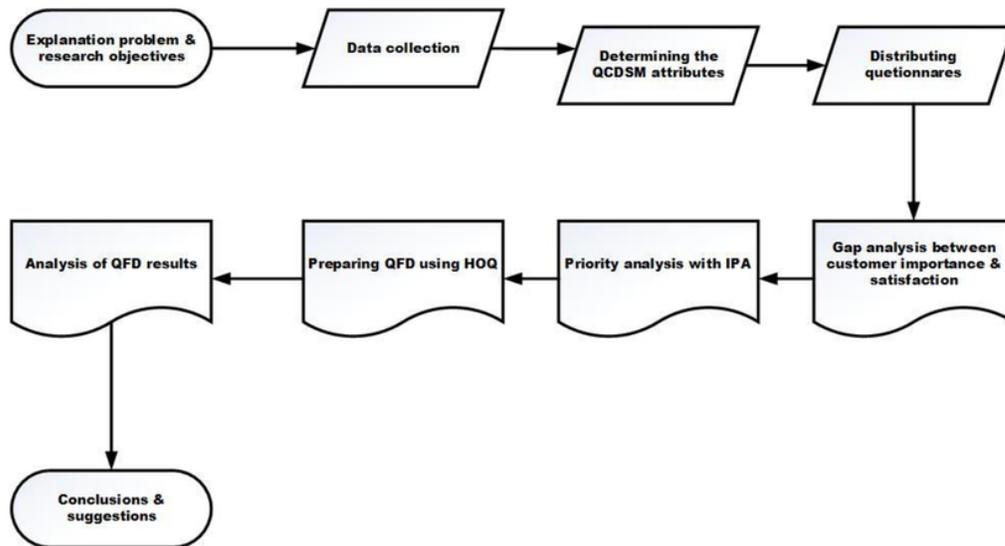


Figure 1. Research Flowchart

The next step is the questionnaire preparation. The questionnaires are used for data collection tools to be analyzed. The questionnaires on consumer satisfaction levels are prepared using questionnaires on the level of customer satisfaction on the attributes by underlying the selection of woven fabric products using IPA. The population target in this study is the Ikat woven fabric customers of Kediri with an average number of 40 consumers per month. The consumers have used Bojonegoro woven and Lamongan woven fabric. Data collection is obtained from the results of questionnaires distributed to consumers of the Ikat and weaving entrepreneurs to get a technical response for QFD. In the center of MSMEs of Ikat woven fabric in Kediri, 20 woven entrepreneurs employ 270 residents around Kediri. They are the respondents in the technical response data collection used to compile the House of Quality. Then, the data are collected and processed in accordance with the steps that have been set.

After the questionnaire data are obtained, the next step is to test the validity. The main instruments used are questionnaires to respondents. The research questionnaire refers to the research attributes that have been

predetermined. Validity test is performed to determine the extent to which a measuring device can measure what people want to measure. The validity test can be defined as the size of a measuring device to do its measuring function.

Validity is defined as an accurate measure of a test function in performing its size function. If the validity obtained is higher, the test will be more accurate and increasingly shows what should be shown. This validity test is determined by the internal validity, where the criteria come from within the tool itself, and each item for each variable is correlated with the total value obtained from the product moment in the correlation coefficient. If the correlation coefficient value is low and not significant, the item in question is not valid.

Validity analysis is performed to know whether the data or each question obtained is in accordance with the conditions of the population. In the determination of correlation value (r), reliability can be defined as an index that shows the extent to which a measuring instrument (questionnaire) can be reliable. Reliability test is intended to determine the reliability of the instrument for collecting data.

The questions or attributes are asked to different respondents, and the results will not deviate too far from the average.

The data are processed using Microsoft Excel and SPSS software. Data processing carried out is qualitative data processing. Qualitative data processing is obtained from the results of preliminary questionnaires in the form of attributes needed and desired by respondents.

Next, it is the preparation of IPA. It is a procedure to show the relative importance of various attributes to the performance of an organization or company. Then, the next step in data processing is to build a House of Quality. In building a House of Quality, the data needed are consumers' needs, technical response, planning matrix, technical correlation, relationship matrix, and technical matrix.

Next, it is data interpretation. The interpretation can be carried out based on the results achieved. Interpretation is a translation of each value obtained in processing data and a description of QFD visualization in the form of a quality house. The analysis is performed so that House of Quality results can be more valuable and useful to explain observed phenomena. The results of the analysis are

used as references in making recommendations. As a result, this research is in the form of a proposal to improve the description of the technical response (Wijaya, 2018). The 8th stage in the research is to draw conclusions based on the results of the analysis and recommendation in the proposed improvement of product quality of MSMEs of Ikat woven fabric in Kediri and recommendation for further research.

RESULT AND DISCUSSION

8 Based on the results of data collection and processing of the level of importance to the customer, the data are the result of processing IPA from the value of customer satisfaction and the interests of the customer (Yuen, 2014). The use of the results of IPA aims to find out what things are influential and become the main expectations of customers in obtaining products or services from MSMEs of Ikat woven fabric in Kediri. Based on the results of the questionnaire that have been disseminated, the level of customer satisfaction and the importance of customers are obtained. The results of IPA processing from the value of satisfaction and customer interests can be seen in Figure 2.

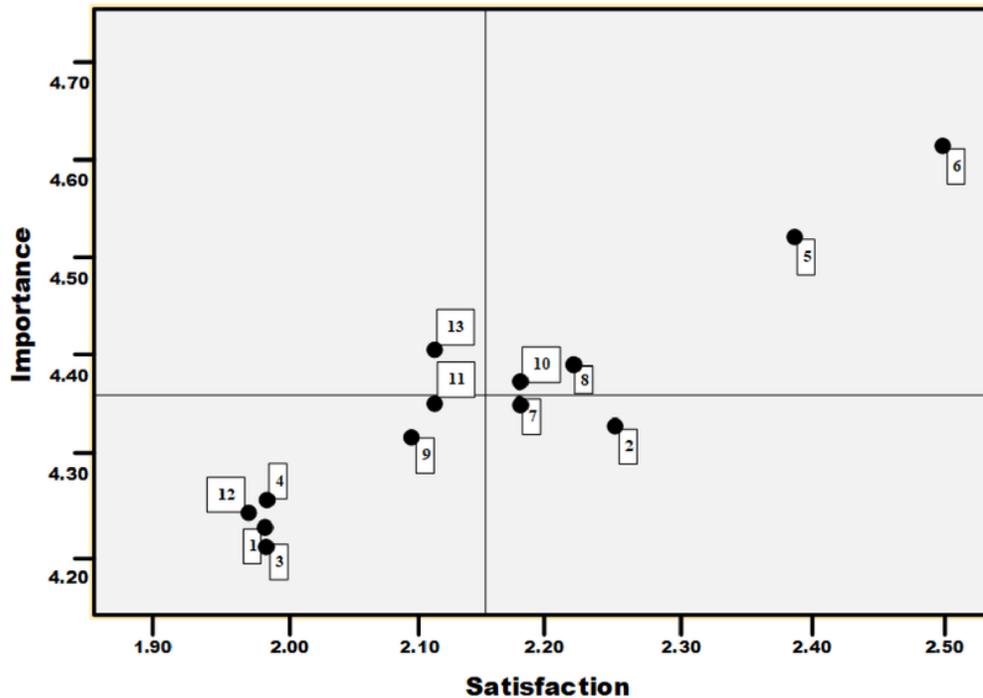


Figure 2 Diagram of Classifying Interests with the IPA Concept

After the average value of each attribute is obtained, the next step is to create a Cartesian diagram of the position of data placement based on IPA. The plot results from the values of each attribute in the Cartesian diagram can be seen in Figure 2.

The explanation for each quadrant of the Cartesian diagram is explained. Quadrant A contains the attributes that are considered as important by the consumers. However, in reality, these attributes are not in accordance with what is expected (the level of customer satisfaction is still low). In this quadrant, the company makes continuous improvements so that performance in this quadrant increases. The attributes included in this quadrant are environmentally friendly attributes (13). Quadrant B contains the attributes that are considered as important by the consumers, and the attributes are considered in accordance with the consumers' perception so that the relative level of satisfaction is higher. Attributes included in this quadrant are

attributes of product size (5), coloring agents (6), packaging materials (8), and product safety (10). Next, Quadrant C includes the attributes that are less important by consumers, and the performance is not good. In this quadrant, there are price suitability (1), product packaging (3), trademarks (4), product availability (9), product delivery (11) and dangerous and poisonous materials waste (12). Quadrant D has the attributes that are considered less important by consumers and are felt to be excessive. It includes endurance attributes (2) and product color (7).

The results of the IPA analysis of consumer satisfaction are mapped into House of Quality. There are the attributes in Quadrant A and Quadrant C. The quadrant C is the attributes that are considered less important by the consumers, and the performance is not good enough. Quadrant C is chosen because if an improvement is made on these attributes, it will increase consumer satisfaction from the MSMEs of Ikat woven fabric in Kediri. Quadrant A will increase the number of

consumers if it is fulfilled, and vice versa. The IPA mapped into the House of Quality is in Quadrant A and C because it has a high priority in increasing consumer satisfaction so that it can provide a positive impact on the competitive advantage of the MSMEs of Ikat woven fabric in Kediri.

Consumer satisfaction is the perception of the quality of Ikat woven fabric according to

consumers as they perceive. This is related to consumers' ratings in each Ikat woven fabric attribute based on the level of customer satisfaction. The assessment of the level of customer satisfaction is performed on the MSMEs of Ikat woven fabric in Kediri and its competitors (Bojonegoro and Lamongan). The values of the level of satisfaction on each brand can be seen in Table 2.

Table 2 Determination of the Consumer Satisfaction Value

No.	Atribut	Customer Satisfaction Performance			Goal
		Kediri	Bojonegoro	Lamongan	
1.	Product Delivery	3,27	3,32	3,52	3,52
2.	Product Availability	3,28	3,38	3,42	3,42
3.	Trademark	3,77	4,08	3,82	4,08
4.	Dangerous Waste	3,55	4,05	4,23	4,23
5.	Price Conformity	3,83	4,03	3,85	4,03
6.	Product Packaging	3,63	3,58	3,80	3,80
7.	Environmental Friendly	4,12	3,85	4,10	4,12
	Mean	3,54	3,77	3,77	

Based on Table 2, it shows that in the three Ikat woven fabric providers, the highest value is on the dangerous waste with a value of 4,23. The consumers consider that the dangerous waste produced by MSMEs of Ikat woven fabric is less than their competitors. Next, it is the eco-friendly attribute with the value of 4,12. This value shows that consumers consider the business process of MSMEs of Ikat woven fabric to be more environmentally friendly than their competitors. The attribute with the next highest value is a trademark with 4,08. This value means that the way of creating and forming a trademark of MSMEs of Ikat woven fabric is still less than its competitors. Then, the next attribute is the suitability of product price by the value of 4,03. Most of the product attributes do not have a higher level of satisfaction than competitors. The average level of consumer satisfaction on Ikat woven fabric in Kediri is also lower than the two competing brands. This is a problem that must be solved. MSMEs of Ikat woven fabric has the average satisfaction level of 3,54. Meanwhile, in Bojonegoro, it has an average consumer satisfaction value of 3,77. It is the same level of consumer satisfaction with Lamongan.

The improvement ratio shows whether a determined goal can be achieved or needs improvements so that the goals can be achieved (Sousa-Zomer & Miguel, 2017). To find out whether the goal has been achieved, the researchers look at the value of the improvement ratio. If the value of the improvement ratio is equal to 1, the goal can be achieved and must be maintained. However, if the value of the improvement ratio is greater than 1, the necessary improvements must be made to improve the quality of Ikat Woven fabric in Kediri. The greater the value of the improvement ratio is, the greater the effort that must be made to achieve the determined goal will be. The results of the improvement in the ratio of Ikat woven fabric in Kediri can be seen in Table 3.

8 Based on the results of data collection and processing, it can be seen that almost all attributes of Ikat woven fabric in Kediri have not met the goals. From the seven attributes of the selected woven products, there are six attributes of Ikat woven fabric in Kediri that have not fulfilled the goal yet because they have an improvement ratio of more than 1. Therefore, it is needed to improve the competitiveness of Ikat woven fabric in Kediri. The calculation of improvement ration can be seen in Table 3.

Table 3 Calculation of Improvement Ratio

No.	Attribute	Consumer Satisfaction Performance	Goal	Improvement Ratio
1	Product Delivery	3,27	3,52	1,08
2	Product Availability	3,28	3,42	1,04
3	Trademark	3,77	4,08	1,08
4	Dangerous Waste	3,55	4,23	1,19
5	Conformity Product	3,83	4,03	1,05
6	Product Packaging	3,63	3,80	1,05
7	Environmental Friendly	4,12	4,12	1,00

Moreover, the technical response is a solution to consumers' need in a company (Yu, Yang, Tao, & Xu, 2015). This solution describes the system that will be created by the company while demonstrating the management capabilities of the MSMEs of Ikat woven fabric in Kediri in overcoming the problems of meeting consumer needs with each attribute of competitive advantage. The technical response

is the answer to the problems in each attribute that illustrates the competitive advantage of Ikat woven fabric. At the House of Quality, the technical response is placed on the roof (Maritan, 2014). The solution to the problems in Ikat Woven fabric attributes is obtained from the results of interviews with the owner of MSMEs of Ikat woven fabric in Kediri. The interview results can be seen in Table 4.

Table 4 Technical Response of MSMEs of Ikat Woven Fabric in Kediri

No.	Attribute	Technical Response
1.	Price Conformity	- Utilizing cheap domestic raw materials - Arrangement of looms and sewing tool - Suitability of raw dye composition
2.	Endurance	- Arrangement of looms and sewing tool - Employee training
3.	Product Packaging	- Replacing the form of plastic packaging into environmentally friendly materials
4.	Trademark	- Arrangement of looms and sewing tool - Redesigning the trademark
5.	Product Size	- Employee training
6.	Dyes	- Choosing natural raw materials & not containing dangerous and poisonous materials
7.	Product Color	- Suitability of raw dye composition
8.	Packaging Material	- Replacing plastic wrap with recyclable material
9.	Product availability	- Increasing the production
10.	Product Safety	- Choosing natural raw materials & not containing dangerous and poisonous materials
11.	Product Delivery	- Partnering with third parties to ship goods
12.	Dangerous waste	- Choosing natural raw materials & not containing dangerous and poisonous materials
13.	Environmental Friendly	- Choosing natural raw materials & not containing dangerous and poisonous materials - Replacing plastic wrap with recyclable material

The following is an explanation of each technical response from the MSMEs of Ikat Woven fabric in Kediri. First, it is utilizing domestic raw materials so that prices are more

competitive. In cutting the production costs, the selection of raw materials must be carried out by the MSMEs of Ikat woven fabric in Kediri. The raw materials used are still imported from other countries such as yarns

from India and dye from China. If the imported raw material can be found in Indonesia, it can cut the shipping costs and cut the time for shipping raw materials which will have a positive impact on the competitive advantage of the MSMEs of Ikat woven fabric in Kediri.

Second, it is the arrangement of the loom and sewing tool. The looms used in the production process of Ikat woven fabric are still very conventional. Therefore, they need a method to standardize the settings of the loom. However, the aspects that need to be considered are the unique aspects of handmade products like the characteristics of cultural products.

Third, the weighing of dye is according to their composition and measurement. If the dye is not used properly (excessive or insufficient), it will affect the production and make the production process ineffective and inefficient (De Fátima Cardoso, 2015). Therefore, the weighing of the dye needs to be in line with the right measurement so that the quality of the Ikat woven fabric will be better, and the colors will last longer.

Fourth, in the employee training, employees or weavers in MSMEs need to be equipped with production capabilities and an understanding of the good, effective, and efficient production process (Hongal & Charantimath, 2014). With this understanding, it is expected to increase the sense of awareness in the employees towards the business process of MSMEs (Darcy, Hill, McCabe, & McGovern, 2014). It will have a positive impact on MSMEs of Ikat woven fabric in Kediri.

Fifth, packaging is the display so that consumers are interested in seeing the contents of the product. Currently, the packaging of the MSMEs of Ikat woven fabric in Kediri is only made of mica plastic. By changing the packaging that is originally from mica plastic and transforms it into a purse shape, it is expected that this effort will increase consumers' interest in the Ikat woven fabric in Kediri.

Sixth, it is redesigning the trademark. The trademarks are listed on each product packaging as well as every element of the MSMEs of Ikat woven fabric in Kediri. It can become an icon for the MSME itself. By changing the design and style of a trademark into a more attractive form of consumers, it is expected that it will bring a positive impact on MSMEs of Ikat woven fabric in Kediri.

Seventh, the weavers should choose a dye that does not contain **dangerous and poisonous materials**. Safe dye does not contain hazardous ingredients and side effects when the product is used (Yu *et al.*, 2015). It is important for the MSMEs of Ikat woven fabric in Kediri to know and sort raw materials for textile dyes that are safe for consumers. Thus, it will increase consumer's trust in MSMEs of Ikat woven fabric in Kediri.

Eighth, it is replacing plastic materials into recyclable ones. Plastic waste is a global problem for every country. Each element of life contributes to the amount of plastic waste in the environment (De Fátima Cardoso, 2015). Therefore, by replacing plastic materials into recyclable plastic will provide a competitive advantage for the MSMEs of Ikat woven fabric in Kediri because they lack awareness of plastic problems. Meanwhile, consumers' awareness has begun to raise. It can become an opportunity for MSMEs to increase their competitiveness by using recyclable plastic materials.

Ninth, it is creating a production plan. Production planning is very important to create an effective and efficient production system (Kaviani & Abbasi, 2014). By creating a good and systematic plan, it will have an impact on the availability of products in each outlet, and it can meet consumers' needs. Currently, there is no qualified production plan for the MSMEs of Ikat woven fabric in Kediri. Therefore, by creating a production plan from MSMEs, it is expected that it will increase the competitiveness of the company.

Tenth, it is ensuring that the raw materials do not contain **dangerous and poisonous materials**. It is important for the MSMEs of Ikat woven fabric in Kediri to know and sort

raw materials that are safe for consumers and safe for the environment so that it will increase consumers' credibility on MSMEs of Ikat woven fabric in Kediri. In addition, the impact is an increase in public trust in the presence of MSMEs of Ikat woven fabric in Kediri because the waste produced will be more environmentally friendly and will not pollute the surrounding environment.

Eleventh, it is choosing a third party to ship the product. Product delivery is an important attribute in maintaining a competitive advantage for MSMEs of Ikat woven fabric in Kediri. Creating a good partnership with third parties can deliver products on time, and it will increase the competitiveness of the MSMEs of Ikat woven fabric in Kediri.

One of the efforts to improve the product quality is to understand the relationship between the technical response that the company has with the wants and needs of consumers. This relationship is very important and needs consideration to find out how strong the correlation is. The value of the relationship can be seen in the contribution value and the contribution of normalized value. The contribution value shows the contribution of the existing technical response to the fulfillment of consumer desires. Meanwhile, the normalized contribution value shows the percentage of technical response contributions that are obtained previously. The contribution calculation results and normalized contribution values can be seen in Table 5.

6
Table 1 Calculation result of Contribution and Normalized Contribution Value

No.	Technical Response	Contribution	Normalized Contribution
1.	Utilizing cheap domestic raw materials	2,12	0,07
2.	Arranging of looms and sewing tool	4,12	0,13
3.	Suitability of raw dye composition.	3,81	0,12
4.	Employee training	1,91	0,06
5.	Replacing the plastic packaging into environmentally friendly materials	3,65	0,12
6.	Redesigning the trademark	2,45	0,08

After analyzing the planning matrix, technical responses along with the correlation between technical response and customer need, and the correlation between technical responses, a quality improvement proposal of MSMEs of Ikat woven fabric in Kediri can be proposed. To determine the priority of improvement proposals, the result difference is obtained from the performance of Ikat woven fabric in

Kediri with the performance of Bojonegoro and Lamongan. The difference is between the target and the performance. However, if its performance is better than the two competitors, and the target is the same as its performance, no improvement is needed. The results of the performance and target calculations can be seen in Table 6.

Table 6 The Performance and Target of Ikat woven fabric in Kediri, Bojonegoro, and Lamongan

No.	Technical Response	Performance			Goal
		Kediri	Bojonegoro	Lamongan	
1.	Utilizing cheap domestic raw materials	3,75	3,98	3,92	3,98
2.	Arranging of looms and sewing tool	3,87	4,02	4,04	4,04
3.	Suitability of paint raw material composition.	3,83	3,98	4,06	4,06
4.	Employee training	3,62	3,73	3,75	3,75

5.	Replacing the plastic packaging into environmentally friendly materials	3,64	3,79	3,82	3,82
6.	Redesigning the trademark	3,71	3,84	3,81	3,84
7.	Choosing natural raw materials & not containing dangerous and poisonous materials	3,82	3,95	4,09	4,09
8.	Replacing plastic wrap with recyclable natural ingredients	3,82	3,94	4,11	4,11
9.	Increasing the planning production	3,51	3,49	3,68	3,68
10.	Using raw materials that do not contain dangerous and poisonous materials	3,82	3,94	4,11	4,11
11.	Choosing a third party to deliver the product	3,27	3,32	3,52	3,52

Based on the difference between the target and performance, the priority for improvement recommendations can be made for MSMEs of Ikat woven fabric in Kediri to maintain their competitive advantage. The priority recommendations are in order of replacing plastic materials into recyclable ones, ensuring raw materials that do not contain **dangerous and poisonous materials**, choosing dye that does not contain **dangerous and poisonous materials**, choosing the third party to ship the product, weighing the dye materials according to their composition and appropriate measure, utilizing domestic raw materials so that the prices are more competitive.

Nowadays, the environmental friendly paradigm is an important factor in the business process in every company (Dubey, Gunasekaran, & Samar Ali, 2015). It is shown by the emergence of priorities for plastic materials and consumers' awareness to look for producers that are more environmentally friendly (Paul, Bhole, & Chaudhari, 2014). Therefore, replacing plastic packaging into recyclable plastic will provide a competitive advantage for the MSMEs of Ikat woven fabric in Kediri because they lack awareness of plastic problems. Meanwhile, consumers' awareness has begun to raise. Therefore, this becomes an opportunity for MSMEs to be able to increase their competitiveness by using recyclable plastic materials.

In addition, the selection of safe dye for consumers is an important priority to be recommended for the MSMEs of Ikat woven fabric in Kediri. It is important for the MSMEs of Ikat woven fabric in Kediri to know and sort of raw materials for a textile dye that are safe for consumers. Thus, it will increase consumers'

trust in the MSMEs of Ikat woven fabric in Kediri.

It is important for MSMEs of Ikat woven fabric in Kediri to know and sort raw materials that are safe for consumers and the environment so that it will increase consumers' credibility. In addition, There will be an increase in public trust in the presence of the MSMEs of Ikat woven fabric in Kediri because the waste produced will not pollute the surrounding environment.

These paradigm shifts are things that need to be considered by MSMEs to stay ahead in market competition. Price and quality that are used to be the main keys in winning the market competition have turned to the concept of green manufacturing or more environmentally friendly. In other words, consumers have begun to be sensitive to environmental issues and the safety of the products used. This is closely related to the competitive advantage criteria (QCDSM). If a company wants to win the market competition, QCDSM must be a top priority to improve its business processes and become a reference in maintaining its competitive advantage. After the required information has been obtained, the next step is to create a House of Quality based on the available data. The results of the House of Quality are in Figure 3. It is done by compiling consumers' needs, planning matrix, technical response, relationship matrix, technical correlation, and technical matrix.

This study uses the customers' voice in determining measurement criteria based on quality, cost, delivery, safety and morale, whereas previous studies only used criteria based on quality, cost, delivery, service in manufacturing industries (Ambarwati, 2018). These criteria can be used for developing product and are also factors of measuring the competitive advantage of a product. In addition, many

previous studies only used QFD (Quality Function Deployment) in building House of Quality, while in research using a combination of two methods of data analysis, IPA and QFD such as Ionica and Leba (2015), Cardoso et al. (2015) and Zaim et al. (2014). IPA is needed in determining the level of satisfaction and level of interest according to customer perceptions based on established criteria. This research was carried out in the ikat woven fabric industry that uses safety product criteria both in the processing of raw materials without using hazardous raw materials and packaging of products without using plastic. The other focus of research is product development that focuses solely on the processing & packaging of products that are effective and efficient without paying attention to hazardous waste caused, (Ambarwati, 2018).

The process of this study also uses QFD for the process of making House of Quality, in the

preparation of HOQ a method is needed to prioritize importance. Determination of this priority level can use ANP or other fuzzy methods for ranking (Zaim et al., 2014). While in this study using science for priority ranking processing based on customer perceptions as respondents. The use of QFD is more for product design which would be developed in previous studies, whereas in research all aspects of competitive advantage are Quality Cost Delivery Safety and Morale measured according to customer needs. Many previous studies focused on the quality of products that will be developed even though many factors are related to the impact of products in order to compete in the industrial market.

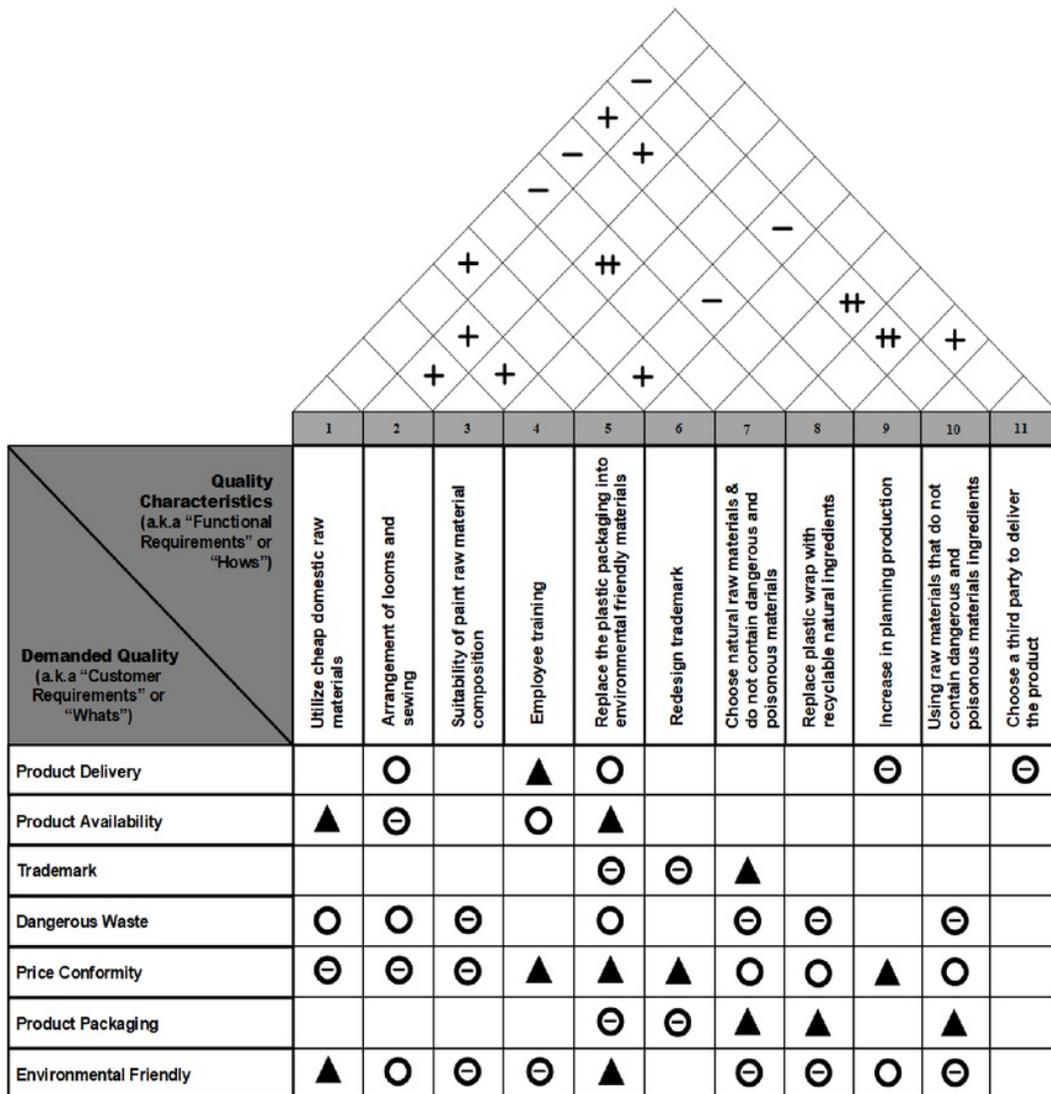


Figure 3 House of Quality of MSMEs of Ikat Woven Fabric in Kediri

CONCLUSION

The consumers' needs of MSMEs of Ikat woven fabric in Kediri are the attributes processed using IPA. These attributes include environmentally friendly attributes, attributes of price suitability, product packaging, trademarks, product availability, product delivery, and **dangerous and**

poisonous materials waste. Almost all attributes of Kediri Ikat woven fabric are less able to meet the goals. From the seven attributes of the selected woven products, there is one product attribute that has fulfilled the goal because it has an improvement ratio. To design products that are in accordance with consumers' desires, a contribution value shows the technical response to consumers' desires.

It is found that the technical response will be the priority of MSME owners to be used as an improvement material. The most important technical response is that the target value is lower than the competitors. The technical responses are replacing plastic materials into recyclable materials, ensuring raw materials that do not contain dangerous and poisonous materials, choosing coloring materials that do not contain dangerous and poisonous materials, choosing a third party to deliver the product, weighing the dye materials according to their composition and appropriate measure, and utilizing domestic raw materials so that the price is more competitive. These paradigm shifts are needed to be considered by MSMEs to stay ahead in the competition. The aspects like price and quality as the main keys in winning the competition have turned to the concept of green manufacturing that is more environmentally friendly. If a company wants to win the competition, the criteria of the QCDSM must be a top priority to improve its business processes and become a reference in maintaining its competitive advantage.

This research contributes to the concept of product development in the MSMEs by testing the level of satisfaction and importance of products for customers and creating House of Quality. The results of this study can help in providing insight and knowledge for MSME owners as a basis for making decisions on the strategy of developing MSME products based on QCDSM. This study contributes to the general industry, especially the development of MSME industrial products in applying the concept of product development, service to customers, and the marketing of these products.

The scope of this research is only on the development of MSMEs in woven products in Kediri. The measurement has eliminated several criteria that cause the loss information. Future research can be carried out in larger industrial sectors such as manufacturing. In addition, the criteria for product development can be done by adding a number of measurement indicators such as pre-product and after-sale services.

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