

Mapping Craft Industry Cluster Development In Madura To Enhance Local Economic Competitiveness

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ABSTRACT

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The purpose of this study is to identify the potential of the creative economy in the craft industry subsector in Madura that can be developed as an economic potential through cluster grouping with K-Means Clustering analysis technique. The results of this study indicate that the craft industry in Madura has not fully entered into a dynamic cluster. The problems that result in some craft industries in Madura that have not entered into dynamic clusters are due to weak spatial identity, weak specialist supplier networks, lack of economic specialization, still not optimal labor specialization, still using simple production technology and unable to innovate products, and not having a network of business partners resulting in minimal development of market information obtained.

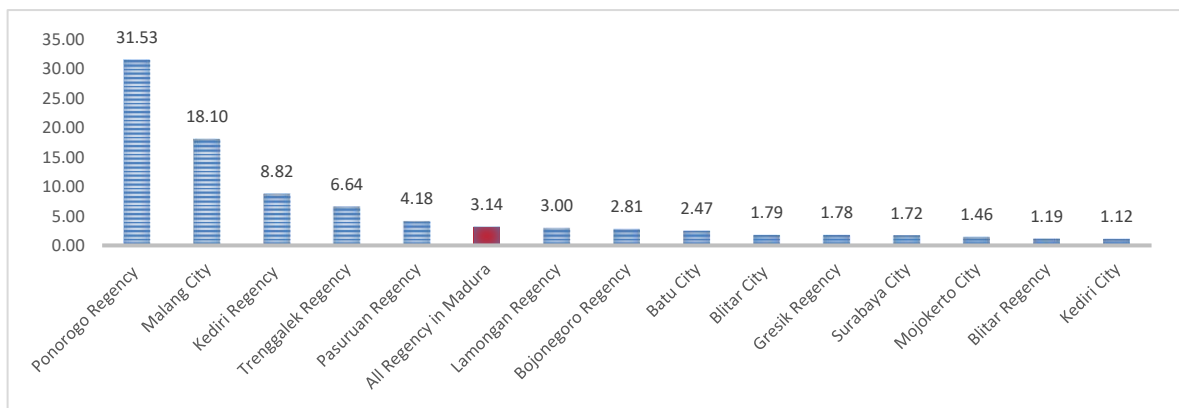
Pemetaan Pengembangan Klaster Pada Subsektor Industri Kriya Di Madura Sebagai Upaya Penguatan Daya Saing Ekonomi Lokal

ABSTRAK

Tujuan penelitian ini adalah untuk mengidentifikasi potensi ekonomi kreatif di subsektor industri kriya di Madura yang dapat dikembangkan sebagai potensi ekonomi melalui pengelompokan klaster dengan teknik analisa K-Means Klustering. Hasil dari penelitian ini menunjukkan bahwa industri kriya yang ada di Madura belum sepenuhnya masuk kedalam klaster dinamis. Adapun permasalahan yang mengakibatkan beberapa industri kriya di Madura yang belum masuk kedalam klaster dinamis dikarenakan lemahnya identitas spasial, lemahnya jaringan pemasok spesialis, belum adanya spesialisasi ekonomi, masih belum optimalnya spesialisasi tenaga kerja, masih menggunakan teknologi produksi yang sederhana dan belum dapat melakukan inovasi produk, serta belum memiliki jaringan mitra usaha sehingga mengakibatkan minimnya perkembangan informasi pasar yang diperoleh.

INTRODUCTION

The creative economy plays an important role in driving the national economy, which comes from the active role of local communities in creating creative businesses (Handoko, 2024). The creative economy subsector contributed 1.153,4 trillion rupiah to the total national economy in 2022 and contributed 1.500 trillion rupiah to the total national economy in 2024 (Detik Finance, 2024). The development of the creative economy in East Java Province is dominated by three main industrial subsectors, one of which is the craft business subsector. Where districts/cities on Madura Island are included in the 6 largest rankings, which contribute 3,14% of the total number of creative economy actors in East Java Province (Dinas Kebudayaan dan Pariwisata Provinsi Jawa Timur, 2024). The distribution of the creative economy is listed in the spatial and regional planning documents in each district in Madura. The spatial and regional planning documents regulate that the potential of the craft industry subsector is spread among the following locations: Macajah Village, Sampang Subdistrict; Polagen Village, Sampang Subdistrict; Kalianget East Village, Kalianget Subdistrict; Aeng Tong-Tong Village, Saronggi Subdistrict; and Karduluk Village, Pragaan Subdistrict.



Source: Dinas Kebudayaan dan Pariwisata Provinsi Jawa Timur, 2024

Figure 1: Development of the Distribution of the 15 Largest Creative Economy Actors in East Java Province in 2024 (percent)

The development of the craft industry subsector in Madura needs to increase its growth to increase people's income. According to Todaro & Smith (2020), The higher the per capita income, the more the welfare of the community increases and poverty will be reduced. On average, the per capita income of Madurese people is still below East Java Province, even though from 2022 to 2024 it has an upward trend. Likewise, the poverty rate in Madura from 2022 to 2024 shows a downward trend, although the poverty rate in Madura is still higher than the average level of East Java Province.

Economic growth supported by the industrial sector contributes to increasing employment opportunities, income, and people's purchasing power so that it will be able to reduce unemployment, encourage community welfare, and reduce poverty (Ulya et al., 2025). Therefore, one way to develop the potential of the creative economy in Madura is to map and develop creative economy industry clusters (Palani & Handoko, 2018). Silvia et al., (2023) and Syairozi et al., (2023) revealed that the existence of creative industries can help increase income for their workers and help prosper in addition to reducing unemployment.

Table 1. GRDP Per Capita ADHB (Thousand Rupiah) and Percentage of Poor Population in Madura and East Java Province in 2019-2024

Wilayah	GDRP Per Capita ADHB			Percentage of Poor Population		
	2022	2023	2024	2022	2023	2024
Bangkalan	25.134,3	25.408,1	26.066	19,44	19,35	18,66
Sampang	23.186,1	23.978,2	24.484	21,61	21,76	20,83
Pamekasan	22.225,7	23.978,2	25.424	13,93	13,85	13,41
Sumenep	35.324,2	37.370,1	39.215	18,76	18,70	17,78
East Java Province	66.246,9	71.121,9	39.215	10,38	10,35	9,79

Source: Central Bureau of Statistics, 2024

According to Porter (1998), a cluster is a geographical concentration of interconnected firms and institutions in a particular sector. Four them determinants lead to the competitiveness of industrial clusters, namely: (1) input factors, (2) demand conditions, (3) supporting and related industries, and (4) firm and competitor strategies. From these determinants, according to JICA in Ferdinand (2016) clustering is divided into inactive clusters, active clusters and dynamic clusters.

- a. Inactive clusters are characterized by business groups with no spatial identity, no specialist suppliers, no business specialization, no specialist workforce, low product competition and lack of/limited access to information.
- b. Active clusters are characterized by product development according to market demand, technology development for quality production in the market, development of joint activities for production and markets. In other words, this active cluster shows business groups that have no spatial identity, no business specialization, low product competition and limited access to information.
- c. Dynamic clusters are characterized by the formation of business groups that have a spatial identity, have specialist suppliers, have economic specialization, have a specialist workforce, have competitive competitiveness and have access to information exchange.

Based on this, this study uses the framework that has been put forward by Porter (1998) which is adopted into the division of clusters according to JICA in Ferdinand (2016). The author analyzes cluster development in the craft industry subsector in accordance with the superior potential that exists in Madura. The author in this study uses K-Means Clustering analysis which is used to analyze and identify craft industry subsector groups based on indicators from cluster theory so that it is expected to provide deeper insight into the differences and similarities between craft industries which can then be formed further development strategies related to the cluster. The author uses K-Means Clustering analysis because previous researchers such as Eminawati et al., (2020) and Salimova et al., (2020) used regression analysis which can only identify the influence between indicators of industrial cluster forming variables. The results of this study can be used as input to policy makers to pay more attention and increase the role of developing the potential and cluster of the craft industry in Madura. This study also contributes to the development of economics by demonstrating how a clustering approach can strengthen local competitiveness through the optimization of resources and the networking of business actors in the craft industry sector.

METHODS

This research was conducted through a questionnaire with the target respondents of the craft industry business actors. The technique used in this research is a non-probability sampling technique, namely snowball sampling. Khalefa & Selian (2021) stated that snowball sampling is a sampling technique that is initially small in number, then gets bigger. Researchers chose snowball sampling because in determining the initial sample, the researcher only determined one or two people, but because the data obtained was deemed insufficient or incomplete, the researcher looked for other people to complete the data. Snowball sampling is used for sampling creative industries in a predetermined business field (Pham & Vu, 2024). From the snowball sampling technique, the number of samples for this study was 29 respondents. The analysis used in this research is K-Means Clustering.

K-means clustering is a clustering technique that seeks to partition N individuals in a multivariate dataset into groups (k groups). The most common approach in implementing K-Means is to partition the N individuals into k groups that minimize the within-group sum of square of all variables. The goal of cluster analysis is to group observational data into groups until the group members within are homogeneous, while between groups are heterogeneous. The process in K-Means clustering is as follows:

- a. Determine the magnitude of k, k = number of clusters
- b. Randomly initiate a centroid value (cluster center) of a number k
- c. Calculate the distance of each data to each cluster centroid using euclidean distance.

The euclidean distance between objects i and j is formulated by:

$$d(x, y) = \sqrt{\sum_{k=1}^n (x_{ik} - x_{jk})^2} \dots\dots\dots(1)$$

- d. Cluster the data based on the closest distance between each data to the centroid
- e. Determine the new centroid by calculating the average of all data in the same cluster center

$$C_{kj} = \frac{x_1 + x_2 + \dots + x_{aj}}{a}, j = 1, 2, 3, \dots, p \dots\dots\dots(2)$$

- f. Step c and continue to iterate until the cluster centroid is fixed and the cluster members do not move (converge).

RESULT AND DISCUSSION

The cluster center value is the end of the clustering process. The following is the output of the clustering value of the craft industry in Madura:

Table 2. Output Final Cluster Centers Craft Industry In Madura

	Final Cluster Centers		
	Cluster		
	1	2	3
Zscore: Spatial Identity	-2.15333	-0.11109	0.76473
Zscore: Specialist Supplier	-0.12993	0.35031	1.27386
Zscore: Economic Specialization	-0.25277	-0.25287	3.41244
Zscore: Labor Specialization	-0.34606	0.24570	3.41729
Zscore: Competition	-0.76814	-0.04190	0.24441
Zscore: Information Exchange Access	-1.24348	-0.06330	2.03479

Source: Data Processed, 2024

The results of cluster analysis with K-Means Cluster are interpreted as follows:

- Cluster 1 contains the average value of the craft industry cluster indicators, namely Spatial Identity (-2.15333), Specialist Suppliers (-0.12993), Economic Specialization (-0.25277), Specialist Labor (-0.34606), Competition (-0.76814) and Access Information Exchange (-1.24348). All average values of creative economy cluster indicators are negative, which means they are below the overall average value. It can be concluded that Cluster 1 shows an inactive cluster.
- Cluster 2 contains the average value of the craft industry cluster indicators, namely Spatial Identity -0.11109), Specialist Suppliers (0.35031), Economic Specialization (-0.25287), Specialist Labor (0.24570), Competition (-0.04190) and Access to Information Exchange (-0.06330). The average value of indicators of spatial identity, economic specialization, competition and access to information exchange is negative, which means it is below the overall average, while other indicators are positive, which means they are above the average value. It can be concluded that cluster 2 shows an active cluster.
- Cluster 3 contains the average indicators of the craft industry cluster, namely Spatial Identity (0.76473), Specialist Suppliers (1.27386), Economic Specialization (3.41244), Specialist Labor (3.41729), Competition (0.24441) and Access to Information Exchange (2.03479). Judging from the average value, all cluster indicators are positive, which means they are above the average value. It can be concluded that cluster 3 shows a dynamic cluster.

Table 3. Output ANOVA Craft Industry Cluster

		Cluster		Error		F	Sig.
		Mean Square	df	Mean Square	df		
Zscore:	Spatial Identity	5.376	2	0.663	26	8.104	0.002
Zscore:	Specialist Supplier	1.956	2	0.926	26	2.112	0.141
Zscore:	Economic Specialization	12.507	2	0.115	26	108.931	0.000
Zscore:	Labor Specialization	12.552	2	0.111	26	112.712	0.000
Zscore:	Competition	0.672	2	1.025	26	0.655	0.528
Zscore:	Information Exchange Access	5.737	2	0.636	26	9.025	0.001

Source: Data Processed, 2024

To find out the differences in variables in the clusters formed, the summary table above is presented. In the table above, it is known that the test results with ANOVA obtained a result that the Specialist Supplier and Competition variables show a significant difference between the craft industries. This is evidenced by the probability value of the F statistic which is more than the 5% significance level.

Table 4. Output Number of Cases in each Craft Industry Cluster

Number of Cases in each Cluster		
Cluster	1	2
	2	9
	3	18
Valid		29
Missing		0.000

Source: Data Processed, 2024

From the information above, it is obtained that the number of members of each cluster of the craft industry in Madura who are included in cluster 1 is 2, cluster 2 is 9, and cluster 3 is 18. The details are as follows:

Table 5. Cluster Composition Craft Industry

Case Number	Regional	Qcl_1	Qcl_2
1	Macajah Village, Sampang Subdistrict	2	1.39798
2	Macajah Village, Sampang Subdistrict	2	1.39798
3	Macajah Village, Sampang Subdistrict	2	1.56717
4	Polagen Village, Sampang Subdistrict	2	1.92237
5	Polagen Village, Sampang Subdistrict	2	1.81003
6	Polagen Village, Sampang Subdistrict	2	1.45528
7	Polagen Village, Sampang Subdistrict	2	2.64646
8	Polagen Village, Sampang Subdistrict	2	1.92237
9	Polagen Village, Sampang Subdistrict	2	2.12502
10	Kalianget Timur Village, Kalianget Subdistrict	1	0.58361
11	Kalianget Timur Village, Kalianget Subdistrict	1	0.58361
12	Aeng Tong-Tong Village, Saronggi Subdistrict	3	1.13914
13	Aeng Tong-Tong Village, Saronggi Subdistrict	3	1.13914
14	Aeng Tong-Tong Village, Saronggi Subdistrict	3	1.13914
15	Aeng Tong-Tong Village, Saronggi Subdistrict	3	1.13914
16	Aeng Tong-Tong Village, Saronggi Subdistrict	3	2.55190
17	Aeng Tong-Tong Village, Saronggi Subdistrict	3	2.13658
18	Aeng Tong-Tong Village, Saronggi Subdistrict	3	1.75264
19	Aeng Tong-Tong Village, Saronggi Subdistrict	3	2.86886
20	Karduluk Village, Pragaan Subdistrict	3	1.70537
21	Karduluk Village, Pragaan Subdistrict	3	1.75264

Case Number	Regional	Qcl_1	Qcl_2
22	Karduluk Village, Pragaan Subdistrict	3	1.13914
23	Karduluk Village, Pragaan Subdistrict	3	1.06497
24	Karduluk Village, Pragaan Subdistrict	3	1.70537
25	Karduluk Village, Pragaan Subdistrict	3	2.13658
26	Karduluk Village, Pragaan Subdistrict	3	1.75264
27	Karduluk Village, Pragaan Subdistrict	3	2.87860
28	Karduluk Village, Pragaan Subdistrict	3	1.45528
29	Karduluk Village, Pragaan Subdistrict	3	1.45528

Source: Data Processed. 2024

Judging from the table above, the cluster column shows the cluster number of the village and sub-district in the distribution of the craft industry, the distance to the cluster center column shows the distance between the data and the cluster center. The smaller the distance, the more similar the cluster is: Cluster 1 indicates an inactive industry cluster. From the research results, it was found that the craft industry included in the inactive cluster is Kalianget Timur Village, Kalianget Sub-district with products in the form of kitchen utensils. The village is included in the inactive industry because: (a) No spatial identity. There are no characteristics that signify the spatial identity of the industry so that it has not been able to make the industry develop; (b) Absence of Specialist Suppliers. The craft industry in Kalianget Timur Village, Kalianget Subdistrict still does not have specialist suppliers. All raw materials used in the production process are obtained from their own search in the nearest market; (c) Low Economic Specialization; (d) The craft industry in the form of kitchen utensils in Kalianget Timur Village, Kalianget Sub-district still does not have a business partner in developing its production process. All work processes from manufacturing to packaging are only carried out by workers in each industry so that this affects the achievement of product output produced and the level of labor productivity used. The level of labor productivity is said to work effectively if it has a productivity level (LUR) exceeding 50% (Riski, 2023). The level of labor productivity in the industry. The level of labor productivity in the Craft Industry of Kalianget Timur Village, Kalianget Subdistrict shows a value below 50% so that it can be said that the level of labor productivity is low (show table 6); (e) Absence of Specialist Workers. The low level of labor productivity in the craft industry in Kalianget Timur Village, Kalianget Sub-district indicates that there is no specialist labor. The level of labor productivity in the craft industry is low because there is no clear division of work specialization based on the production process activities that are intertwined among other similar business partners; (f) No Competitiveness in Business Competition; (g) The craft industry in Kalianget Timur Village, Kalianget Sub-district, is still weak in mastering production technology. The production technology used is relatively simple compared to other similar craft industries. Whereas the use and mastery of renewable technology can improve the quality and efficiency of production so that it can compete in the market (Henirsa et al., 2023). Besides, the craft industry in Kalianget Timur Village, Kalianget Sub-district, has never made changes in product innovation. Product innovation in a business is important in order to improve industry performance; (h) No Access to Information Exchange; (i) The lack of optimization of a business product in reaching consumers may be due to the weakness or lack of optimization of the business network that supports these business activities. Business networks involve other business units in business activities carried out by producers both in production and product marketing activities.

Manufacturers use intermediaries because they create greater efficiency in providing goods to the target market (Herman & Nohong, 2022). Based on the field results, the craft industry in Kalianget Timur Village, Kalianget Sub-district has not cooperated with other similar industry networks either in terms of information exchange related to market change trends or related to product marketing development.

Table 6. Labor Productivity Level in Cluster 1 of Craft Industry

Region	Average Labor Force/ Industry (People)	Production Capacity Per Day (pcs)	Labor Productivity Level (%)
Kalianget Timur Village, Kalianget Subdistrict	1	0,50	50,00

Source: Data Processed, 2024

Cluster 2 shows an active industry cluster. From the research results, it was found that the craft industry that is included in the active cluster is Macajah Village, Sampang Sub-district, and Polagen Village, Sampang Sub-district, with products in the form of furniture. The village is included in the active industry cluster because: (a) No spatial identity; (b) Low economic specialization. The craft industry in the form of furniture in Macajah Village, Sampang Subdistrict and Polagen Village, Sampang Subdistrict does not yet have a business partner in developing its production process. All work processes from making designs, production processes, finishing to sales are carried out by workers in each industry so that this affects the achievement of product output produced and the level of labor productivity used. The level of labor productivity in the craft industry in Macajah Village, Sampang Subdistrict; Polagen Village, Sampang Subdistrict shows a value below 50% so that it can be said that the level of labor productivity is low (show table 7); (c) Low Competitiveness of Business Competition. The craft industry in Macajah Village in Sampang Subdistrict and Polagen Village in Sampang Subdistrict is still weak in mastering production technology. The production technology used is relatively simple compared with other similar craft industries. In addition, there are still 33% of craft industries in Macajah Village, Sampang Subdistrict and Polagen Village, Sampang Subdistrict that have never made changes to product innovation. Innovation cannot be separated from business life because innovation is the spirit or soul in a company to develop. The need for innovation is not only carried out by large companies, but small companies also need to innovate for the sustainability of their business (Nugraha, 2022); (d) Low access to information exchange. Based on the field results, the craft industry in Macajah Village, Sampang Subdistrict and Polagen Village, Sampang Subdistrict has not cooperated with other similar industry networks in terms of information exchange related to market change trends or product marketing development.

Table 7. Labor Productivity Level in Cluster 2 of Craft Industry

Region	Average Labor Force/ Industry (People)	Production Capacity Per Day (pcs)	Labor Productivity Level (%)
Macajah Village, Sampang Subdistrict	4	0,50	12,50
Polagen Village, Sampang Subdistrict	2	0,57	28,33

Source: Data Processed, 2024

Cluster 3 shows a dynamic industry cluster. From the research results, it was found that the craft industry that is included in the dynamic cluster is Aeng Tong-Tong Village, Saronggi Subdistrict and Karduluk Village, Pragaan Subdistrict. The village is included in the dynamic industrial cluster because: (a) There are characteristics that indicate the spatial identity of the industry so that it can make the industry grow. According to the determination of business location can affect the success of the business (Fitriyani et al., 2019). Aeng Tong-Tong Village is known as the "Keris Tourism Village" and Karduluk Village is known as the "Center for Carving Works"; (b) Having Specialist Suppliers. Supplier selection is one aspect of supply chain management, which includes the fulfillment of raw materials, services and equipment for the company both in quality and quantity (Fauzan Ahmad et al., 2025). Based on field results, the craft industry (meubel and keris) in Aeng Tong-Tong Village, Saronggi District and Karduluk Village, Pragaan District take the main raw materials from Madura; (c) Economic specialization. The Craft Industry in Aeng Tong-Tong Village, Saronggi Subdistrict and Karduluk Village, Pragaan Subdistrict already has business partners in the development of its production process. According to Fauzan Ahmad et al., (2025) industrial specialization is very important for the division of production activities between entrepreneurs so that production becomes more effective and efficient. All craftsmanship processes in the village are carried out between similar industry partners who are also in the village area so that this affects the achievement of the product output produced and the level of labor productivity used. The level of labor productivity is said to work effectively if it has a productivity level (LUR) exceeding 50% (Riski, 2023). The level of labor productivity in the craft industry in Aeng Tong-Tong Village and Karduluk Village shows a value above 50% so that it can be said that the level of labor productivity is high (show table 8); (d) Presence of Specialist Labor. The high level of labor productivity in the craft industry in Aeng Tong-Tong and Karduluk villages indicates the formation of a specialist workforce. The level of labor productivity in the craft industry is high because there has been a clear division of work specialization based on production process activities that are intertwined between other similar business partners. According to Ginting (2023) the level of labor productivity affects the development of a business; (e) Competitiveness of Business Competition. Factors that can affect the high or low competitiveness of a product are the use of production technology and product innovation of a business (Herman & Nohong, 2022). The Craft Industry in Aeng Tong-Tong Village, Saronggi Subdistrict and Karduluk Village, Pragaan Subdistrict began to master the use of production technology. The production technology used is semi-modern compared to other similar craft industries. The use and mastery of technology can improve the quality and efficiency of production so that it can compete in the market (Nugraha, 2022). A total of 70% of the craft industry in Madura has quite often done product innovation. Product innovation in a business is important in order to improve industry performance (Basalamah et al., 2021); (f) Having Access to Business Information Exchange; (g) The optimization of a business product in reaching consumers is due to the existence of a business network that supports these business activities. Producers use intermediaries through business networks to create greater efficiency in providing goods to target markets (Herman & Nohong, 2022). Based on the field results, the craft industry in Aeng Tong-Tong Village, Saronggi Subdistrict and Karduluk Village, Pragaan Subdistrict has collaborated with other similar industry networks as well as with private/community parties both in terms of information exchange related to market change trends and related to product marketing development.

Table 8. Labor Productivity Level in Cluster 3 of Craft Industry

Region	Average Labor Force/ Industry (People)	Production Capacity Per Day (pcs)	Labor Productivity Level (%)
Aeng Tong-Tong Village, Saronggi Subdistrict	1	20	66,67%
Karduluk Village, Pragaan Subdistrict	1	20	66,67%

Source: Data Processed, 2024

Referring to the results of this study, the development strategy to improve the development of the craft industry cluster in Madura from cluster 1 (inactive industry cluster) and from cluster 2 (active industry cluster) to cluster 3 (dynamic cluster) is: (1) Exploring and developing the potential of local resources. Cultural characteristics will create uniqueness that can represent the identity of a region. Mapping the potential of local resources can help in policy making for the advancement of the creative economy which can be used as a characteristic or spatial identity (Hutama et al., 2024). Identifying regional characteristics is important to create strategic branding that strengthens the spatial identity of the cluster. The government has a central role in managing and encouraging regional identity-based marketing strategies; (2) Development of specialist supplier networks. Specialist suppliers are a key strategy in strengthening creative economy clusters. Specialized suppliers provide high-quality raw materials, services or production components, which in turn improve production efficiency, accelerate innovation and create a productive ecosystem. Strong collaboration between businesses and suppliers reduces transaction costs (Purnomo, 2024); (3) Development of economic specialization. To effectively meet market demand, the craft industry in Madura should collaborate with partners who specialize in certain areas. Thus, the production process becomes more efficient and of higher quality through structured standards and in-depth expertise. Industry specialization allows for a more effective division of production tasks, compared to when each business operates alone. According to Fauzan Ahmad et al., (2025) industrial specialization is very important for the division of production activities between entrepreneurs so that production becomes more effective and efficient; (4) Forming workforce specialization. The development of labor quality in clusters cannot be ignored. Fulfilling specific skills through training and technical development will create a more productive and competitive workforce. The focus on specialized skill-based workforce development is critical in creating competitive advantage and readiness to face dynamic market competition; (5) Adoption and mastery of technological. To improve production quality and capacity, industries need to implement the latest technology. In addition, collaboration between business actors, the private sector, and the government is urgent in creating sustainable product innovation. Product innovation is not only important for industry performance, but also supports long-term business continuity (Nugraha, 2022); (6) Expanding access to information exchange. The success of product marketing is highly dependent on the strength of business networks. To expand access to information, it is important for creative industry players to collaborate with other businesses, both within and across clusters. Active participation in forums and organizations allows them to keep up with the latest market trends and effectively expand product marketing channels.

CONCLUSIONS

The results of this study show that the existing craft industry in Madura is classified into three types of clusters namely inactive clusters, active clusters and dynamic clusters. The problems that result in some craft industries in Madura that have not entered into dynamic clusters are due to weak spatial identity, weak specialist supplier networks, lack of economic specialization, still not optimal labor specialization, still using simple production technology and unable to innovate products, and not having a network of business partners resulting in minimal development of market information obtained. Therefore, the strategies needed to be able to develop the craft industry both from inactive clusters and active clusters towards dynamic clusters are by exploring and developing the potential of local resources; developing a network of specialist suppliers; developing economic specialization; forming labor specialization; adopting and mastering technological developments; and expanding access to information exchange. Government involvement is essential to ensure that the development of craft industry clusters in Madura effectively enhances local economic competitiveness.

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