STUDY OF THE COMPETITIVENESS AND SUSTAINABILITY OF THE MSME CLUSTER IN THE CITY OF SEMARANG

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Abstract. Development of MSME Clusters in Semarang City is carried out to support the activities of MSME actors who are grouped into various types. This research was conducted by taking a sample of 70 MSME actors in various clusters. The competitiveness and sustainability of the clusters are determined using the AHP (Analytic Hierarchy Process) Method. From the results of the analysis it was found that Clusters in Semarang City, it can be seen that based on the HR variable, all clusters in Semarang City fall into the criteria/category of Sustainable Clusters. However, when viewed from the competitiveness variable, there are 3 (three) clusters that fall into the less sustainable category, namely Metals, Tourism, and Furniture. So, in general, the results of the cluster categories in the city of Semarang show that the problems facing cluster sustainability are more like an inability to compete.

Keywords: competitiveness, sustainability, cluster, msme

INTRODUCTION

Nicolescu (2009) shows that the ability of MSMEs to survive and grow depends on internal and external factors. Internal factors such as business scale, *stakeholder personality*, educational background, and company culture (internal training), can affect the level of productivity and innovation of the company. While external factors, namely factors outside the company such as access to capital and the policy environment, both government policies and the economic conditions of a country. So far, government policies related to MSMEs have mostly used a social welfare approach rather than a business approach. MSMEs are considered as vulnerable business entities and require protection so that many government policies regarding MSMEs are in the nature of providing protection that 'fences MSMEs from competition. In fact, competition is an environment necessary for the growth and development of a competitive company.

The government proposed a concept to develop the small and medium industries, one of which is through this industrial cluster. Clusters are used because most of these SMEs tend to be clustered within a certain area. There are various types of industrial clusters in Semarang City, namely 10 clusters: batik cluster, bag cluster, food processing cluster, herbal medicine cluster, lumpia cluster, handicraft cluster, metal cluster, furniture cluster, milkfish cluster, tourism cluster.

Clusters are not only grouping these industries, but there must be linkages. Namely the linkages between the core industry and related industries, supplying industries, supporting industries, and buyers, all of which are supported by supporting institutions. However, not all clusters can run as expected. This is what sometimes makes small industrial clusters in Indonesia less developed, namely due to a lack of coordination between industries and a lack of government involvement in cluster development. The government tends to be hands off. after creating industrial clusters, the government has less control over the running of this industry. In addition, the lack of innovation also affects the sub-optimal clusters, so that the clusters that have been formed are less competitive in the market. For example, what often happens is that locally produced goods are eroded by goods from outside.

LITERATURE REVIEWS
Cluster

In plain language, cluster means group or grouping. However, not all industrial groups can be called clusters. According to Porter (1998), a cluster is a group of companies and related institutions that are geographically close together, have similarities that encourage competition, and are also complementary. The Ministry of Industry of the Republic of Indonesia (2009) explains that there are eight 8 cluster keys, namely:

A. Geographical concentration

Within clusters, the availability of local natural resources and assets are in the same location. Geographic proximity creates opportunities for reducing transaction costs, particularly in transportation and technology transfer, and supports information sharing. This can happen through regular cluster meetings.

B. Specialization (common denominator)

Clusters are concentrated in an activity where the actors are interrelated. A cluster is specialized because the actors involved are related to a core activity within the same market scope and process.

C. Many actors involved (multiple actors).

Clusters are plural, not only involving companies, but also including public authorities, academics, financial supporters, and institutions that encourage collaboration.

D. Dynamics and linkages through competition and collaboration

In clusters, actors will build relationships with each other, and competition and collaboration are formed.

E. Critical mass (critical mass)

Critical period is needed to ensure the achievement of internal dynamics, namely competition and collaboration. The critical period also acts as a buffer against external influences and pressures, especially on key actors.

F. Life cycle

Is not intended for the short term, but sustainable for long-term goals. In general, there are five stages in the life cycle of a cluster, namely agglomeration, emerging, developing, mature, and changing.

G. Environment

for the exchange of information and ideas is a driving force for the emergence of participation and adaptation between actors in a cluster which also links production and market factors to create an innovation.

H. Innovation

Innovation is defined as the process of commercializing new ideas, involving technical, commercial, and organizational changes. Innovation is usually associated with the mastery of technology.

Cluster Sustainability

Sustainable clusters are an innovative step for clusters and integrate the concept of sustainable development which aims to increase cluster competitiveness in a sustainable manner (Martin and Mayer 2008; Wibowo 2011). So the challenge of cluster sustainability is to maintain the cluster life cycle and cluster competitiveness. Regarding the cluster life cycle, Martin and Mayer (2005) argue that to maintain the life cycle it is necessary to expand the value chain network, government intervention for quality clusters, and pay attention to social sustainability related to the distribution of economic activity and income. Meanwhile, cluster competitiveness is determined by Zulhan (2010) as productivity, which is measured based on added value or sales results and the number of workers. Almost the same as Perry (2005) who saw the sustainability of clusters seen from the cooperation of cluster actors, namely related to the commitment and activeness of cluster actors, reasons for cluster actors, and obtaining business information. Meanwhile, sustainable clusters according to Wibowo (2011) are dynamic clusters, growing and developing as well as increasing capabilities and capacities to create increased product quality. This product quality improvement encourages clusters to be more innovative. LPM-ITB (2001) in Sukendar (2008)

Product Competitiveness

The basic understanding of competitiveness is formulated by Sumihardjo (2008), namely the ability to strengthen market position, the ability to connect with its environment, the ability to increase performance without stopping, and the ability to establish a profitable position.

Kotler and Susanto (2001) link competitiveness with product marketing management. Marketing programs include attention to products, promotions, prices, and distribution channels. Levitt in Kotler and Susanto (2001: 561) argues that competition now is not between what companies produce in their factories, but between what they add to the results of these factories in forms of packaging, advertising, consulting for customers, funding, delivery, warehousing, and other matters deemed necessary.

RESEARCH METHODS
MSME and Cluster Classification

Analysis Classification analysis is used to classify MSME actors and MSME clusters based on several ideal and sustainable criteria. Apart from being based on quantitative data, the process of determining the classification will be combined with opinions from key stakeholders, including representatives of policymakers and experts/ academics/ actors.

The analytical tool used in the classification analysis is the Analytical Hierarchy Process (AHP). AHP is a method of making decisions on complex problems by simplifying them into hierarchical variables. Decision-making is carried out thoroughly using logic, judgment, intuition, quantitative data, and qualitative preferences to obtain an understanding of the relative effect of a variable on other variables. The strength of AHP to deal with complex problems lies in its approach which has unity, complexity, interdependence, hierarchical structure, measurement, consistency, synthesis, tradeoff, process repetition, and judgment and consensus. Meanwhile, in its analysis, AHP uses 3 (three) basic principles as follows: 1. Arranging a hierarchy, namely simplifying the problem into separate elements. 2. Setting priorities, namely determining the ranking of elements according to their importance. 3. Logical consistency, namely ensuring that all elements are grouped logically and consistently ranked according to logical criteria.

The stages of AHP, include:

1. Defining the problem and determining the desired solution. Defining the problem clearly, in detail, and easily understood, then trying to determine the solution. The solution to the problem may be more than which will be developed further in the next stage.

2. Create a hierarchical structure. The hierarchy begins with one element as the main goal (focus) and is followed by several suitable criteria for considering or assessing the alternatives we provide and determining these alternatives. Each criterion has a different intensity and is arranged in a hierarchical level with an order of focus, criteria, sub-criteria, and alternatives. The hierarchical arrangement is dynamic, so it is possible to add new criteria in the future.

3. Create a pairwise comparison matrix that describes the relative contribution or influence of each element to the objectives or criteria at the level above it. The matrix used is simple, has a strong standing for the consistency framework, and can analyze the overall

sensitivity of priorities to changes in consideration. The matrix approach reflects a dual aspect of priority, namely dominating and being dominated. Comparisons are made based on the judgment of the decision maker by assessing the level of importance of an element compared to other elements. To start the pairwise comparison process, a criterion is selected from the highest level of the hierarchy, and then from the level below it is taken the elements to be compared.

4. Develop a pairwise comparison matrix so that the total number of assessments is nx [(n-1)/2], where n is the number of elements being compared. The results of the comparison of each element will be a number from 1 to 9 which shows the comparison of the importance of an element. If an element in the matrix is compared with itself, the comparison result is given a value of 1. The result of the comparison

RESULT AND DISCUSSION

MSME Profiles and Clusters

MSME profiles were obtained from the results of a questionnaire to 70 MSME respondents in Semarang City. The number of respondents in each cluster is as follows :

Cluster sustainability Analysis

Analysis Cluster sustainability analysis is carried out through 2 (two) stages, namely weighting analysis and cluster sustainability analysis. The weighting analysis is carried out by synthesizing the literature review that has been done, while the sustainability analysis is carried out by calculating quantitatively based on the weighting generated in the previous analysis.

Variable and Indicator Weighting Analysis

Broadly speaking, weighting is done through a process of verification and validation of existing literature results. This verification and validation process involves selected respondents, namely stakeholders who handle clusters in the city of Semarang.

According to Mukti and Handayani (2014), after going through the verification and validation process, there are 2 (two) variables and 20 (twenty) indicators in cluster sustainability with the order and weight as listed in the following table:

Table 1. Variables and Indicators of Cluster Sustainability

Variables and Indicators	Weight
Human Resources	
Actors' Commitment	0,296
Cooperation of business actors in facing of market competition	0,215
Benefits obtained	0,153
Worker capacity development	0,109
Activeness of cluster actors	0,076
Reasons of cluster actors	0,053
The level of interest in inheriting the business	0,037
Cluster actor educational level	0,027
Worker type	0,019
The number of workers	0,015
Total	1,000
Product Competitiveness	
Promotion of production results	0,296
Product packaging	0,215
Market competition	0,153
Ease of obtaining raw materials	0,109
Technology level	0,076
Market location	0,053
Presence of trademarks	0,037
Generated turnover	0,027
Forecast of future business	0,019
Government and institutional support	0,015
Total	**1.000**

Variables and indicators were then verified and validated by the selected respondents as a basis for determining the number and ranking of cluster sustainability variables and indicators in the city of Semarang. Based on the assessment of selected respondents, it is known that these variables and indicators are still appropriate as variables and indicators in assessing cluster sustainability in Semarang City. This can be seen from the percentage of assessment 50% on all variables and indicators. However, there is a slight difference in the order/ranking of the Human Resources variables and their indicators. The results of the ranking and weight of the selected respondents are as follows:

Table 2. Priority Order and Weight of Variables and Indicators of Sustainability Cluster

Variable	Indicator	Percentage of Respondents Rating (%)	Priority Order of Indicators	Indicator Weight
Human resources (cluster actors)	Cluster actor commitment	100,00	1	0,296
	Cooperation of business actors in facing of market competition	100,00	2	0,215
	Benefits obtained in the cluster	100,00	3	0,153
	Capacity building for workers in the company	100,00	4	0,109
	Activeness of cluster actors	100,00	5	0,076
	Education Level of cluster actors	100,00	6	0,053
	Level of interest in inheriting a business	100,00	7	0,037
	Cluster actors' reason	83,33	8	0,027
	The number of workers	66,67	9	0,019
	Worker type	50,00	10	0,015
Product Competitiveness	Promotion of production results	100,00	1	0,296
	Product packaging	100,00	2	0,215
	Market competition	100,00	3	0,153

Variable	Indicator	Percentage of Respondents Rating (%)	Priority Order of Indicators	Indicator Weight
	Ease of obtaining raw materials	100,00	4	0,109
	Technology level	100,00	5	0,076
	Market location	100,00	6	0,053
	Presence of trademarks	100,00	7	0,037
	Generated turnover	100,00	8	0,027
	Forecast of future business	100,00	9	0,019
	Government and institutional support	100,00	10	0,015

Source: Mukti and Handayani (2014) and analysis, 2022

After obtaining the weight of each indicator, the next step is to carry out an assessment by scoring. The score calculation is carried out on the answers from the questionnaire with the scoring criteria of each indicator divided into 3 (three) scales/categories, namely:
- bad, with a value of 1
- moderate, with a value of 2
- good, with a value of 3.

Based on this categorization, the higher the score, the closer to a sustainable cluster condition. The explanation of the categories and scale values per indicator of the human resource variable and cluster competitiveness is as follows:

Table 3. Categories and Variable Values and Indicators of Sustainability Cluster

Variable	Indicator	Category		
		Good	**Moderate**	**Bad**
		Scale Value		
		3	**2**	**1**
Human resources (cluster actors)	Cluster actor educational level	Graduated from high school and above	Graduated from middle school to high school	Not attending school or graduating from elementary school
	Capacity building for workers in the company	Annual training for all divisions	Limited and selected training for workers	No possibility for worker capacity development
	The number of workers	16 – 30 people	6 – 15 people	0-5 people
	Worker type	Permanent worker	Contract and subcontract workers	Freelancer
	Activeness of cluster actors	Cluster actors are active and diligent in attending regular meetings	Quite active and quite often attend regular meetings	Less active and rarely attend regular meetings
	Cluster actors' reason	Join the cluster on your own accord because you want to advance your business	Joined the cluster because invited by friends and lacked strong motivation	Join the cluster because forced and unmotivated
	Cluster actor commitment	Highly committed to be more active in cluster activities	Will probably commit to be more active in cluster activities	No commitment to be more active in cluster activities
	Benefits obtained in cluster	Have obtained the benefits and advantages	Feeling that you have not received benefits	Not getting benefits
	The level of interest in	Interested in passing his business on the children	Maybe interested in passing the business on to the children	Not interested in passing on the

Variable	Indicator	Category		
		Good	**Moderate**	**Bad**
		Scale Value		
		3	**2**	**1**
	inheriting the business			business to the children
	Collaboration between business actors in facing market competition	Actively collaborate	Previously there was cooperation	There was no cooperation
Product competitiveness	Ease of obtaining raw materials	Raw materials are easy to obtain, taken from the surrounding environment (local)	Raw materials are taken from outside the region, but still within the province	Raw materials are difficult to obtain, come from outside the province
	The level of technology used	Already using high-tech machines	Already using technology but simple technology	Still manual and not using technology
	There is a trademark	The product already has a brand	Don't have a brand yet but have plans to add another brand	The product does not have a brand
	Product packaging	Promotional packaging (plastic, protective packaging, corporate design)	Simple packaging (ordinary baskets, pallets/levers)	No packaging (finished goods)
	Promotion of production results	Having more than 2 media other than shop/offline, for example having a shop/kiosk, website, brochure, newspaper advertisement	Only rely on 2 promotional media, for example: through exhibitions and joining associations	Only rely on 1 promotional media or even no promotion
	Generated turnover	> 5 million/month	1 million - 5 million/month	< 1 million / month

Variable	Indicator	Category		
		Good	**Moderate**	**Bad**
		Scale Value		
		3	**2**	**1**
	Support from government and institutions	The support that has been given is considered very good	The support that has been given is considered mediocre	Support is considered unsatisfactory or has not received support
	Market location	Already reached the international market (export); target market through more than 2 media: combination of internet, exhibition, and order	Have reached regional and national market; target market consists of 2 media: combination of internet, exhibition, and order	Just reached the local market; the target market consists of 1 media: from the internet, exhibitions, and orders
	Market competition	Has no Competitors	Competitors from outside the region	Competitors are still from within the region
	Forecast for future business	Increase	Still	Decline

Source: Mukti (2014) modified, 2022

After assigning a scale value to each indicator to each respondent, a score is calculated which is obtained by multiplying the scale value by the number of respondents present. The assessment of each of the indicators above is then concluded to obtain the total value of cluster sustainability based on the variables that have been determined. The formula above can be seen more clearly in the calculation table below:

Table 4. Calculation of Sustainability Category Cluster

Variable	Indicator	Indicator Priority Order	Indicator Weight	Scale	Respondents	Score (Scale x Respondents)	Average Score	Score (Average score x Indicator Weight)	Final score
Human resources (cluster actors)	Cluster actor commitment	1	0,296	3	N1				
				2	N2				
				1	N3				
Etc….									

Source: Mukti (2014) modified, 2022

From the final weight obtained per indicator, it will be added up to get a cluster sustainability value. As for the categorization of sustainability values:

Table 5. Cluster Sustainability Assessment

Sustainability Category	Lower limit	Upper limit
Less sustainable	1.0	2.0
Sustainable	2.1	3.0

Source: Mukti (2014) modified, 2022

Cluster Sustainability Analysis

An analysis of cluster sustainability can be seen in the following table:

Table 6. Competitiveness Variable

Cluster	Human resources (cluster actors)									
	Promotion of production results	Product packaging	Market competition	Ease of obtaining raw materials	The level of technology used	Market location	There is a trademark	Generated turnover	Forecast for future business	Support from government and institutions
Bandeng	0,74	0,65	0,31	0,32	0,17	0,13	0,11	0,06	0,06	0,04
Batik	0,74	0,61	0,31	0,29	0,08	0,13	0,10	0,05	0,06	0,04
Craft	0,74	0,54	0,31	0,33	0,11	0,11	0,11	0,05	0,05	0,04
Jamu	0,69	0,65	0,31	0,33	0,13	0,13	0,11	0,06	0,06	0,03
Metal	0,52	0,22	0,31	0,33	0,10	0,09	0,04	0,07	0,06	0,03
Lumpia	0,69	0,65	0,31	0,33	0,08	0,11	0,09	0,06	0,06	0,04
Tourism	0,52	0,34	0,28	0,33	0,08	0,11	0,04	0,03	0,06	0,03
TP processing	0,71	0,53	0,31	0,33	0,11	0,12	0,10	0,06	0,06	0,04
Bag	0,59	0,56	0,31	0,33	0,11	0,11	0,07	0,04	0,06	0,05
Furniture	0,63	0,22	0,15	0,15	0,15	0,09	0,05	0,05	0,06	0,05
Minimum Value	0,52	0,22	0,15	0,15	0,08	0,09	0,04	0,03	0,05	0,03
Max Value	0,74	0,65	0,31	0,33	0,17	0,13	0,11	0,07	0,06	0,05
Mean Value	0,66	0,49	0,29	0,30	0,11	0,11	0,08	0,05	0,06	0,04

Source: analysis, 2022

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Table 7. Sustainability Value Per Cluster Per Indicator on HR Variables

Cluster	Human resources (cluster actors)									
	Cluster actor commitment	Business cooperation	Benefits obtained in the cluster	Capacity development	Activeness of cluster actors	Cluster actor educational level	The level of interest in inheriting the business	Cluster actors' reason	The number of workers	Worker type
Bandeng	0,86	0,26	0,46	0,33	0,21	0,16	0,11	0,08	0,06	0,02
Batik	0,89	0,23	0,43	0,33	0,22	0,16	0,11	0,08	0,06	0,02
Craft	0,89	0,22	0,46	0,33	0,23	0,15	0,11	0,08	0,06	0,02
Jamu	0,89	0,27	0,42	0,33	0,23	0,16	0,11	0,08	0,06	0,02
Metal	0,81	0,22	0,38	0,33	0,15	0,13	0,11	0,08	0,06	0,02
Lumpia	0,89	0,22	0,46	0,33	0,14	0,14	0,11	0,07	0,06	0,02
Tourism	0,89	0,52	0,39	0,33	0,20	0,16	0,08	0,08	0,06	0,03
TP processing	0,89	0,27	0,46	0,33	0,23	0,16	0,11	0,08	0,06	0,02
Bag	0,89	0,22	0,46	0,33	0,23	0,16	0,11	0,08	0,06	0,02
Furniture	0,79	0,32	0,41	0,27	0,15	0,16	0,10	0,08	0,06	0,02
Minimum Value	**0,79**	**0,22**	**0,38**	**0,27**	**0,14**	**0,13**	**0,08**	**0,07**	**0,06**	**0,02**
Max Value	**0,89**	**0,52**	**0,46**	**0,33**	**0,23**	**0,16**	**0,11**	**0,08**	**0,06**	**0,03**
Mean Value	**0,87**	**0,27**	**0,43**	**0,32**	**0,20**	**0,15**	**0,11**	**0,08**	**0,06**	**0,02**

Based on the weighting analysis, it can be seen the value of each indicator as well as the sustainability of each cluster. The summary of each value and cluster category is as follows:

Table 8. Sustainability Value Based on Cluster

Cluster	HR Variable Value	Criteria	Competitiveness Variable Value	Criteria
Bandeng	2,54	sustainable	2,57	sustainable
Batik	2,49	sustainable	2,41	sustainable
Craft	2,53	sustainable	2,38	sustainable
Jamu	2,55	sustainable	2,49	sustainable
Metal	2,29	sustainable	1,75	less sustainable
Lumpia	2,42	sustainable	2,40	sustainable
Tourism	2,59	sustainable	1,80	less sustainable
TP processing	2,60	sustainable	2,35	sustainable
Bag	2,54	sustainable	2,21	sustainable
Furniture	2,36	sustainable	1,59	less sustainable

Source: analysis, 2022

Based on the table it can be seen that based on the HR variable, all clusters in Semarang City fall into the criteria/category of the Sustainable Cluster. However, when viewed from the competitiveness variable, there are 3 (three) clusters that fall into the less sustainable category, namely Metals, Tourism, and Furniture. So, in general, the results of the cluster categories in the city of Semarang show that the problems facing cluster sustainability are more like an inability to compete.
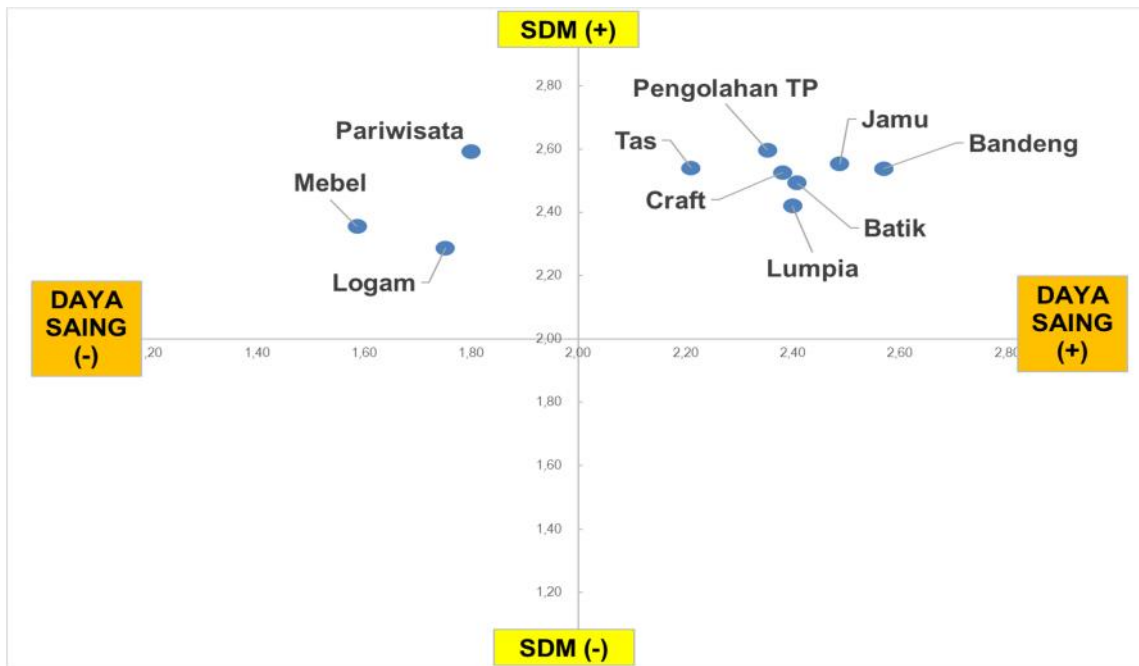
Figure 1. Cluster Sustainability Matrix in Semarang City

Source: analysis, 2022

CONCLUSIONS AND RECOMMENDATIONS

All clusters in Semarang City are included in the criteria/category of Sustainable Clusters. However, when viewed from the competitiveness variable, there are 3 (three) clusters that fall into the less sustainable category, namely Metals, Tourism, and Furniture. So, in general, the results of the cluster categories in the city of Semarang show that the problems facing cluster sustainability are more like an inability to compete.

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