SME COMPETITIVENESS CLUSTER ANALYSIS IN EAST JAVA

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ABSTRACT

This study aims to analyse the competitiveness of the small and medium industries in East Java in the face of global economic openness. The method used is a cluster to find out the factors that influence the competitiveness of Small and Medium Industries (SME) by grouping them into groups based on similarity of characters. The use of the cluster method is carried out hierarchically, or processed through a series of successively fusing objects into groups. Based on the results of identification and analysis, then the conclusion, there are three cluster findings based on competitiveness categories. Cluster I is SME with low competitiveness, Cluster II is SME with high competitiveness, and Cluster III is SME with medium competitiveness. SME that have high competitiveness are SME that can increase efficiency in 2 fields, namely Production and Marketing. While SME that have medium competitiveness are SME that are superior in technology, so they can be classified in the creative industry.

Keywords: Competitiveness, Cluster, SME, East Jawa

JEL Classification: O0; O1; O2; L6

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Introduction

The industrial sector is one of the main components of East Java's economy. The average contribution of the industrial sector reaches 29% of the total East Java RGDP in the period of 2012 to 2016. Other sectors that are supporting are the trade and agriculture sectors with an average contribution of 19% and 15% respectively. In the industrial sector, the sub-sector knownto be the main contributor is the food and beverage industry sub-sector. While other industrial sub-sectors whose contribution is not too large are tobacco processing and chemical sub-sectors. In general, industries in East Java classified into two, namely Large Industries (LIs), and Small and Medium Enterprises (SME). This division based on business scale factors, number of workers, investment value, and production technology. In practice, both LIs and SME are both supportingthe economy of East Java. However, both of them have different market shares. Ideally, both of them can work together, progress, be strong and have high competitiveness along with the openness of the local, regional and global economy (Disperindag Jatim, 2019).

The number of business actors in the industrial sector in East Java as of 2016 is 813,140 business units. From these, 99.86% is SME while the other 0.14% is LIs. Although the number ofSME is very large and to be the backbone of any economy. Their contribution to innova-

tion-led economic growth and job creation has been of renewed interest in recent years, its growth from 2014 to 2016 tends to decline. This is an early indication of the lethargy faced by the SME. Unlike the case with LIs, whose growth increased in 2015, although it declined in 2016 (Disperindag Jatim, 2019).

Viewed from the amount of production, LIs is able to contribute large quantities of production even though the number of LIs is far smaller than the number of SME. Within a year, the average LIs is able to contribute 39.48% of the total production value in the industrial sector. While the average SME production value reached 60.53%. However, both the SME and LIs have a slowdown in production growth. Moreover, in LIs, the growth has declined dramatically from 2014 to 2016. This indicates difficulties for both the SME and LIs in penetrating market share. In other words, both LIs and SME face the problem of decreasing competitiveness. This problem is important, to be solved immediately given the industrial position in East Java, which is to be a contributor to GDP. Both of SME and LIs need to be able to maintain their existence in penetrating local and international market shares.

Some literatures shown, how interesting to analyze about SME, particularly to face a global economy. Maranto-Vargas & Gómez-Tagle Rangel (2007) observed that business performance is positively related with the development of internal capabilities such as ''soft technology'' (methods and processes that support the firm) and ''hard technology'' (externally acquired equipment, in-house development of machinery and innovation in raw materials). A strategy of continuous improvement, innovation and change is also part of the process. In other hand, Singh et al. (2008) developed a Competitiveness Index Framework for quantifying the level of competitiveness. In this context, the present study analyzes different challenges for SME, pinpoints their status, describes the promotional policies related to SME and reviews strategy development in China and India.

Major constraints in the competitiveness of SME are access to adequate technologies (Gunasekaran et al., 2001) and involvement of employees in product and process development. A successful CIM initiative in small and medium enterprises (SMEs, excessive costs of product development projects (March-Chordà et al., 2002) taking into account various market and innovation barriers. However, small and medium enterprises (SMEs, a lack of effective selling techniques and limited market research (Hashim and Wafa, 2002). Hussain et al. (2006) observed that with the exception of a few top-performing businesses, the majority of SME in China do not possess sufficient self-accumulated capital to meet their capital requirements. As such, it appears that a finance gap exists for Chinese SME, which limits or constrains their potential for growth. Otherwise Ernst and Young (2006) identified additional challenges that include weak intellectual property protection, which makes capitalizing on innovation difficult (Berrell & Wrathall, 2006) cultural, political and legal architecture of intellectual property rights (IPR).

However this study quite different with previous study. Becauses the method used is a cluster to find out the factors that influence the competitiveness of Small and Medium Enterprises (SME) by grouping them into groups based on similarity of characters. The use of the cluster method is carried out hierarchically, or processed through a series of successively fusing objects into groups. This study wants to reveal the extent of the competitiveness of the East Java SME currently in controlling the domestic market and examine the factors that influence the expansion of the East Java SME market share.

Theoretical Framework

The existing literature on SME competitiveness primarily focuses on identifying the factors that are relevant to SME competitiveness and the determinants of its success. It emphasizes on the role of innovation as a key element of competitiveness and it mainly focuses at a country level. Karaev et al. (2007) examine the use of a cluster approach among SME as a tool for meeting their challenges related to globalization and trade liberalization, as well as investi-

gating its contributing factor in the process of increasing their competitiveness. They practically perform a literature review of the existing publications as the time. They find that there is strong evidence to suggest that a cluster policy brings additional positive effect to existing SME policy in industrialized economies, but such effects have not been extensively researched in developing (transition) countries, particularly from the point of view of the SME, which are the main actors in the clusterdevelopment process, in relation to whether their performance has been improved as a result of cluster effects.

Munir et al. (2011) look at the sustainability of the competitive advantage of SME by studying the capabilities that they need to develop in order to achieve it. They use a sample of successful SME in leather, sports and surgical instruments clusters. They use field research to interview SME executives of successful manufacturing firms that are in business for a minimum of 15 to 20 years, in and around Sialkot, Pakistan.

Piatkowski (2012) identifies factors that have a direct impact on the competitive position and the development of enterprises. In the analysis performed, a secondary research was employed, using the study of literature, research reports from various scientific centers and statistical data, aswell as an empirical re-search conducted by means of a questionnaire with participation on a random sample of micro, small and medium enterprise located within southern and south-eastern Poland.

Utami & Lantu (2014) aim at developing a model of competitiveness for SME, especiallyin the creative industry in Bandung, Indonesia. As a means to address the issue, they use depth interviews using semi-structured interviews. They rely on the output of the analysis to make recommendations to some of the interest-ed parties, such as the business owners, the government,and the mediator in order to develop the SME.

Şener et al. (2014) present the current state of SME in Turkey and investigate the global competitiveness strategies for them. The results of the study show that SME form 99.9% of the industry in Turkey however only 55% of the SME are operating in value-adding sectors. They need dedicated financial support pro-grams and policy initiatives for increasing their levels of global competitiveness. They look at the structure of the SME in Turkey compared to the EuropeanUnion with regards to a series of drivers: entrepreneurial learning and women's entrepreneurship,bankruptcy and second chance for SME, regulatory frame-work for SME policy making, operational environment for SME, support ser-vices for SME and start-ups, public procurement, access to finance for SME, standards and technical regulations, enterprise skills, innovation policyfor SME, SME in a green economy and internationalization of SME.

Sipa et al. (2015) point out and discuss the competitiveness determinants in polish small companies. They use the results of two direct studies of small and medium sized enterprises conducted in 2006 and 2013 with the use of questionnaires in SME companies in Poland. They come out with a series of factors, the most important of which seem to be company image productbrand, power of product price and focus on a specific group of customers.

The existing literature does not capture determinant factors of the SME competitive-ness from perspective capital, productivity, technological input, networking, level of competitiveness, and government role by classifying SME from cluster perspective, which is the objective of our paper. In our opinion unfolding this determinant is quite important so as to understand what the EastJava need to do in order to increase the competitiveness of their SME. This is where the contribution of our research lies.

Research Methods

The research approach uses quantitative methods. According to Creswell & Creswell (2018) a quantitative approach is a research approach that aims to test the truth of a theory by explaining the relationships between variables that can be measured. These measurable variables are generallythrough research instruments, so data in the form of numbers can be

analyzed using statistical procedures.

The population of this study includes all small and medium industries in the fields of food& beverage, furniture and footwear in East Java, where the number registered at the Department of Industry and Trade of East Java until 2016 in 811,993 business units. However, due to cost andtime considerations, researchers did not examine the entire population but part of the population (sample). Meanwhile, the sampling method uses a purposive sampling method, where SME involved in food & beverages, furniture and footwear are selected as samples with specific criteria,with the number of samples is 200 SME. Based on this consideration, we adopted a purposive sampling technique in which samples were taken to include particular areas or groups found in thepopulation, to meet specific criteria (Short et al., 2002). Another technical reason, because of limited on time and research costs. Then, variables and types of data used in this study include SME competitiveness, access to finance/capital, productivity level, utilization of technology, partnerships/networks, business competition, and the role of government. Types of variables, definitions and operational measurements as presented below:

Table 1: Concept, Operational Definition and Measurement

No	Concept	Variable Operational Definition	Measurement	Adopted
1	SME competitiveness (X1)	Role of government (X8)	The ratio of one SME sales to the total SME sales	Katua (2014)
2	Access to finance/capital (X2)	The ability to obtain capital & raw materials	The proportion of bank credit to total capital	Liang et al. (2017)
3	Productivity level (X3)	Labor productivity levels	Total output per labor	Okumu & Buyinza (2018)
4	Utilisation of technology (X4)	Production efficiency	Total output per cost	Yang (2006)
5	Utilisation of technology (X4)	Horizontal or vertical collaboration with other partners	Long standing of SME	Levushkina et al. (2016)
6	Business competition (X7)	Business competition	Number of competitors in the same business	Medlin & Ellegaard (2015)
7	Role of government (X8)	The government's contribution to the activities of small industries	The ratio of government assistance to the total capital of SME	Tambunan (2008)

Souce: Data processed, 2019

This research uses a cluster method to find out the factors that influence the competitivenessof SMIs by grouping SMIs into groups based on similarity of characters. Cluster methods in this study refers to the statement of Hair (2010) that purpose of cluster analysis are: (i) identifying groups that are naturally contained in the data; (ii) its ability to analyze groups with similar characters and not the study of all individuals in the information; (iii) group structure formed fromthe results of cluster analysis will give a picture of the relationship of a group with the concepts/variables that have been determined and not proof; (iv) cluster analysis only includes concepts/variables that have special relationships with research objects based on theories, conceptsand empirical research results, and (v) concepts/variables chosen characterize the individuals (research objects) formed by the clusters.

This method is popular for exploration of intricate population data patterns (Franke et al., 2009) where a researcher will be able to identify homogeneous "clusters" in-group hetero-

geneity based on the similarity of elements. Wallin (2010) states cluster analysis is arevealing tool that can summarize hundreds of thousands of observations of the various variables by finding them in the form of groups in the data. Hair et al. (2010) states cluster analysis is a group ofmultivariate techniques where main goal is to group objects based on the characteristics they have.Cluster analysis called as classification analysis, typology formation, or number classification system.

According to Morgan (2001), efforts to explain the characteristics of data have a significantmeaning in cluster analysis. In this parts there are four basic things that need to be considered Hair et al. (2010): (i) how many samples considered sufficiently representative; (ii) can an outlier be detectedand how to detect it; (iii) how to measure the similarity of research objects, and iv) data must be standardized. There are many approaches to answering these questions, but unfortunately, none ofthem provides sufficient definitive answers. This is then associated with the hierarchical method inwhich the resulting cluster is a set of partition sequences where the low-level cluster is an aggregation of higher-level clusters (Morgan, 2001). According to Morgan (2001), the hierarchicalcluster method processed through a series of successive melting objects into groups. Wallin (2010) states that the hierarchical agglomeration method can be use as an initial step to determine how many clusters naturally exist in the data. The method explained by starting with each observationbeing seen as an individual cluster and then calculating the distance between observations and grouping the two observations that have the closest distance between the two. These two observations then become one cluster, and then this process continues to be repeated until each observation has entered into an entire inclusive cluster.

Results and Discussion

Table 2: SME Grouping in East Java

Concept	Variable	Cluster			Mean Centered Cluster			F	Sig
		1	2	3	1	2	3		
Competitiveness of SME (X1)	Products sold in the market	0,0068	0,105	0,0327	-1,02	1,13	0,25	72,13	0,00001
Access to finance/capital (X2)	The ability to obtain capital & raw materials	0,0725	0,451	0,22	-1,731	0,525	-0,312	51,22	0,00011
Productivity level(X3)	Labor productivity levels	0,98	2,37	1,32	0,46	2,02	0,81	12,15	0,00910
Utilisation of technology (X4)	Production efficiency	2,56	4,11	7,22	-0,41	0,52	1,45	27,17	0,00320
Partnerships/networks (X6)	Horizontal or vertical collaboration with other partners	11,25	10,06	12,02	1,21	1,09	1,51	1,28	0,62810
Business competition (X7)	Business competition	42,21	81,27	65,21	-0,22	1,75	0,82	18,13	0,00827
Role of government (X8)	The government'scontribution to theactivities of small industries	0,3021	0,0215	0,1022	0,921	-1,72	-0,025	32,5	0,00170
Jumlah Sampel IKM		**122**	**21**	**57**					-
		(61%)	**(10,5)**	**(28,5)**					

Souce: Data processed, 2019

Based on the statistical results in Table 2, SME in East Java grouped into three clusters: cluster I, II III, based on seven predetermined concepts, namely (i) competitiveness;(ii) financial access;(iii) labor productivity levels;(iv) technology utilization; (v) networking; (vi) level

of business competition; and (vii) the role of government. The three clusters produced have varying values in each concept, but the most striking difference is in the concept of competitiveness as measured by the ratio of products sold. The concept of competitiveness shows prominent characteristics that distinguish between clusters I, II and III. This is indicated by the value of the statistical F of this concept the largest and most significant. Thus, the concept of competitivenessbecomes a label or sign that can accurately explain the natural clusters in the data. Furthermore, by looking at the average score, the cluster I has the lowest average ratio of products sold by 0.68percent, cluster II with the highest average ratio of products sold at 10.5 percent, and cluster III with the average ratio product sold was 3.3 percent. Thus, the resulting cluster groups explained as follows: Cluster I: Low Competitiveness, Cluster II: High Competitiveness, and Cluster III: Medium Competitiveness.

Cluster I with low competitiveness on average has a sales ratio value of 0.0068 or 0.68% of the total sales of IKM products in East Java. Meanwhile, if viewed from the financial access, which is equal to 0.0725, which means the total capital owned by low competitiveness SME, in average 7.25% of them credited from banks. The concept of productivity level shows how much production one worker can produce. Thus, in cluster I, one worker was able to produce an averageproduction of Rp. 984.927,66. The concept of using technology shows the ratio of products to production costs. Based on the analysis results, SME in cluster I has an average technology utilization of 2.56. Every one rupiah of production costs used by low competitiveness SME is ableto produce products worth 2.56 rupiah. Then, the concept of partnership (networking) reflects thelength of time that the SME business has been running, and assuming if SME established longer than other, will has more partnerships. From the results of the analysis, it found that SME cluster I had been operating for an average of 11.25 years. The level of business competition shows the number of competitors in the same business field as the SME. Low competitiveness SME face anaverage of 42 other SME operating in the same field. The concept of the role of government showsthe amount of government assistance to SME. Each year, in cluster I, on average, receives assistance from the government in the amount of 0.3021 or 30% of the total capital. Assistance received from the government can be in the form of business capital, raw material support, production equipment assistance, as well as training, guidance and assistance.

Otherwise, in the cluster II with high competitiveness, as follows: (i) the ratio of sales of high competitive SME products in average is 10.5% from the total sales; (ii) the total capital in high competitiveness SME in average is 45.1% source from loan banks; (iii) high competitivenessSME workers are able to produce a product worth Rp2,373,242.5 (iv) per one rupiah the cost usedby high competitiveness SME on average capable of producing products is Rp4.11; (v) high competitiveness SME operated in average 10.06 years; (vi) the average competitive SME faced 81similar business units as competitors; (vii) high competitiveness SME in average accept the role of the government at 2.15% from the total capital they have.

From cluster III SME with medium competitiveness, as follows: (i) The average sales ratioof SME products is 0.0327 or 3.27% from all SME product sales; (ii) The ratio of capital originating from banks in this cluster is moderately competitive in average 22% from the total capital; (iii) workers are moderately competitive with average able to produce Rp. 1.326.341; (iv)medium competitiveness SME in average is able to produce a product that value Rp. 7.2, from every one rupiah they used; (v) The average medium competitiveness SME have been in businessfor 12.02 years; (vi) SME with medium competitiveness in average have 65 competitors; (vii) thetotal capital owned by SMEs that are moderately competitive, in average of 10.22% from the roleof the government. Based on the statistical results of the cluster analysis as described above, the explanation based on the concept, described as follows:

Competitiveness of SME

In this concept, cluster I shows that the ratio of products sold is still very low (0.68%).

Thisshows that the ability of SMEs to drive product sales and market dominance is still very weak, sothat SME competitiveness is still weak. Meanwhile, in cluster II the average score of the ratio of products sold was quite high (10.5%), meaning that the ability of SMEs to control market share was relatively high. Meanwhile, in cluster III shows the average score of the ratio of products soldin the medium category (3.27%), meaning that control of the market share going to be moderate. If we look at the statistical F figures (72.13) and significance (0.00001), the concept of competitiveness is strongly show as the main characteristic between clusters. So, between clustersI, II, and III are really different in terms of the ability to control market share (competitiveness).

Access to finance/capital

In this concept, cluster I have an average score of a bank credit ratio of 7.25%. This meansthat SMEs in this cluster are not capable enough to access capital from banks. SMEs generally have difficulty in getting capital from the banks. This can occur due to several factors, for example,according to banking calculations, SMEs have not met the requirements to be able to receive loansbased on criteria set by banks. For example, SME profitability is not strong enough, collateral value is low, and others. Meanwhile, in cluster II the average score of the bank credit ratio showeda high number (45.1%). This means that SMEs have good ability to access capital from banks. A good financing relationship between banks and SMEs in this cluster might be because banks seeingthat they SME sufficiently bankable. Whereas, in cluster III the statistical results show an averagescore of bank credit ratio at a moderate level (22%). This means that the SME group is not too difficult to deal with obstacles to financial access to bank credit even though the intervening periodis not too easy. Based on the F value of statistics and significance, the concept of financial accessshows other characteristics that reinforce differences between clusters. This noticed by the high Fstatistic (51.22) and the significance value (0.00011). That is, between clusters I, II, and III differin terms of the ability of financial access from banks.

Productivity Level

In this concept, SME cluster I has an average score with a product value per worker of Rp.984,927.66. This means the level of labor productivity is low. Labor productivity at lower level may caused by the small number of workers and for other reasons such as the still small productioncapacity. Meanwhile, SME in cluster II show the average score with a product value per worker isquite high, Rp. 2,373,242.5, -. The high labor productivity in cluster II has an indication if existence of a production process involves the use of technology, the availability of infrastructurefacilities to support the production process, so that production efficiency had achieved. MSE in cluster II can easily utilize technology because it is supported by the availability of adequate capital. Otherwise, SME in cluster III has an average labor productivity score of Rp. 1,326,341, - or in the medium category. If you look at the value of F statistics and significance, the level of productivity is another character that reinforces the differences between clusters, as evidenced bythe high F statistic (12.15) and the significance value (0.00910). That is, between clusters I, II, andIII differ in terms of labor productivity.

Utilisation of technology

In this concept, SME in cluster I show a very low average score (2.56%), indicating that SME in the cluster I are generally still weak in terms of technology utilization. The reluctance to use technology in this cluster may be due to factors of limited costs, understanding and mindset ofthe SMEs themselves, production capacity and so on. Meanwhile, in cluster II show a moderate average score (4.11%, this indicates that SME in this group have an indication that the use of the latest technology has begun to decline because the existing technology is sufficient to be able to bring production efficiency and achieve production capacity targets. Meanwhile, in cluster III, it actually started using technology, based on the average score on this concept at a high level (7.22%). Behavior to utilize this technology is very reasonable to

catch up with the ability to control the market (competitiveness). Based on the value of F statistics and significance, the concept of technology utilization is another characteristic that reinforces the differences between clusters, as evidenced by the high F statistics (27,17) and the significance value (0.00320). That is, between clusters I, II, and III differ in terms of technology utilization.

Networking

In this concept, SME cluster I has an average score in the medium category (11.25). This means that MSE has sufficient partnerships. Likewise, SME cluster II, with an average score in the medium category (10.06), means that SME has built a good partnership with other parties. SMEs in cluster III have a higher average score (12.02). This means that in this group, the enthusiasm of SME to build partnerships with outsiders is very high, especially to increase marketcompetitiveness that is still wide open. Based on the statistical F value and significance, the concept of partnership is a character that is not strong enough as a label that distinguishes betweenclusters, as evidenced by the very low statistical F statistic (1.17) and the significance value (0.62810). Therefore, between clusters I, II, and III there was no significant difference in terms ofpartnership (networking). SMEs that are included in Cluster I are likely to be included as membersof Clusters II and III, vice versa.

Business competition

In this concept, SMEs in cluster I have an average score in the low category (42.21), which means the number of competitors faced by cluster I SMEs is quite low. This condition can occur due to the type of SME business that is easy to run, does not require much capital, so everyone hasan easy opportunity to open the same business. Meanwhile, SME in column II has an average scorein the high category (81.27), which means that the level of competition is getting heavier. The highlevel of business competition in SME cluster II may occur because businesses who want to win the competition for market share is not small. Each is armed with the capacity and capabilities possessed. Based on the statistical F value and significance, the concept of the level of business competition is a strong character as a label that distinguishes between clusters, as evidenced by thehigh F statistic (18.13) and the significance value (0.00827). Therefore, between clusters I, II, andIII there was no significant difference in terms of p, between clusters I, II, and III are indeed different in terms of partnership (networking).

Role Government

In this concept, SMEs in cluster I have an average score with a high category (30.21%). Thisindicates that the SME has received considerable support from the government in various forms. For example, capital assistance with low interest, assistance machinery / production equipment, guidance, training, and assistance. While SME cluster II had an average score in the low category(2.15%), which indicated that SME received assistance and the role of the government was gettingsmaller. This is rational, because the SME in cluster II had considered capable enough to take careof themselves.

Based on the F statistical value and significance, the concept of the role of government is another character that reinforces the differences between clusters. It evidenced by the high F statistic (32.5) and the significance value (0.00570). Therefore, between clusters I, II, and III differin terms of the role of government. Based on the results of statistics and analysis, it can be explained the relationship between cluster groups and the concepts that become their characteristics, as follows:

Table 3: Characteristics of IKM by Concept

Concept	Low Competitiveness	Medium Competitiveness	High Competitiveness
Financial accessibility	Low	Medium	High

Concept	Low Competitive-ness	Medium Competi-tiveness	High Competitive-ness
Productivity Level	Low	Medium	High
Technology Utilization	Low	High	Medium
Business competition	Low	Medium	High
Dependence on the Government	High	Medium	Low

Souce: Data processed, 2019

Conclusion

The conclusion based on the analysis, SMEs with high competitiveness are able to increase efficiency in 2 fields, production and marketing. Meanwhile, SME that have medium competitiveness who are superior in technology, so they can be classified in the creative industry. In the current globalization era, the way to increasing competitiveness is through increasing the ability for access financial institutions, increasing labor capabilities, reducing the level of dependence from the government especially direct government assistance, reducing the risk of failure in high competition through, with: (i) facilitation of standardization , (ii) enhancing export capabilities, and (iii) collateral guarantee, and protecting the interest in innovating through patent facilitation (IPR).

What we however saw in this paper is that SME competitiveness in East Java is vital not only for the SME themselves but also for the province and countries. It is of great importance to identify the characteristics of economic activity that countries with successful SME exhibit. In this paper, we were able to show that SME competitiveness is definitely linked to their performance as competitiveness of sme, access to finance/capital, productivity level, utilisation of technology, partnerships/networks, business competition, and role of government. A province or country that wishes to foster SME competitiveness needs to pay attention to the development of these figures and make sure they move to the appropriate direction. For the next study we hope there are some developing method based on our research.

References

Berrell, M., & Wrathall, J. (2006). Between Chinese culture and the rule of law: What foreign managers in China should know about intellectual property rights. *Management Research News*, *30*(1). https://doi.org/10.1108/01409170710724304

Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. In *Research Defign: Qualitative, Quantitative, and Mixed M ethods Approaches*. SAGE Publications.

Disperindag Jatim. (2019). *Perkembangan UKM di Jawa Timur*. disperindag.jatimprov.go.id

Ernst, & Young. (2006). Strategic growth markets various reports. www.ey.com/US/en/Services/Strategic-Growth-Markets

Franke, N., Reisinger, H., & Hoppe, D. (2009). Remaining within-cluster heterogeneity: A meta-analysis of the "dark side" of clustering methods. *Journal of Marketing Management*, *25*(3–4). https://doi.org/10.1362/026725709X429755

Gunasekaran, A., Marri, H. B., Mcgaughey, R., & Grieve, R. J. (2001). Implications of organization and human behaviour on the implementation of CIM in SMEs: An empirical analysis. *International Journal of Computer Integrated Manufacturing*, *14*(2). https://doi.org/10.1080/09511920150216297

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis, 7th ed. Prentice Hall, New Jersey. *Technometrics, 15(3)*.

Hashim, M. K., & Wafa, S. A. (2002). Small & medium-sized enterprises in Malaysia: development issues. Pearson Malaysia.

Hussain, J., Millman, C., & Matlay, H. (2006). SME financing in the UK and in China: A comparative perspective. *Journal of Small Business and Enterprise Development*, *13*(4). https://doi.org/10.1108/14626000610705769

Karaev, A., Koh, S. C. L., & Szamosi, L. T. (2007). The cluster approach and SME competitiveness: A review. *Journal of Manufacturing Technology Management*, *18*(7). https://doi.org/10.1108/17410380710817273

Maranto-Vargas, D., & Gómez-Tagle Rangel, R. (2007). Development of internal resources and capabilities as sources of differentiation of SME under increased global competition: A field study in Mexico. *Technological Forecasting and Social Change*, *74*(1). https://doi.org/10.1016/j.techfore.2005.09.007

March-Chordà, I., Gunasekaran, A., & Lloria-Aramburo, B. (2002). Product development process in Spanish SMEs: An empirical research. *Technovation*, *22*(5). https://doi.org/10.1016/S0166-4972(01)00021-9

Morgan, S. D. (2001). Cluster analysis in electronics manufacturing. North Carolina State University.

Munir, A., Lim, M. K., & Knight, L. (2011). Sustaining competitive advantage in SMEs. *Procedia - Social and Behavioral Sciences*, *25*. https://doi.org/10.1016/j.sbspro.2012.02.052

Piatkowski, M. (2012). Factors Strengthening the Competitive Position of SME Sector Enterprises. An Example for Poland. *Procedia - Social and Behavioral Sciences*, *58*. https://doi.org/10.1016/j.sbspro.2012.09.1001

Şener, S., Savrul, M., & Aydın, O. (2014). Structure of Small and Medium-Sized Enterprises in Turkey and Global Competitiveness Strategies. *Procedia - Social and Behavioral Sciences*, *150*. https://doi.org/10.1016/j.sbspro.2014.09.119

Short, J. C., Ketchen, D. J., & Palmer, T. B. (2002). The role of sampling in strategic management research on performance: A two-study analysis. *Journal of Management*, *28*(3). https://doi.org/10.1016/S0149-2063(02)00132-0

Singh, R. K., Garg, S. K., & Deshmukh, S. G. (2008). Competency and performance analysis of Indian SMEs and large organizations an exploratory study. *Competitiveness Review*, *18*(4). https://doi.org/10.1108/10595420810920798

Sipa, M., Gorzeń-Mitka, I., & Skibiński, A. (2015). Determinants of Competitiveness of Small Enterprises: Polish Perspective. *Procedia Economics and Finance*, *27*. https://doi.org/10.1016/s2212-5671(15)01019-9

Utami, R. M., & Lantu, D. C. (2014). Development Competitiveness Model for Small-Medium Enterprises among the Creative Industry in Bandung. *Procedia - Social and Behavioral Sciences*, *115*. https://doi.org/10.1016/j.sbspro.2014.02.438

Wallin, J. (2010). Customer Segmentation Using Cluster Analysis on Student Loan Applications. In *ProQuest Dissertations and Theses*.