Identification of Factors Affecting The Productivity Of Medium Small Micro Enterprises (MSMEs)

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Abstract:

Economic growth in Indonesia tends to increase because the contribution of MSME growth to GDP is quite large. MSMEs contributed 7,009,283 (in billion rupiah) or equivalent to 59.84% of total GDP in 2016 and in 2017 GDP growth reached 7,704,635.9 (in billion rupiah) or equivalent to 60% of total GDP in Indonesia with a market share absorption of 99%. This study uses a Multiple Criteria Decision Making (MCDM) approach by combining 2 methods, namely the Decision Making Trial and Evaluation Laboratory (DEMATEL) and the Fuzzy Analytic Network Process (FANP). This study supports 3 types of MSME categories based on the standards of the Indonesian Muslim Women Entrepreneurs' Organization (WPMI), namely Basic, Advance and Professional. The results of the application of the Super Decision application to the business environment cluster show that the financial support sub-cluster is a major factor in the productivity of MSMEs at the Basic and Advance levels. Meanwhile, at the Professional level, Regulations and Business Boundaries are the main factors. In the Human Resources cluster, the sub-cluster experience is the main factor at the Basic level. Meanwhile, the education sub-cluster is the main factor at the Advance and Professional levels. In the Production Resources cluster, the marketing distribution sub-cluster is the main factor at the Basic level. Meanwhile, the raw material management sub-cluster is a major factor.
Keywords: *UMKM, Productivity, Hybrid MCDM, Fuzzy*

1. Introduction

According to the World Bank, the current world economy in 2020 is estimated to grow by 2.5% with a growth from 2016 of 2.6% then in 2017 it increased by 0.6% to 3.2% in 2018 decreased by 0, 2% to 3.0% in 2019 decreased significantly by 0.6% to 2.4% and in 2020 increased by 0.1% to 2.5% (W.B. Group, 2020). However, the economic slowdown occurred in 2019 due to the trade war between America and China. As a result Cambodia fell 0.5%, China fell 0.5%, Fiji fell 3.2%, Indonesia fell 0.2%, Laos 0.7%, Malaysia fell 0.1%, Mongolia fell 1.5%, Myanmar up 0.1%, Papua New Guinea up 6.4%, the Philippines down 0.4%, Solomon Islands down 0.6%, Thailand down 1.6%, Timor Leste 5.3% and Vietnam down 0.3%. Several countries in the Asia Pacific region, except South Korea, and countries with increasing GDP experienced a significant decline of 0.87% (W.B. Group, 2020).

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Micro, Small and Medium Enterprises (MSMEs) have an important role in driving Indonesia's economic growth (Indrajaya, 2022). According to the Central Bureau of Statistics, at least in 2016 the number of labor absorption reached 116,673,416 people from 61,651,177 MSMEs and in 2017 increased by 3.41% to 121,828,610 from 67,922,617 with a market share of 99%. So as to encourage the GDP growth rate in 2016 of 7,009,283 (in billion rupiah), namely 59.84% of Indonesia's total GDP and in 2017 it increased by 0.16% to 7,704,635.9 (in billion rupiah) or the equivalent of 60 % of Indonesia's total GDP (Indrajaya, 2021). This triggers a problem how can MSMEs have a market share of around 99% but contribute only 60% of Indonesia's GDP (Hamdani and Wirawan, 2012; Irjayanti and Azis, 2012).

The government should dedicate more efforts to eliminating the boundaries of MSMEs and decide on effective ways to help MSMEs develop their strengths and potential (Irjayanti and Azis, 2012). According to this statement (Kurniawati and Yuliando, 2015) concluded that there are several factors that must be delegated to create more productive MSMEs. Therefore, this study aims to determine what factors affect the level of productivity of MSMEs. And this research is focused on the Indonesian Muslim Women Entrepreneurs Organization (WPMI).

2. Theoretical Background

According to Tsai et al in 2011 in the journal (Kurniawati and Yuliando, 2015) a multi-criteria decision making approach (Multi Criteria Decision Making) is appropriate. (Adiningsih, 2011) said if Hybrid MCDM is more suitable for evaluating and correcting problems in the world than some of the previous methods available.

The analysis in this study combines the Fuzzy Decision Making Trial and Laboratory (FDEMATEL), and the Fuzzy Analytic Network (FANP) as a hybrid Multi Criteria Decision Making (MCDM) model to evaluate and improve problems related to the performance of MSMEs. Hybrid MCDM not only deals with the problem of interdependence and feedback factors but also enhances the normalized supermatrix to fit the real world according to Tsai and Kuo, 2011; Yang et al, 2008; Huang and Tzeng, 2012; Liao et al, 2014 in the journal (Kurniawati and Yuliando, 2015).

3. Methodology

In identifying and determining the relationship between the factors in our study we used the FDEMATEL method. While determining the criteria weights with dependency factors and our feedback using the FANP method. Fuzzy methods of DEMATEL and ANP serve to assist in decision making and reduce uncertainty in assessments, especially for qualitative factors. (Kurniawati and Yuliando, 2015).

The correspondence used to answer the questionnaire is experts in related fields. The ANP method is used to determine the relative weight factors. ANP includes all relevant factors and decision making alternatives to form a network that combines feedback and interdependent relationships. Due to interdependence, factors that are

less important individually can change to become more important when evaluated collectively. This study uses fuzzy techniques to obtain the structure of the MCDM problem. Blurred decisions are used to be judged by experts (decision makers) (Kurniawati and Yuliando, 2015). Briefly described in the following table.

Table 1. Linguistic Scale and Triangular Fuzzy Number in Fuzzy ANP

Linguistic Scale	Triangular Fuzzy Number	Reciprocal
No Influence (NO)	(8,9,9)	(1/9,1/9,1/8)
Very Low Influence (VL)	(6,7,8)	(1/8,1/7,1/6)
Low Influence (L)	(4,5,6)	(1/6,1/5,1/4)
High Influence (H)	(2,3,4)	(1/4,1/3,1/2)
Very High Influence (VH)	(1,1,2)	(1/2,1/1,1/1)

Source: Processed Data (2019)

Table 2. Linguistic Scale and Triangular Fuzzy Number in Fuzzy DEMATEL

Linguistic Term	Influence Score	Triangular Fuzzy Number
No Influence (NO)	0	(0, 0, 0,25)
Very Low Influence (VL)	1	(0, 0,25, 0,5)
Low Influence (L)	2	(0,25,0,5,0,75)
High Influence (H)	3	(0,5,0,75,1)
Very High Influence (VH)	4	(0,75,1,1)

Source: Processed Data (2019)

4. Empirical Findings/Result

In measuring the level of productivity of MSMEs according to (Kurniawati and Yuliando, 2015) There are at least 3 main factors that affect the productivity of MSMEs in Indonesia, namely: Business Environment, Human Resources and Production Resources. MSMEs also face problems in the quality of human resources, technology, knowledge, facilities, access to capital, unbalanced competition, market access and information. (Bhasin and Venkataramany, 2010; Hamdani and Wirawan, 2012; Kurniawati and Yuliando, 2015; Adiningsih, 2011; Tambunan, 2011).

According to the Asian Pacific Organization (APO) in 2017 Indonesia was ranked 13th out of 22 countries in Asia Pacific in the category of Human Resources productivity with a productivity level of only 21%. According to the Global Talent Competitiveness Index (GTCI) in 2015-2017, Indonesia is ranked 78 out of 88 countries. This ranking shows that Indonesia is quite far behind in its ability to education and level of competitiveness (Lanvin and Monteiro, 2020).

So that according to some of the literature studies above, it can be constructed that the criteria are considered to have a significant effect in the table below.

Table 1. Factors that used to assess the MSMEs performance

| Cluster		Factors	Journal Resource
Production Resource	A	Raw Material	(Lahu et al, 2017),(Nurhayati and Komara, 2013)
	B	Marketing & Distribution	(Bhasin and Venkataramany, 2010),(Irjayanti & Azis, 2012),(Kotler & Keller, 2009)
	C	Technology (Production Process)	(Hamdani & Wirawan, 2012),(Setiawan, 2012)
Human Resource	D	Motivation	(Sri, 2017)
	E	Education	(Hamdani & Wirawan, 2012)
	F	Experience	(Irjayanti & Azis, 2012)
Business Environment	G	Partnership	(Hamdani & Wirawan, 2012),(Tangkilisan, 2005),(Jane & Parahyangan, 2012)
	H	Business Regulation & Restriction	(Gaganis, Pasiouras, & Voulgari, 2018),(Karpak & Topcu, 2010)
	I	Financial Support	(Hamdani & Wirawan, 2012),(Karpak & Topcu, 2010)
	J	Government Policy	(Tambunan, 2011)
	K	Business Competition	(Hamdani & Wirawan, 2012),(Kotler & Keller, 2009),(Karpak & Topcu, 2010)

Source: Processed Data (2019)

Fuzzy DEMATEL

The decision maker (respondent) assesses the interdependency relationship between factors as input for the Fuzzy Model framework. The research framework is depicted in Figure 1. The DEMATEL method provides the results of the relationship between the analyzed factors.
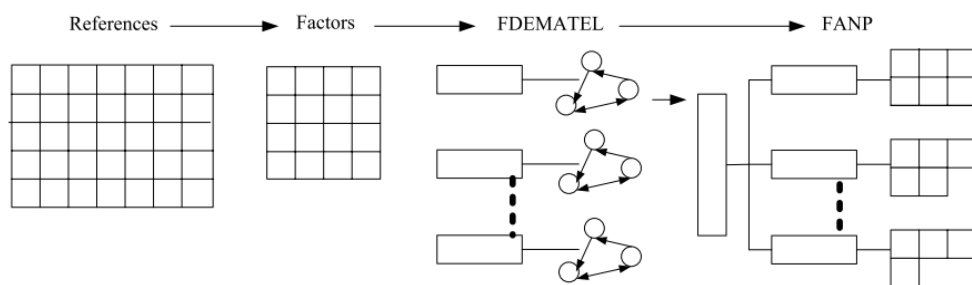
Figure 1. Research Framework

The threshold value is 0.27, which means that not all factors can be converted to the impact-diagraph map. It can be said that any factor equal to or more than this threshold has a relationship with another. The results of the DEMATEL analysis are considered to be able to build a fuzzy ANP network model as shown in Figure 2.
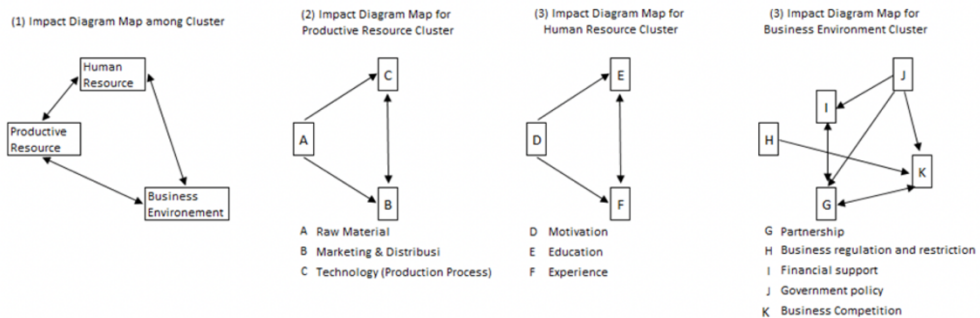
Figure 2. Impact Diagram Map among Clusters and in the Various Clusters

Fuzzy ANP

The input of Fuzzy ANP is the pair ratio between the factors called nodes, in this study the paired ratio only affects the nodes in the same cluster or also known as (inner dependence) (Saaty, 2010). In accordance with the influence between the factors formed by the Fuzzy DEMATEL framework. This assessment is carried out based on 3 categories of respondents in the WPMI organization, namely at the Basic, Advance and Professional levels.

The final result or it can be referred to as local and global weight is generated through 3 supermatrix stages, namely: The first stage is to calculate the Unweighted Supermatrix containing local priorities derived from pairwise comparisons across networks. The second stage is the Weighted Supermatrix obtained by multiplying all the elements in the component of the weighted supermatrix by the corresponding cluster weights. The third stage is to calculate the Limit Supermatrix obtained by increasing the Unweighted Supermatrix to strength by multiplying it yourself. When the number column is the same for each column, the boundary matrix has been reached and the matrix multiplication process is stopped (Saaty, 2010).

After passing the 3 calculations above, the results obtained for the so-called priorities of the three categories are as follows:

Table 2. Recapitulation of Local and Global Weight of Basic

Cluster	Factors	Local Weight	Global Weight	Priority
Production Resource	Raw Material	0,31657	0,117506	2
	Marketing & Distribution	0,47388	0,175898	1
	Technology (Production Process)	0,20955	0,077784	4
Human Resource	Motivation	0,30128	0,058461	5
	Education	0,28884	0,056047	6
	Experience	0,40988	0,079534	3
	Partnership	0,28134	0,028538	8

Cluster	Factors	Local Weight	Global Weight	Priority
Business Environment	Business Regulation & Restriction	0,08071	0,008187	11
	Financial Support	0,36919	0,037449	7
	Goverment Policy	0,08862	0,008989	10
	Business Competition	0,18014	0,018273	9

Source: Processed Data (2019)

Table 3. Recapitulation of Local and Global Weight of Advance

Cluster	Factors	Local Weight	Global Weight	Priority
Production Resource	Raw Material	0,50983	0,067373	4
	Marketing & Distribution	0,39963	0,052810	5
	Technology (Production Process)	0,09054	0,011965	7
Human Resource	Motivation	0,31250	0,205450	2
	Education	0,37500	0,246540	1
	Experience	0,31250	0,205450	3
Business Environment	Partnership	0,32354	0,014317	6
	Business Regulation & Restriction	0,10972	0,004855	11
	Financial Support	0,41606	0,018411	8
	Goverment Policy	0,11121	0,004921	10
	Business Competition	0,03948	0,001747	9

Source: Processed Data (2019)

Table 4. Recapitulation of Local and Global Weight of Advance

Cluster	Factors	Local Weight	Global Weight	Priority
Production Resource	Raw Material	0,47466	0,125168	1
	Marketing & Distribution	0,40920	0,107905	2
	Technology (Production Process)	0,11614	0,030625	7
Human Resource	Motivation	0,13384	0,026761	9
	Education	0,48893	0,097757	3
	Experience	0,37723	0,075424	4
Business Environment	Partnership	0,20071	0,029071	8
	Business Regulation & Restriction	0,32342	0,046844	5
	Financial Support	0,29372	0,042543	6
	Goverment Policy	0,10417	0,015088	10

Cluster	Factors	Local Weight	Global Weight	Priority
	Business Competition	0,07798	0,011295	11

Source: Processed Data (2019)

Global weights describe the priorities or factors that influence to improve the performance of SMEs.

5. Discussion

Table 4 reflects the critical factors for improving the performance of MSMEs at the WPMI Basic Organization level, namely distribution and marketing, raw materials, experience, technology, motivation, education. Meanwhile, factors that have a weight below 0.05 are assumed to have a weak influence. It can be said that distribution and marketing are highly appreciated as triggers for the productivity of UMKM products in the WPMI organization.

Table 5 reflects the critical factors for improving the performance of MSMEs at the WPMI Advance Organization level, namely education, motivation, experience, raw materials and distribution and marketing. Meanwhile, the factors that weigh below 0.05 are assumed to have a weak influence. It can be said that education is highly appreciated as a trigger for UMKM business productivity in the WPMI organization.

Table 6 reflects critical factors for improving the performance of MSMEs at the WPMI Professional Organization level, namely raw materials, distribution and marketing, education, experience. Meanwhile, the factors that weigh below 0.05 are assumed to have a weak influence. It can be said that raw materials are highly appreciated as a trigger for UMKM business productivity in the WPMI organization.

6. Conclusions

This study seeks to prioritize critical factors that affect the productivity of MSMEs in the WPMI Organization. At the Basic level, distribution and marketing are the factors that have the greatest influence in supporting the productivity of MSMEs, and factors of raw materials, experience, technology, motivation and education are factors that can increase the competitiveness of MSMEs, while the most important factor in the performance of MSMEs is production resources.

At the Advance level, education is the factor that has the greatest influence in supporting the productivity of MSMEs, and factors of motivation, experience, raw materials and distribution and marketing are factors that can increase the competitiveness of MSMEs, while the most important factor in the performance of MSMEs is human resources.

At the professional level, raw materials are the factors that have the greatest influence in supporting the productivity of MSMEs, and distribution and marketing, education,

and experience factors are factors that can increase more competitiveness in MSMEs while the most important factor in the performance of MSMEs is production resources.

These findings suggest that non-monetary reasons play a more important role than financial reasons. The government needs to remove restrictions and encourage the development of SMEs through supporting policies in the areas of access to finance, facilities and infrastructure.

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