Exploratory Factor Analysis Msmes Anti-Fragile

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Abstract.
Developing a framework for MSMEs to become more fragile is the goal of this research. As it is known that the business world has fluctuated a lot and is facing turbulence, so we need an anti-fragile MSME framework concept. Using Exploratory Factor Analysis (EFA), this research is then analyzed to produce 5 (five) factors that build an anti-fragile MSME framework, namely Network Building, Growth Mindset, and Willingness to Develop, Focusing on Sustainability, Support, and Ability to Overcome Risk and the last is Competence. So far, there has been no research on the anti-fragile concept for MSMEs in Indonesia, so it is hoped that the results of this study can be a reference for future researchers and business actors in running their businesses.

Keywords: Management, Business, Anti-fragile UMKM, Building Network, Growth Mindset, Support, Ability

I.   INTRODUCTION

Based on a report from the Ministry of Cooperatives and SMEs of the Republic of Indonesia, the development of Micro, Small, Medium Enterprises (MSMEs) reached 64.2 million and had contributed to the Gross Domestic Product of 61.07% or Rp. 8,573.89 T [1] . This number is quite large even though the existence of MSMEs amid this Pandemic has experienced many obstacles. Furthermore, suppose we analyze the data on the development of MSMEs. In that case, currently, most are dominated by micro-enterprises. At the same time, for small and medium enterprises, the number is only around 800,000 businesses, so the difference in the number of micro and small and medium enterprises is obvious [1]. In 2020, the deputy for production and marketing at the Ministry of Cooperatives and SMEs reported that 23 business units managed to advance to grade after being facilitated by KUMKM [2]. It is conceivable that the number of small and medium-sized enterprises, which amount to 800,000, while only 23 units are promoted, means that currently, the condition of MSMEs in Indonesia is still experiencing many obstacles.

From this phenomenon, it becomes a big question for academics and related parties so that it is appropriate for scholars and associated parties to conduct research related to the development of MSMEs and re-identify what things can make MSMEs not only able to survive but also be able to advance to class even during the Pandemic. This. Therefore, it is essential to conduct further research regarding what factors make MSMEs Anti-fragile. The Anti - Fragile concept itself was initiated by Taleb (2012). It was then used also by Kennon (2017) Nikookar(2021) [3][4] [5]to research Anti-fragile SMEs and how to create Anti-Fragile models in procurement and supply chain management. Taleb (2012) introduces the opposite of brittle, which in the past the opposite of brittleness has been called something tough or strong. A logical deduction states that the opposite of something adverse to volatility is positive to volatility, so the term Anti - Fragile appears to describe something sensitive but positive to volatility. Thus, the Anti-Fragile system becomes a system that thrives amid uncertainty. Of course, this Anti-Fragile system also requires a strategy that can quickly and accurately learn and adapt.

So far, there has been no research on Anti-fragile supply chain management in Indonesia, so researchers are interested in adopting the research model conducted by Kennon (2017) and Nikookar (2021) to find out what factors can make MSMEs Anti- Family MSMEs. Fragile. The purpose of this research is also to develop a framework that can help MSMEs to become Anti- Brittle MSMEs.

II.   METHODS

In the literature on purchasing and supply chain management (P&SCM), the desired solution to overcome disorder is to build strength or resilience in the supply chain. Power has been widely discussed in

P&SCM as an approach that enables a supply chain to tolerate disruption and maintain its functionality.The dominant system in the P&SCM literature considers any trouble in the supply chain to be seen as a source of loss that must be avoided. However, there was chaos everywhere in today's world, so viewing losses as something to be avoided was also questionable. From the current pandemic conditions, the writer thinks, "What if we think positively about the disorder and accept it? What if we built a supply chain that could even benefit from disease, both financially and non-financially (e.g., social reputation)? Thus, referring to the work of Nikookar et al. (2021), which was inspired by Taleb's book (2012), targets the fragile supply chain as a new (and positive) approach to supply chain disorder and randomness. Furthermore, Nikookar et al. (2021) stated that future research is necessary to contextualize how various industries can generate knowledge about building brittle supply chains. In other words, currently, the existence of a resilient and robust supply chain lies between a fragile chain to an anti-fragile one. Therefore, the goal of introducing a delicate supply chain is in line with a recent reflection on the last 25 years of the Journal of Purchasing and Supply Management, in which the editors suggested for researchers in logistics and supply chain management to "refresh and broaden the field in terms of perspective". , topics, and "build bridges between disciplines such as management science, communication, psychology, industrial engineering and others.

" we already know.The research was conducted through a quantitative approach with *exploratory factor analysis*. *Exploratory Factor Analysis* is a set of statistical procedures designed to determine the number of construct variables needed to explain the correlation pattern between a group of measurements [6]. This research is exploratory with anti-fragility properties that allow it to be used in real life. In addition, this exploratory research is used to identify what factors can help MSMEs become Anti- Brittle MSMEs so that they can be used as MSME considerations for developing MSMEs. The research data was collected using a questionnaire instrument using a Likert scale distributed with the help of Google Forms. The population in this study is MSMEs that grew up in the Pandemic era in the Kediri area. For the sampling technique, the researchers used a purposive technique, namely SMEs that were respondents who had been established for more than two years, had an increased turnover during the covid-19 Pandemic. This technique found that there were 105 samples, which can be said to be adequate according to what was conveyed by Fabrigar [6]. To identify the feasibility of the data, the authors also pay attention to 2 (two) factors besides the adequacy of the sample, namely *the factorability matrix* and Kaiser-Meyer-Olkin (KMO) *Sampling* [7]. Furthermore, the authors perform anti-image associations in which all objects must be above 0.5 [7].

III.   RESULT

This research found five dimensions of 15 construct items for anti-fragile management of SMEs. This decision was taken from the test results of the eigenvalues and the percentage of Variance, as shown in Table 1

Table 1. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.672	31.145	31.145	4.672	31.145	31.145
2	2,765	18,436	49,581	2,765	18,436	49,581
3	1,731	11,539	61,120	1,731	11,539	61,120
4	1.532	10,217	71.336	1.532	10,217	71.336
5	1.007	6,713	**78.049**	1.007	6,713	**78.049**
6	.881	5.876	83.926			
7	.670	4.468	88.393			
8	.547	3,649	92.042			
9	.418	2,789	94,832			
10	.260	1,734	96.566			
11	.233	1.552	98.118			
12	.195	1.302	99,420			
13	.057	.380	99,801			
14	.028	.184	99,985			

| 15 | .002 | .015 | 100,000 | | |

Extraction Method: Principal Component Analysis.

Source: SPSS version 24 output data processing results(2021)

From table 1, it is known that the *eigenvalues* for factor or *component* 1, *component* 2, *component* 3, *component* 4, *component* 5 have *eigenvalues* of more than 1, so they can be maintained for the following analysis. So the subsequent study found five factors or *five elements* with a cumulative value of 78.04%, which means that the five factors produced explain 78.04% of the total *Variance*.Furthermore, table 2 will present the results of the *commonalities test,* which shows how significant the factor is in explaining the *Variance* of the original variable [8].

Table 2.

Communalities

	Initial	Extraction
P1	1.000	.912
P2	1.000	.870
P3	1.000	.731
P4	1.000	.789
P5	1.000	.794
P6	1.000	.743
P7	1.000	.759
P8	1.000	.808
P9	1.000	.588
P10	1.000	.775
P11	1.000	.815
P12	1.000	.785
P13	1.000	.805
P14	1.000	.882
P15	1.000	.652

Extraction Method: Principal Component Analysis.

Sumber : Output SPSS Versi 24 hasil pengolahan data (2021)

The communalities value for the P1 variable is 0.912, which means that the factors that have been formed based on the Principal Component Analysis (PCA) can explain the Variance of the P1 variable by 91.2%, the developed factors explain the P2 Variance by 87%, explaining the variance P3 is 73.1%, defines the Variance of P4 is 78.9%, explains the Variance of P5 is 79.4%, explains the Variance of P6 is 74.3%, explains the Variance of P7 is 75.9%, explains the Variance of P8 is 80.8%, explains the Variance of P9 is 58.8%, explains the Variance of P10 of 77.5%, explaining the P11 Variance of 81.5%, explaining the P12 Variance of 78.5%, explaining the P13 Variance of 80.5%, explaining the P14 Variance of 88.2%, explaining the P15 Variance of 65.2%. From the results of the commonalities above, all have shown numbers above 0.5 according to the usual practice of commonalities [9].After knowing the value of communalities, the next step in this *exploratory factor analysis* is to find *the loading factor*, the correlation value between the original variables and factors. The value of the loading factor can be called high if it is above 0.4 [9]. To get a clear picture of the factor loading value from this study, it can be seen in Figure 1 below:

Rotated Component Matrixª

	Component				
	1	2	3	4	5
P1	.066	.269	.322	.129	.846
P2	.907	-.058	.203	-.033	-.021
P3	.124	.616	-.122	.550	.140
P4	.406	.119	.298	.050	.720
P5	-.103	.776	.414	-.077	.062
P6	.111	.053	.797	.098	.287
P7	.775	.021	-.053	.293	.263
P8	.856	.063	-.025	.125	.237
P9	-.039	.711	.049	.108	.259
P10	.596	.537	-.322	.084	-.142
P11	.545	.657	.243	-.151	.061
P12	.126	.105	-.034	.777	.399
P13	.207	-.109	.342	.778	-.163
P14	-.404	.167	.625	.548	-.005
P15	.066	.143	.772	.040	.171

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.ª
a. Rotation converged in 8 iterations.

Fig 1. Component Matrix Varimax output from SPSS data processing (2021)

From Figure 1, it is known that the matrix has been varimax to get precise results where the *components* will form into factors. From the elements from Figure 1, it is finally understood that this research on anti-fragile MSME management began with five factors, so what needs to be done next is to give names to the factors above so which can be seen in Table 3 below:

Table 3.

Item Description	Question items	Factor Group	Factor Definition
I often interact with customers through social media	P2	1	
I made a cooperation agreement with the supplier	P7	1	Networking
I have many lists of raw material suppliers for my business	P8	1	
I am always open to customers regarding the composition of my products so that they believe in quality.	P10	1	
I always think positive, even during the Pandemic	P3	2	
I always develop the Ability to communicate well with consumers	P5	2	Mindset growing and Willing to grow
I have the will to continue to grow and develop	P9	2	
My goal is not only to be a strong business but also a business that can grow when there are various problems.	P11	2	
I am always looking for new ideas to develop my business	P6	3	
For me, the most important thing for this business is to be able to run	P14	3	Focus on sustainability
The essential factor for my business to keep growing is that I don't stop.	P15	3	
In my opinion, a good business is a business that can always solve problems.	P12	4	Support and Ability to cope with Risk
My business can grow because of the help of government agencies	P13	4	
Employers must be able to identify the conditions that occur	P1	5	
I understand the ins and outs of my business, so I can solve any problems that may occur myself.	P4	5	Competent

Source: Processed data (2021)

Based on table 3, it is known that five factors that can explain how to manage MSMEs are anti-fragile, namely:

a)   **Networking**

Every business is an integral part of the supply chain. We all know that each of these MSMEs certainly has many possible disturbances that can create stress, such as uncertainty, resource constraints, and others. Therefore, every business needs to be able to build a network. Based on the construct items that were asked of the sample, it was found that according to the entrepreneurs, they were doing things that could build strong networks with customers and suppliers. This can also be seen from the results of the *component matrix* for P2, which produces a value of 0.907, P7 makes a value of 0.775, P8 has a value of 0.856, and P10 creates a value of 0.596.Thus, entrepreneurs must build networks in anti-fragile supply chains. Creating your network can be interpreted as an effort to strengthen and a source of resilience for entrepreneurs; if the network formed is solid, then entrepreneurs will still be able to grow under any circumstances. Because in a reliable network, there will be trust, kinship, and good communication between entrepreneurs and their networks. This network will have a prolonged impact; when the network with customers is damaged, the company will also find it difficult to build its business again and the network with suppliers [10]. The results of this study are in line with the results of research, which states that if an entrepreneur can effectively model involvement in business activities, they can help reduce the disruption that may occur [11]. So like it or not, like it or not at this time, one of the things that can make a business grow, competing successfully requires a

supply chain network with the appropriate capabilities. In addition, customer *relationship management (CRM)* has also developed so that in the future, MSME entrepreneurs will also be helped by the CRM application [12].

b)   *The Mindset* to grow and willingness to grow

The construct items P3, P5, P9, and P11 are gathered to form one factor. *Mindset* growth and willingness to develop with their respective values were 0.616, 0.776, 0.711, and 0.657. They all have a value of more than 0.5, which means that they are strong enough to represent construct *variances. From* the construct items, it was found that MSMEs, on average, agree with *the statement* This *Mindset* to grow and willingness to develop can bring MSMEs to become anti-fragile MSMEs. The characteristics of MSMEs with a growth *mindset and desire to create will make it easier for MSME actors to innovate because the Mindset* is a belief in firmness, flexibility, and personal quality [13]. In addition, many studies also state that a growth or development mindset is always related to something useful, so of course, this *growth mindset* will also bring good for the anti-fragile management of MSMEs [14–16].It is undeniable that this growth mindset and willingness to develop are influenced by the attitudes and views of others [17]. So that the activities of MSMEs are increasingly tricky and need to continue to increase motivation (willingness) to develop, foster a positive mindset. Support from the closest people and related institutions is required.

c)   Focus on *sustainability*

Informing this factor, the construct items P6, P14, and P15 combine into 1. The resulting values for each item to represent the *Variance* include 0.797, 0.625, and 0772, which are also more than 0.5. Business actors sampled in this study consciously agreed that their goal of becoming entrepreneurs was to make their business sustainable. Conceptually, they don't understand *sustainability,* but they know how to respond to change and move dynamically.The understanding of the focus on *sustainability* for each MSME is undoubtedly different, as is research on how MSMEs translate the theme of sustainability into practice [18]. However, in this study, the focus on *sustainability* has indicators: MSME actors are always looking for new ideas to develop their business so that their business can run and never stop trying. When MSME entrepreneurs focus on *sustainability*, it is a positive signal for the Indonesian state, considering that the contribution of MSMEs in Indonesia to GDP and employment is also quite large. So far, there has been a lot of research that discusses *sustainability*. Even research has summarized these researches to find themes that often arise related to the sustainability of MSMEs [19]. These themes relate to technology that supports business sustainability, finance, the environment, stakeholders, and the collaborative efforts of MSMEs.

d)   Support and Ability to cope with Risk

Next, the construct items P12 and P13 were gathered to form a support factor and the ability to cope with Risk with values representing the Variance of 0.773 and 0.779, respectively, and this value was more significant than 0.5, so it can be said to be adequate in describing the Variance. If examined in-depth, basically every business requires support from the closest people and the local government; besides that, every entrepreneur must also be able to overcome all risks that may arise. The entrepreneurs in this study agreed and were confident that they could overcome the dangers they faced, although they still needed assistance from the local government. Due to some government policies, entrepreneurs are sometimes still difficult to understand. Hence, entrepreneurs need government policies related to ease of business establishment, easy access to capital information, easy access to business development, and other facilitation supporting businesses to grow and develop.The characteristics of business actors in this study who are confident in overcoming this Risk are similar to the character of SME business actors in the Czech Republic and Slovakia, where business actors also have considerable business optimism [20]. In the long term, the Czech Republic also focuses more on the issue of levies or taxes, the quality of the legal system, and state support for SMEs [20]. Therefore, in the future, research on MSMEs in Indonesia needs also to discuss the extent of government support for the progress of MSMEs. Considering the results of this research, it is known that one of the factors that can build anti-fragile management of MSMEs is support and the ability to overcome risks.

e)   Competent

The Competence or Ability possessed by the entrepreneur is the last factor formed from the construct items P1 and P4, with each value representing the Variance of 0.846 and 0.720. The statement that supports this competent factor is that entrepreneurs must be able to identify the conditions that occur and understand the ins and outs of the business to solve the problems that occur themselves. In this statement, business actors indirectly convey that they are competent, considering that the indicators of Competence having a role in the management of a business have been widely discussed by researchers both at home and abroad [21–24].The entrepreneur's Competence in understanding the ins and outs of this business is related to the skills in the functional logistics field, which are essential in maintaining competitiveness; this is because knowledge and Competence are a strong foundation in a business. The need for these competencies from time to time will continue to increase along with the speed of change in the business world.

IV.   CONCLUTION

Developing a framework that can help MSMEs become more Anti-Bribly requires 5 (five) factors: Building a Network, a Growth Mindset and Willingness to Develop, Focusing on Sustainability, Support, and Ability to overcome risks, and finally, Competence. These 5 (five) factors were conveyed quite confidently by business actors and have been studied and analyzed to become reliable data and a reference for startup business actors. In the future, it is hoped that business actors and academics in this field can continue to develop the concept of anti-fragile management practices.

V.   LIMITATION

This Reaserch Is Still Limited To The Exploratory Factor Analysis Method,So It Is Still Very Posibble To Futher Use Other Metohods

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