Factors Affecting Entrepreneurial Resilience in Disaster Prone Areas

Emrizal*

Politeknik Negeri Padang

Padang, Indonesia

*emrizal@pnp.ac.id

Abstract—**Entrepreneurial resilience has been widely researched recently. However, not many studies have examined what factors influence entrepreneurial resilience. This study tries to examine the factors that affect the resilience of an entrepreneur and measure the level of entrepreneurial resilience index for SMEs owners in disaster-prone areas in West Sumatra. In obtaining the entrepreneurial resilience index, it is done by determining the Importance Average, Weighting Factor, Performance Average, Weighting score, Weighting Average. The findings of this study are that there are eight factors that make an entrepreneur tough and the entrepreneurial resilience index is 82.7%. The novelty of this research is the measurement of entrepreneurial resilience which has never been done so far. This research also contributes to the government to find out the factors that influence entrepreneurial resilience so that it is more focused on developing entrepreneurship.**

Keywords—entrepreneurial resilience, disaster, importance average, entrepreneurship, SMEs

I. Introduction

The condition of West Sumatra, which is a disaster-prone area, will affect entrepreneurial resilience in this area. Entrepreneurship in West Sumatra and other disaster-prone areas requires resilience to various pressures, elements of business uncertainty and including the threat of natural disasters [1]. The magnitude of the risk faced by entrepreneurs in West Sumatra requires entrepreneurs to have the ability to adapt to change and uncertainty as well as disasters that can come at any time [2].

The ability to adapt to environmental changes that are very fast and unwanted and the ability to overcome difficulties and rise from traumatic experiences is called resilience [3]. So far, the term resilience is widely used in psychology in measuring the ability and resilience of an individual [4]. In managing an entrepreneurial business, of course, you need to be resilient in dealing with various situations, pressures and uncertainties in business.

West Sumatra is one of the disaster-prone areas in Indonesia. In addition to the earthquake and tsunami disaster, West Sumatra is also an area prone to landslides and floods and is currently facing the Covid 19 disaster [5]. In addition to

disaster-prone areas, West Sumatra is actually a unique area where the majority of life is entrepreneurial and one of them is superior in the food business or culinary. The food sector is an advantage of the people of West Sumatra who are famous for the Minang ethnicity and this has been proven not only in West Sumatra but in many other areas in Indonesia and even abroad. In addition, so far the food business is also one of the supporting efforts in other fields such as tourism which we cannot deny that West Sumatra is one of Indonesia's tourist visit areas [6]. This of course must be an important thing for us to know how entrepreneurial resilience in this field is in dealing with disasters that often occur in turn. Although there are many ways to create skills that are ready and able to withstand disasters, but what kind of resilience or resilience is owned by entrepreneurs has not been measured and even studied.

In a developed country such as Japan is a country that often faces disasters such as the earthquake and tsunami, but in the world order Japan is an area that is ready to face disasters, both for its citizens and for entrepreneurs. What about us, especially West Sumatra, which does not yet have clear procedures (fixed procedures) in the event of a disaster what special entrepreneurs should do for SMEs, whether to save themselves and how to save ongoing businesses and this is still far from entrepreneurial expectations. Currently West Sumatra is being hit by the COVID19 pandemic, but there are also no clear instructions on how entrepreneurs deal with this problem so that what happens is that the owners / entrepreneurs of SMEs only save both Human Resources / HR and other equipment according to their individual views [7].

Entrepreneurs in running their businesses face a dynamic, changing and sometimes unpredictable environment that can threaten the sustainability of their business. And this happens when a disaster occurs like now facing COVID19. They face great risks and an unpredictable future marked by internal and external uncertainty due to changes in technology, politics, social and culture [8]. In addition, entrepreneurs also face the threat of big competition in the market and limited financial resources [9]. In this case entrepreneurs must be able to adapt and adjust their behavior in facing various changes in order to survive and even find new business opportunities [10]. Entrepreneurs who are resilient (resilience) will be able to

adapt more quickly to environmental changes and can make the right decisions for the success of their business [11].

Entrepreneurial resilience is the ability to adapt to change, overcome difficulties and rise again and continue to make progress [12]. Resilient entrepreneurs are people who are likely to perform better when business opportunities arise or encounter difficulties [13]. Entrepreneurial resilience is an interaction between entrepreneurs and their environment in which a dynamic process occurs and develops through the knowledge obtained by entrepreneurs for help brands face an uncertain future with a positive attitude, develop creativity and optimism, through their available resources. Resilient entrepreneurs have the ability to mobilize the resources they have to deal with unfavorable situations [14]. Not many have researched the readiness of MSEs to face disasters. Previous research was carried out in 2013 regarding the readiness of communities in earthquake-prone areas to face disasters, the result is that people, especially those affected by natural disasters, are prepared to face disasters [15].

Entrepreneurial resilience is an element that can explain entrepreneurial behavior in overcoming difficulties, adapting to uncertainty and taking lessons from previous failures. Research related to entrepreneurial resilience is generally concerned with whether entrepreneurs with resilience are more successful in their business than those without resilience [16], or the ability to adapt to change and recovery in difficult situations. [17]. While there is still very limited research that explores what causes an entrepreneur to be resilient in facing business difficulties and uncertainties, especially in disaster-prone areas which have a greater risk. a study to find out what are the factors that influence the resilience of an entrepreneur in disaster-prone areas.

This study aims to determine the factors that influence the entrepreneurial resilience of SMEs in disaster-prone areas in West Sumatra.

II. METHODOLOGY

Calculating the entrepreneurial resilience index using a formula adopted from the consumer satisfaction index. This index measurement is done by calculating the average value of the level of expectation and current conditions for each question. In obtaining an index of entrepreneurial resilience, it is done by determining Importance Average (IA), Weighting Factor (WF), Performance Average (PA), Weighting score (WS), Weighting Average [18], in the following manner:

- The Importance Average of the j attribute is expressed as:

$$IA_j = \frac{\sum_{i=1}^{n} Y_{ij}}{n} \qquad (1)$$

where IA_j = Importance average for the j-attribute

Y_{ij} = score of answer the expectation to the j attribute for the i-respondent

n = number of research respondents

- Weighting Factor (WF), by dividing IA by the total number of average importance levels.

$$WF_j = \frac{IA_j}{\sum_{j=1}^{k} IA_j} \qquad (2)$$

WF_j = Weighting Factors for the j-attribute

- Performance Average (PA) or the average performance answer for each attribute. The average performance of the jth attribute, PA_j, is expressed as:

$$PA_j = \frac{\sum_{i=1}^{n} X_{ij}}{n} \qquad (3)$$

- Weighting score (WS), namely by multiplying the average value of the performance level with the weighting factor. The weighted factor for the j-attribute is:

$$WS_j = PA_j \times WF_j \qquad (4)$$

- Determine the Weighting Average, namely by adding the weighting score of all items. Weighting Average is defined as:

$$WA = \sum_{j=1}^{k} WS_j \qquad (5)$$

- Determining the entrepreneurial resilience index (IKW) by dividing the weighted average by the maximum scale of the questionnaire used in the study, then multiplying the result by 100%.

$$IKW = \frac{WA}{Maksimum\ scale} \times 100\% \qquad (6)$$

III. IMPORTANCE PERFORMANCE ANALYSIS

According to Santoro et al. [8] introduced Importance Performance Analysis (IPA) with the aim of measuring customer satisfaction with the products or services provided. This analysis involves linking the importance level of an attribute of a particular object to the reality or performance perceived by the user. Importance-Performance Analysis (IPA) is a business research technique primarily in marketing to test and suggest management strategies [19]. Although initially developed for marketing purposes, this technique has since expanded to various fields such as tourism, food business, education, health and banking [20]. In this study Importance Performance Analysis (IPA) is also used to measure entrepreneurial resilience by calculating the average level of expectations and the perceived reality of respondents. The first step for this analysis is to calculate the average level of

expectation and level of performance or reality for each attribute with the formula:

$$\bar{X}_k = \frac{\sum_{i=1}^{n} X_i}{n}$$

$$\bar{Y}_k = \frac{\sum_{i=1}^{n} Y_i}{n} \quad (7)$$

$\bar{X}_k$ = weight average performance level or reality attribute k-k

$\bar{Y}_k$ = weight average level of importance or expectation of the k-attribute

n = number of respondents / samples

The next step is to calculate the average level of expectation and level of reality performance for all attributes with the formula:

$$\bar{\bar{X}} = \frac{\sum_{k=1}^{p} \bar{X}_k}{p}$$

$$\bar{\bar{Y}} = \frac{\sum_{k=1}^{p} \bar{Y}_k}{p} \quad (8)$$

$\bar{\bar{X}}$ = the average value of the attribute performance

$\bar{\bar{Y}}$ = the average value of the attribute's importance

p = the total number of attributes

The value of $\bar{\bar{X}}$ intersects perpendicular to the vertical axis, which is the axis that reflects the performance or reality of the attribute (x), while the value of $\bar{\bar{Y}}$ crosses perpendicular to the horizontal axis, which is the axis that reflects the importance or expectations of the attribute (y). After obtaining the weight of the performance and importance of the attributes as well as the average value of the performance and the average importance of the attributes, then these values are plotted into a Cartesian diagram.

IV. RESULTS AND DISCUSSION

Importance Performance Analysis is an analysis that compares the expectations with what the respondents currently feel. This analysis is illustrated by a Cartesian diagram consisting of 4 quadrants. Quadrant I shows the attributes that are considered important by the respondent and at this time the respondent has felt the attributes belong to a high level. Quadrant II shows that the attribute is very important to the respondent, but the respondent does not feel that the attribute has a high value. Quadrant III shows that the attribute is not very important to the respondents and in fact they do not have these attributes in sufficient levels. Quadrant IV shows that the attribute is not so important to the respondent, but they have a

high ability to this attribute. The results of the Importance Performance Analysis in this study are shown in Figure 1.
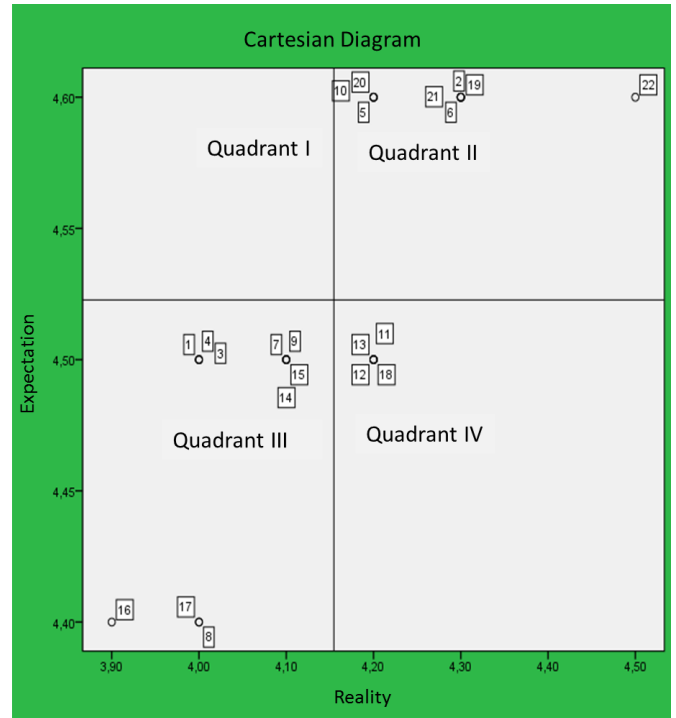

Fig. 1. Cartesian diagram.

Quadrant I in the Cartesian Diagram in Figure 1 is a condition where the respondents' high expectations for an attribute and the reality that the respondent feels are also high. In Quadrant I, there are eight attributes with high scores on Importance Average and Performance Average, namely the 22, 19, 2, 6, 21, 5, 20, 10. The 22nd attribute is sure God will help in dealing with problems with an Importance Average value of 4, 6 and the value of Performance Average is 4.5. This value is the highest value for all attributes, which means that food SMEs entrepreneurs in disaster-prone areas in West Sumatra are resilient because of the belief that God will help every problem they face. Food SME entrepreneurs consider it very important to believe that God will help every problem they face. And in reality, entrepreneurs have a very high belief that God will help every problem they face.

Next is the 19th attribute in running a business having clear objectives with an Importance Average of 4.6 and a Performance Average of 4.3. This condition indicates that the food SME entrepreneurs who are respondents in this study consider that in running a business having clear objectives is very important and entrepreneurs feel that they have clear objectives in running a business.

The second attribute is working hard to achieve the goal, with an Importance Average of 4.6 and a Performance Average of 4.3. This also shows that food SMEs entrepreneurs consider that working hard to achieve goals is very important in running

a business, on the other hand they feel that they have worked hard in running and advancing the business they are doing.

The attribute that is also included in Quadrant I is the 6th attribute, which is not easy to give up in the face of failure. The value for this attribute is the Importance Average of 4.6 and the Performance Average of 4.3. This result means that the food SMEs entrepreneurs consider that not easily giving up in the face of failure is very important and the respondents feel that they are not people who easily give up in the face of failure.

The next attribute that is included in quadrant I is the 21st attribute, that is, in any condition, it will still do the best, with an Importance Average value of 4.6 and a Performance Average value of 4.3. Respondents consider that doing their best in any condition is very important and respondents feel that they are still doing their best in any condition. This means that SMEs entrepreneurs who are respondents in this study continue to do their best in unfavourable conditions, stress and uncertainty in business.

Attribute to 5 also includes attributes that are in Quadrant I, which is not easy to give up, with an Importance Average value of 4.6 and a Performance Average value of 4.2. This means that in running a business, respondents consider the behaviour of not giving up easily is very important and in fact they feel that they have a personality that does not give up easily.

The 10th attribute is belief in achieving goals. This attribute is also in Quadrant I which has an Importance Average value of 4.6 and an Average Performance value of 4.2. In this attribute, the respondent considers that trust in achieving goals is very important for an entrepreneur and in reality in managing his business the respondent believes that he can achieve his goals.

The last attribute in Quadrant I is the 20th attribute, which is acting on belief. The value of this attribute is an Importance Average of 4.6 and a Performance Average of 4.2, which means that the respondent considers acting on belief to be important for an entrepreneur to be successful in running his business. In addition, respondents in fact feel that they act in running a business based on belief.

Quadrant II is a condition where the attribute according to the respondent is very important or the respondent's expectation of a situation is very high, but the reality that the respondent feels is very low or in other words, the condition that is felt now is far different from what was expected. In this study, based on the answers from respondents, it turns out that there are no attributes that fall into the Quadrant II group. Thus, there is no attribute according to the respondent that is very important but the perceived value is very low in reality.

Quadrant III is where the respondent thinks that the attribute is not important and the perceived reality shows a low value for that attribute. In this quadrant there are 10 attributes, namely attributes 16, 17, 8, 1, 4, 3, 7, 14, 15 and 9. The lowest value is in the 16th attribute with an Importance Average value of 4.4 and a Performance Average value of 3.9. The 16th attribute relates to being able to cope with bad feelings. This

means that according to respondents the ability to be able to deal with bad feelings is not very important for an entrepreneur in running his business.

The next attribute that is in Quadrant III in this study is the 17th attribute, which is related to feeling stronger after successfully dealing with stress. Respondents considered this attribute not important as indicated by the results of the Importance Average of 4.4 and the Performance Average of 4.0.

The 8th attribute is an attribute that is also in Quadrant III, which is about the courage to make difficult and unusual decisions with an Importance Average value of 4.4 and a Performance Average value of 4.0. This means that to be a resilient entrepreneur in a disaster-prone area, the courage to make difficult and unusual decisions is not the main thing according to the respondents.

In Quadrant III there are also 14 attributes related to feeling in control of life. This attribute is also not very important according to respondents as seen from the Importance Average value of 4.5 and the Performance Average value of 4.1. According to respondents, the ability to be able to control life is not an important thing to be a strong entrepreneur.

In addition to the attributes above, other attributes that are included in Quadrant III are attribute 1 (hardiness), attribute 4 (can think focused and clearly), attribute 3 (likes to lead in solving a problem), attribute 7 (likes challenges), attribute 9 (Dare to face the risk of a decision) and attribute 15 (know where to seek help when faced with an event). In this attribute the Importance Average value is 4.522 and the Performance Average value < 4.155 so that these attributes are in Quadrant III which shows low priority.

Quadrant IV is an attribute condition that is not important according to the respondent, but in reality, the respondent feels that he has a high ability in that attribute. In this quadrant there are 4 attributes, namely the 12th, 13th, 11th and 18th attributes. In the 12th attribute, it is a sense of pride in what has been achieved. This attribute obtains an Importance Average value of 4.5 and a Performance Average value of 4.2. This means that a sense of pride in the success achieved is actually not so important to a person's success in managing his business. However, entrepreneurs generally have a high sense of pride in their success.

In addition to the 12th attribute in quadrant IV, there is also an 18th attribute, namely seeing every event has a bright side. In this attribute, the Importance Average value is 4.5 and the Performance Average value is 4.2. Respondents considered that an attitude that could take lessons from an event was not something important for an entrepreneur, but generally they often take lessons in reality from every event they experience.

The 13th attribute is an attribute that is in quadrant IV where this attribute is related to the ability to build good relationships with relationships. This attribute obtains an Importance Average value of 4.5 and a Performance Average value of 4.2, which means that respondents, which generally

consist of micro and small business actors, perceive that the ability to build good relationships with relationships is not too important for the success of their business, but on the other hand in reality they are have the ability to build good relationships with their relationships.

Furthermore, in quadrant IV there is also the 11th attribute regarding adaptability (adjusting) to change. The value for this attribute is an Importance Average of 4.5 and a Performance Average of 4.2. This also means that the ability to adapt or adapt to change is not too important for food MSME entrepreneurs in making them strong entrepreneurs.

After knowing the positions of the various attributes in the Cartesian Diagram, then the entrepreneurial resilience index is calculated. In calculating the value of Entrepreneurial Resilience, we first look for the Weighting Factor, the Weighting Scores and the Weighting Average. To calculate the Weighting Factor using the following formula (2).

Meanwhile, to calculate the Weighting Scores, it is done by multiplying the average value of the performance or condition currently felt by the respondent with Weighting Factors, using the following formula (4).

Likewise, the Weighting Average can be obtained by adding up all the weighting scores from 22 attributes or by using the following formula (5).

After obtaining the results of the Weighting Average, then we can look for the value of the Entrepreneurial Resilience Index using the following formula (6).

From the calculation of Weighting Factors and Weighting Scores, the value of the Entrepreneurial Resilience Index is obtained as follows:

$$IKW = \frac{4,1354}{5} \ x \ 100\%$$

$$IKW = 82,7\%$$

The results of the MSME Entrepreneurial Resilience Index (IKW) for food in disaster-prone areas in West Sumatra are 82.7% which is in line with the results of the Cartesian Diagram, there are 8 attributes in Quadrant I which shows that the respondent considers these attributes very important and in addition, the respondents feel they have the abilities referred to in these attributes.

Entrepreneurial resilience is the ability of an entrepreneur to survive and develop his business in difficult conditions with which they can overcome various difficulties. Measuring entrepreneurial resilience is very important to know and ensure entrepreneurial sustainability, especially in areas with potential disasters [21]. However, research on entrepreneurial resilience in disaster-prone areas is still very limited [22].

This research was conducted on food SMEs in disaster-prone areas in West Sumatra. One of the objectives of this study is to measure and predict the resilience of food SMEs entrepreneurs in disaster-prone areas in West Sumatra. In this study we calculate the Importance Average, Performance Average, Weighting Factor, Weighting Scores, and also the Entrepreneurial Resilience Index in the absence of a disaster and predictions of resilience in the event of a disaster. Thus this study produces a prediction of entrepreneurial resilience index in the event of a disaster. This is a novelty in this research because so far there has been no research that produces predictions of entrepreneurial toughness.

V. Conclusion

From the research results, it can be concluded that the factors that influence entrepreneurial resilience in disaster-prone MSMEs in West Sumatra are attributes that are in quadrant I of the Cartesian diagram, namely the belief that God will help in dealing with problems, has a clear purpose in running a business, likes to work hard for achieve goals, do not easily give up in the face of failure, do your best in any condition, do not give up easily, believe you can achieve goals and act on faith.

References

[1] Linnenluecke, "Resilience in business and management research: a review of influential publications and a research agenda," International Journal of Management Review, vol. 19, no. 1, pp. 4-30, 2017.

[2] D. Long and N. Dong, "The effect of experience and innovativness and entrepreneurial oppotunities on the new venture emergence in China: The moderating effect of munificence," Journal of Entrepreneurship in Emerging Economies, vol. 9, no. 1, pp. 21-34, 2016.

[3] A.J. Zautra, J.S. Hall, and K.E. Murray, "Resilience: A new definition of health for people and communities," In J.W. Reich, A.J. Zautra, and J.S. Hall (Eds.), Handbook of adult resilience. New York: Guilford, 2010, pp. 3–29.

[4] F. Luthans and C.M.Y. Morgan, "Psychological Capital : An Evidence-Based Positive Approach," Review in Advance, vol. 17, no. 1, pp. 17-28, 2017.

[5] S. Korber and R.B. McNaughton, "Resilience and entrepreneurship: a systematic literature review," International Journal of Entrepreneurial Behavior & Research, vol. 24, no. 7, pp. 1129-1154, 2018.

[6] A. Kumar, A.K. Sing, and R.K. Yogo, "Entrepreneurship and Development: ICAR- Indian Institute of Natural Resins and Gums," 2015.

[7] S. Kraus, C. Richter, A. Brem, C.F. Cheng, and M.L. Chang, "Strategies for reward-based crowdfunding campaigns," Journal of Innovation & Knowledge, vol. 1, no. 1, pp. 13-23, 2016.

[8] G. Santoro, A. Messeni-Petruzzelli, and M. Del Giudice, "Searching for resilience: the impact of employee-level and entrepreneur-level resilience on firm performance in small family firms," Small Business Economics, pp. 1-17, 2020.

[9] A. Macko and T. Tyszka, "Entrepreneurship and risk talking," Applied Psychology, vol. 58, no. 3, pp. 469-487, 2009.

[10] J.-C. Ayala and G. Manzano, "The Resilience Of The Entrepreneur. Influence On The Success Of The Business. A Longitudinal Analysis," Journal Of Economic Psychology, no. 42, pp. 126–135, 2014.

[11] J. Lee and J. Wang, "Developing Entrepreneurial Resilience: Implications for Human Resource Development," European Journal of Training and Development, vol. 41, no. 6, pp. 519-539, 2017.

[12] M. Hayward, W.R. Forster, S.D. Sarasfathy, and B.L. Fredricson, "Beyond Hubris:how highly confident entrepreneur rebound to venture again," Journal of Business Venturing, vol. 25, no. 6, pp. 569-578, 2010.

[13] A. Bullough, M. Renko, and T. Myatt, "Danger zone entrepreneurs: The importance of resilience and self-efficacy for entrepreneurial intentions," Entrepreneurship Theory and Practice, vol. 38, no. 3, pp. 473–499, 2014.

[14] R.N. Bolton and J.H. Drew, "A Multistage model of cutomers' assesments of service quality and value," Journal of Customer Research, vol. 17, pp. 375-384, 1991.

[15] Emrizal, "Social Education of Earth Quake and Tsunami Disaster in West Sumatera," Social and Development Journal, vol. 32, no. 1, pp. 1-16, 2016.

[16] U. Sekaran, Research Method for Business, A Skill Building Approach, 4th edition. John Wiley and Sons, Inc., 2006.

[17] F. Luthans, C.M. Youssef-Morgan, and B. Avolio, Psychological Capital and Beyond. New York: Oxford Univ. Press, 2015.

[18] J. Abalo, J. Varela, and V. Manzano, "Importance value for importance-performance analysis: spreading out values derived from preference rankings," Journal Business Research, vol. 60, pp. 115-121, 2007.

[19] J.F. Hair, W.C. Black, B.J. Babin, and R.E. Anderson, Multivariate Data Analysis:a Global Perspective (7th Edition). London: Pearson, 2010.

[20] K.L. Henwood and N.F. Pidgeon, "Qualitative research and psychological theorising," In M. Hammersley (Ed.), Social Research: Philosophy, Politics and Practice. London: Sage, 1993.

[21] A. Bullough, M. Renko, and T. Myatt, "Danger zone entrepreneurs: The importance of resilience and self-efficacy for entrepreneurial intentions," Entrepreneurship Theory and Practice, vol. 38, no. 3, pp. 473–499, 2014.

[22] S. Dawley, A. Pike, and J. Tomaney, "Towards The Resilient Region?" Local Economy, vol. 25, no. 8, pp. 650–667, 2010.