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To cite this article: R R Novanda et al 2021 IOP Conf. Ser.: Earth Environ. Sci. 782 022026

View the article online for updates and enhancements.
The impact of entrepreneurial characteristics and innovation characteristics on entrepreneurial skills in Madura cattle farmers

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Abstract. The entrepreneurial characteristics of farmers have a significant effect on the performance of the beef cattle business. Entrepreneurial skills can encompass a broad range of various skill sets such as technical skills, leadership and business management skills and creative thinking. So, it is important to do further analysis whether entrepreneurial characteristics and innovation characteristics can affect the increase in entrepreneurial skills of Madura cattle farmers. This research was conducted on Madurese cattle farmers in the Sumenep area, Madura Islands. The number of respondents involved was 96 Madura Cattle farmers. The location selection and sampling were carried out by using a purposive method and a census of Madura cattle farmers. Collecting data using a questionnaire instrument with a measuring scale of 1 to 5. Data analysis using partial least squares is a model that connects a response variable with a set of predictor variables. Based on the results of data processing, it was found that Entrepreneur Characteristics and Innovation Characteristics has a significant effect on Entrepreneurial Skill.

1. Introduction

One of Indonesia's backbones for fulfilling beef consumption in Indonesia is cattle farmers. Until now, farmers of beef cattle have a small scale of operation, or are called "gurem" farmers. Indonesian farmers use local cattle breeds to help with land labour, recruitment, or long-term savings. Livestock business will help farming of food crops for Indonesian rural residents. So, the beef cattle fattening sector continues to run down and down until now.

Madura cattle are one of the most cultivated livestock businesses in Indonesia. Madura cattle are one of Indonesian cattle's most versatile species, this type of cow is very suitable for both quality beef and working cattle breeding, which is why it is a common livestock. Genetically, Madura cattle are tolerant of hot climates and poor habitats, and immune to various diseases. Madurese cattle’s characteristics are very uniform, physiologically Madurese cows have a smaller body size, shorter legs and stronger, body hair with a brick red colour, white hair on the abdomen and inner thighs and a half horn shape. Circular and curved from the tip of the horn to the forehead. In East Java, in particular on Madura Island, the contribution of Madura cattle as a commodity for the sale and purchase of beef cattle is well grown. Madura cattle farming’s contribution value is very high, touching 24 per cent of East Java demand for beef cattle. East Java's Central Statistics Agency noted that the population of this type of Indonesian
cattle continues to rise every year in 4 districts on the island of Madura. The results of the institution's data collection in 2014 reported that the cattle population on Madura Island reached 806,608 heads. Compared to 2012 data that only reached 787,424 heads, with the largest number in the Sumenep region reaching 360,000 heads.

The entrepreneurial characteristics of farmers have a significant effect on the performance of the beef cattle business. Entrepreneurial competence is a mediator between entrepreneurial characteristics and business performance. This means that the stronger the entrepreneurial characteristics, the competence of farmers will increase [1]. The importance of entrepreneurial characteristics in farmers must be built so that the business will be more successful in the future. According to [2], small-scale businesses can develop with high entrepreneurial characteristics, there are many things that must be done. First, business actors must strive to build and improve their entrepreneurial characteristics, and must also understand and implement survival management. Entrepreneurs need to take risks, have the ability to overcome difficulties, take initiatives, and achieve goals [3].

In addition to the entrepreneurial characteristics that need to be improved, Madura cattle farmers need to be able to innovate in the holding of the livestock sector. Innovations are being made to enhance the quality of the generated livestock [4]. It will increase income for Madurese cattle farmers with the invention done in Madura cattle farming [5]. According to [6], entrepreneurship’s characteristics are originality in creativity, risk-taking and leadership as well as maximum profit-orientation. The characteristics of innovation are how efforts are made to improve the community's economic ability, especially in terms of education, jobs, and monthly spending [7].

Entrepreneurial skills are closely related to the entrepreneurial characteristics of farmers and the characteristics of innovation. Entrepreneurial skills can encompass a broad range of various skill sets such as technical skills, leadership and business management skills and creative thinking. Entrepreneurial skills prove that farmers must be able to manage their business using appropriate entrepreneurial skills and in accordance with the characteristics of their area. Entrepreneurial skills are supported by a strong entrepreneurial character in achieving better profits than small scale businesses. Meanwhile, the characteristics of the innovation carried out are important to exist in forming entrepreneurial skills for Madura cattle farmers. So, it is important to do further analysis whether entrepreneurial characteristics and innovation characteristics can affect the increase in entrepreneurial skills of Madura cattle farmers.

2. Methodology
This research was conducted on Madurese cattle farmers in the Sumenep area, Madura Islands. The number of respondents involved was 96 Madura Cattle farmers. The location selection and sampling were carried out by using a purposive method and a census of Madura cattle farmers. Collecting data using a questionnaire instrument with a measuring scale of 1 to 5. Data analysis using partial least squares is a model that connects a response variable with a set of predictor variables. PLS regression is a method to overcome multicollinearity which can be obtained through multiple or straightforward regression by concluding the significance test. The significance test aims to select predictor variables for constructing PLS components and determine the number of PLS components formed. The purpose of PLS is to create features that can capture information from predictor variables to predict response variables [8,9].

2.1. Hypothesis testing
H1. Entrepreneurial characteristics have a significant effect on entrepreneurial skills.
H2. Innovation characteristics have a significant effect on entrepreneurial skills
2.2. Measurement model

Figure 1. Measurement model

2.3. Variable description

Table 1. Variable description

| Latent Variable                  | Manifest Variable |
|----------------------------------|-------------------|
| Commitment                       | KW1               |
| Drive to achieve                 | KW2               |
| Opportunity orientation          | KW3               |
| Initiative and responsibility    | KW4               |
| Persistent problem solving       | KW5               |
| Calculate risk taking Seeking Feedback | KW6         |
| Internal locus of control        | KW7               |
| Tolerance for ambiguity          | KW8               |
| Seeking Feedback                 | KW9               |
| Integrity and reliability        | KW10              |
| Tolerance for failure            | KW11              |
| High energy level                | KW12              |
| Creativity and innovativeness    | KW13              |
| Vision                           | KW14              |
| Self-confidence and optimism     | KW15              |
| Independence: independent personality | KW16          |

Entrepreneurship Characteristics

Innovation Characteristics

| Manifest Variable |
|-------------------|
| Relative advantage | KI1   |
| Compatibility     | KI2   |
| Complexity        | KI3   |
| Triability        | KI4   |
| Observability     | KI5   |
3. Results and discussion

3.1. General description of respondents
Madura cattle farmers have a majority age, i.e. between 43 and 61 years, or 50%. In running the Madura cattle breeding business this period is known as the middle age. Most farmers are male, this is because women spend more time on household care. So, Madura cattle farmers are more male. Women dedicate their energies to the breeding of Madura cows. Land ownership for forage production (HMT) with a feed maximum of 6 heads is relatively limited. This is because most farmers have a small-scale business. Outside jobs are 82 per cent outside the profession of government employees, vendors and owners of stalls. Many have farms that work on their own or become farm labourers.

3.2. Partial Least Square (PLS)

3.2.1. Convergent validity.

The value of the loading factor is an individual reflection variable having a norm of 0.5 to 0.7 [10]. So the manifest variable with a value below 0.7 needs to be omitted from the model. The loading factor which is below 0.5 is excluded from the model based on the results of the initial iteration test. Continue making the adjustment in the second iteration again by eliminating the manifest variable at a loading factor of less than 0.7 so that the final model obtained is shown in Figure 3.

Figure 2. Path diagram with initial loading factor

Figure 3. The final model path diagrams
3.2.2. Validity and reliability of constructs. In this study each construct's AVE value was above 0.5. Therefore, the model being tested did not have a convergent validity problem. The model has been deemed correct. Construction reliability is measured to calculate internal quality on the basis of composite reliability, and the value must be above 0.6. The overall results of the composite calculation of reliability are above the 0.6 or practical value, based on Table 3. That means data are reliable and capable of explaining the model.

| Table 2. Validity and reliability of constructs |
|-----------------------------------------------|
| Croch alpa | rho_A | Composite reliability | AVE |
|------------|-------|------------------------|-----|
| 0.789      | 0.814 | 0.904                  | 0.825|
| 0.544      | 0.565 | 0.812                  | 0.684|
| 0.765      | 0.766 | 0.895                  | 0.810|

Note: AVE > 0.5 = Valid
Composite Reliability > 0.6 = Reliable

3.2.3. Evaluate the inner model. First, the inner model evaluation can be done to calculate the GoF (Goodness of fit) value. The GoF value is 0.535 and is included in the large category, which means that the model is fit and feasible to use. Second, the coefficient evaluation that assesses the relationship between the latent variables in the model. Based on the results of data processing, Entrepreneur Characteristics has a positive relationship with Entrepreneurial Skills. Meanwhile, Innovation Characteristics and Entrepreneurial Skills have a negative relationship (Table 3).

| Table 3. Evaluation of coefficients |
|------------------------------------|
| The relationship between variables | Coefficient | The relationship |
| Entrepreneur Characteristics -> Entrepreneurial Skill | 0.264 | Positive |
| Innovation Characteristics -> Entrepreneurial Skill | -0.315 | Negative |

3.2.4. Hypothesis test. Based on the results of data processing, it was found that Entrepreneur Characteristics had a significant effect on Entrepreneurial Skill with a P Value of 0.004. Innovation Characteristics has a significant effect on Entrepreneurial Skill with a P Value of 0.000 (Table 4).

| Table 4. Hypothesis test |
|--------------------------|
| Standard D | T Statistics | P Values | Information |
| Entrepreneur Characteristics -> Entrepreneurial Skill | 0.092 | 2.871 | 0.004 | Significant |
| Innovation Characteristics -> Entrepreneurial Skill | 0.080 | 3.918 | 0.000 | Significant |

Note: P-value<0.05 = Significant

3.3. The impact of entrepreneurial characteristics and innovation characteristics on entrepreneurial skills in cattle farmers in Madura

Based on the research findings, the Entrepreneur characteristics were found to have a major impact on Entrepreneurial Skills. Innovation characteristics can have a major effect on entrepreneurial skills. Each indicator that has an indirect influence on entrepreneurial skills should explain the two latent variables, so that the section below will describe how each indicator and the latent variable has a major impact on entrepreneurial skill [11].
3.3.1. The influence of entrepreneur characteristics on entrepreneurial skills. Entrepreneurial characteristics reflect their ability in entrepreneurship. Based on the results of the study, it was found that entrepreneurial characteristics could affect the ability of entrepreneurs in running their business with a P-Value of 0.0004. Entrepreneurial characteristics that can reflect entrepreneurial skills are calculated risk-taking and Internal locus of control.

Figure 4. Models with t-test values

Calculate risk-taking is an activity carried out to measure the risk of loss that will be obtained when running a business. This is very influential in the Entrepreneurial Skills of a farmer. As we know that the beef cattle business in Indonesia has a huge risk. An entrepreneur always tries to minimize financial risk [12]. However, taking risks also requires explicit calculations so as not to experience huge losses. Entrepreneurs need to take risks, have the ability to overcome difficulties, take initiatives, and achieve goals [3]. Especially in some seasons, the fluctuating price of cattle can be a considerable risk for farmers where the price of cattle in farmers does not provide financial benefits to Madurese cattle farmers. The main factor that can affect the loss of sales of cattle is the cost factor, where the highest production cost is the cost of feed [13]. To deal with these risks, the ability of Madura cattle farmers will continue to increase. Risks will make farmers more careful and find a way out to avoid losses. Therefore, the characteristics of calculate risk-taking can improve Entrepreneurial Skills.

Internal locus control occurs when someone believes that what is happening is always under their control—taking responsible participation in every decision making based on one's self-awareness. So that this is very influential on Entrepreneurial Skills, where every entrepreneurial activity is always carried out with reasonable control from within the entrepreneur, likewise, in carrying out livestock business activities, farmers must have control of themselves which reflects Entrepreneurial Skills. Internal locus control can form the ability to make decisions in entrepreneurship [14]. Good decision making will be realized if you have Entrepreneurial Skills who are involved in the cultivation of Madura cattle. Likewise with farmer creativity, with internal locus control, creativity will also be formed in entrepreneurship [15].

3.3.2. The influence of innovation characteristics on entrepreneurial skills. The characteristics of innovation really reflect their entrepreneurial skills. Based on the study results, it has been found that innovation characteristics may affect entrepreneurs' ability to run their business with a P-value of 0.0000. Complexity and Tribality are innovation characteristics which reflect entrepreneurial skills.

Complexity is the level of difficulty in understanding and using innovation for farmers. Complexity is the degree to which innovation is perceived as challenging to understand and use. Certain innovations are easily understood and used by adopters, and some are the opposite or difficult for adopters to understand and use. The easier it is to be understood and understood by the adopters, the faster an innovation can be adopted. But if innovation is difficult to understand and challenging for adopters to understand, then the more difficult it is for an innovation to be adopted. So that innovation in Madura
cattle cultivation is very influential on Entrepreneurial Skills. If the innovation is too complex and complicated, then it needs good Entrepreneurial Skills to support the achievement of the innovation.

Tribality in innovation is the degree to which an innovation can be tested within certain limits. Innovation in a culture that can be tested directly is closely related to the ability of farmers to absorb this information. The existence of new innovations that cannot be tested will make it difficult for farmers. So that the ability of innovation that can be tested can affect the entrepreneurial skills of farmers in adopting new innovations later.

4. Conclusions
Based on the results of data processing, it was found that Entrepreneur Characteristics had a significant effect on Entrepreneurial Skill with a P Value of 0.004. Entrepreneurial characteristics reflect their ability in entrepreneurship. Based on the results of the study, it was found that entrepreneurial characteristics could affect the ability of entrepreneurs in running their business with a P-Value of 0.0004. Entrepreneurial characteristics that can reflect entrepreneurial skills are calculated risk-taking and Internal locus of control.

Innovation Characteristics has a significant effect on Entrepreneurial Skill with a P Value of 0.000. The characteristics of innovation really reflect their entrepreneurial skills. Based on the study results, it has been found that innovation characteristics may affect entrepreneurs' ability to run their business with a P-value of 0.0000. Complexity and Tribality are innovation characteristics which reflect entrepreneurial skills.

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