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The influence of entrepreneurship characteristics and competencies on farmers' entrepreneurial intentions in the border region of North Borneo

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Abstract. The agribusiness sector as the basis for community economic development in Indonesia requires a policy and program in developing entrepreneurship-based farmers' resources. Strengthening entrepreneurial characteristics and competencies is an important variable in shaping farmer entrepreneurial intentions. This research was conducted in Nunukan, Sebatik Island, which is a border area between Indonesia and Malaysia. This study aims to examine the influence of entrepreneurship characteristics and entrepreneurship competencies on entrepreneurial intentions. The population in this study were farmers in Sebatik as many as 200 respondents. Data collection was conducted using a survey with questionnaires and interviews. Testing the data analysis model by using Structural Equations Models or SEM which was assisted by AMOS 21 program. The results showed that entrepreneurial competence negatively affects entrepreneurial intentions with a coefficient value of -0.472 with a significance value on 0,29 which means significant at 0.005. Likewise, the variables of entrepreneurial characteristics have a positive effect on entrepreneurial intentions with a coefficient value of 0.789 with a significance value on 0.12 which means significant at 0.005.

1. Introduction

The arrangement of border area development is currently one of the most important strategic issues in the national's short, medium and long-term development plans. The development of the border region has a close relationship with the vision of the national development mission, as a manifestation of a country's sovereignty. The border area in Nunukan, especially Sebatik Island is a border area that is directly adjacent to Malaysia. The very strategic geographical position and the magnitude of the potential of agriculture-based natural resources in the broad sense of Sebatik has made the border region a "new economic growth area".

There are five concepts for structuring border areas, one of which is the Agropolitan Area Model, where the implementation of this model is preceded by an agreement between States to utilize cross-country agricultural land [1]. Agropolitan implements a management system in an area that has been designated as the center of agricultural sector-based economic growth (agribusiness/agroindustry). In accordance with the theory of gravity, the development of the growth center (Agropolitan) will encourage the growth of agricultural activities in the surrounding area (hinterland), both in the form of; (a) upstream agribusiness subsector; in the form of providing nurseries, agricultural machinery and

equipment as well as fertilizers, pesticides and livestock medicines/vaccines; (b) downstream agribusiness subsector; in the form of agricultural processing industries and trading businesses; and (c) the farming sector, including food crops, horticulture, plantations, fisheries, livestock and forestry. Similarly, other related sectors (off farm agribusiness) in the region will also experience development, such as credit and transportation business. The availability of the main facilities in the form of transportation infrastructure is very necessary, to create connectivity between the agropolitan area and the hinterland region.

The agricultural development approach using a comprehensive concept of entrepreneurship is expected to be able to answer various kinds of problems that exist in the border region, especially the problem of socio-economic disparity with the Malaysia. Entrepreneurship or entrepreneurs are people who seek profitable opportunities and take the necessary risks to plan and manage a business [2]. Entrepreneurs are people who create new businesses in the midst of risks and uncertainties to gain profits and growth by identifying opportunities and managing available resources [3]. Entrepreneurship is an ability in terms of creating business activities and entrepreneurship has a role in economic development through increasing output and per capita income, as well as causing changes in business structure and society [4]. Entrepreneurs are people who have the ability to see and assess business opportunities, collect the resources needed to take advantage of them and take appropriate actions to ensure success [5].

Entrepreneurship characteristics according to [6] referred to in [7] are as follows: (1) Confidence, (2) Task-oriented and results, (3) Risk takers, (4) Leadership, (5) Originality, and (6) Oriented to the future. [8] examined the analysis of the influence of entrepreneurship characteristics on entrepreneurial performance in Small and Medium Enterprises (SMEs) agroindustry in Bogor Regency using SEM method which shows that entrepreneurial characteristics significantly and positively influence business performance, while [9] states that entrepreneurship characteristics does not have a real and positive effect on the performance of dairy farmers. Entrepreneurship characteristics significantly and positively influence business performance when linked together with entrepreneurial competencies as a whole. The higher the entrepreneurship characteristics and entrepreneurship competencies, the higher the business performance produced by dairy farmers in Kania KTTSP. This shows that the characteristics of entrepreneurship and entrepreneurial competence become an inseparable unity to improve the performance of the breeder's business.

Entrepreneurship competencies is based on specific knowledge, motives, traits, self-image, social roles and skills in creating a new business, survival or business growth [10]. Entrepreneurship competencies can also be interpreted as knowledge, attitudes, and skills that are connected to one another, which entrepreneurs need to be trained and developed to be able to produce the best performance in managing their business. Entrepreneurship competencies is measured by indicators of managerial skills (managerial skills), conceptual abilities (conceptual skills), social skills (social skills), ability to make decisions (decision making skills), and the ability to manage time (time managerial skills) [11]. The research conducted by [12], regarding entrepreneurship competencies with the success of Pujon dairy farmers shows that entrepreneurial competence has a positive and significant effect on business success. Previous research [13, 14] showed that there is a positive influence between entrepreneurship competencies and business performance, which means that the higher the entrepreneurship competencies will have a positive effect on business performance.

The desire of individuals to conduct entrepreneurial actions by creating new products through business opportunities and risk taking is a manifestation of entrepreneurial intentions. Intention as a behavioral disposition, which until there is the right time and opportunity will be realized in the form of action [15]. Intention is the sincerity of the intention of someone to do an action or bring up a certain behavior [16]. Intention shows how hard someone dares to try [17]. Entrepreneurial intention can be interpreted as the first step of a process of establishing a business that is generally long-term [18]. Entrepreneurial intentions are the tendency of individual desires to take entrepreneurial actions by creating new products through risk-taking business [19]. Entrepreneurial intention is a tendency for a

person to start entrepreneurial activities in the future[20]. This study aims to determine the effect of characteristics, subjective norms and entrepreneurial competencies on farmers' entrepreneurial intentions in border areas.

2. Methods

This research is an explanatory research that examines the influence of exogenous (free) variables, namely the characteristics of entrepreneurship and entrepreneurship management competencies with endogenous variables (bound), namely intelligence intentions. This research was conducted in Nunukan, Sebatik Island, which is a border area with Malaysia.

2.1. Population and sample

The population in this study were banana farmers, oil palm farmers and cocoa farmers. Samples are a portion of a population that has relatively the same characteristics and is considered to represent a population. The number of samples taken is 180 farmers, this is based on the opinion of Hair in [21] that the appropriate sample size for SEM is 100-200 samples.

2.2. Data analysis method

Data analysis in the study using Structural Equation Modeling (SEM) analysis assisted by using the AMOS statistical program version 21.0. In testing the data, a suitability test for the model developed must be conducted. Where the model conformity test must meet the required Goodness of Fit testing indicators, as in table 1.

Table 1. Goodness of fit criteria evaluation models

Size Index Criteria	Reference Value
χ^2 (Chi Square Statistic)	Gets Smaller
Probability	≥ 0.05
CMIN/DF	≤ 2.00
GFI	≥ 0.90
AGFI	≥ 0.90
RMSEA	≤ 0.08
TLI	≥ 0.90
CFI	≥ 0.90

Explanation of each of the Goodness of Fit criteria [22], as follows:

a. χ^2 (*Chi Square Statistics*) and probability the fundamental test tool for measuring *overall fit* is the *likelihood ratio of chi square statistics*. The model is categorized as good if it has *chi square = 0* meaning there is no difference. The recommended level of acceptance is if $p \geq 0.05$; which means that the actual input matrix with the input matrix that is predicted is not statistically different.

b. CMIN/DF (*Normed Chi Square*) is a measure obtained from the *chi-square* value divided by the degree of freedom. The recommended value for accepting the suitability of a model is a value of $\leq$ with 2.00.

c. GFI (*Goodness of Fit Index*) used to calculate the weighted proportion of the variance in the sample covariance matrix described by the estimated population covariance matrix. This index reflects the overall suitability of the model calculated from the predicted residual squared model compared to the actual data. The *Goodness of Fit Index* value is usually from 0 to 1. A better value approaching 1 indicates that the tested model has good suitability. The GFI value is said to be good ≥ 0.90.

d. AGFI (*Adjusted GFI*) is the development of GFI that is adjusted to *the degree of freedom* available to test whether or not the model is accepted. The recommended level of acceptance is if it has a value $\geq$ 0.90.

e. RMSEA (*Root Mean Square Error of Approximation*) indicates the expected *goodness of fit* if the model is estimated in the population. The RMSEA value ≤ 0.08 is an index for accepting a model that shows a close fit of a model based on *degree of freedom*. RMSEA is a measurement index that is not affected by the size of the sample so that this index is usually used to measure the fit of the model in the number of large samples.

f. TLI (*Tucker-Lewis Index*) is an alternative *incremental fit index* that compares a model tested against a baseline model. The recommended value as a reference for the receipt of a model is ≥ 0.9 and the value close to 1 indicates *a very good fit*. TLI is a fit index that is less affected by sample size.

g. CFI (*Comparative Fit Index*) also known as the *Bentler Comparative Index*. CFI is *an incremental* suitability index which also compares the tested models with *null models*. This index is said to be good for measuring the suitability of a model because it is not influenced by the sample size. An index that indicates that the model tested has a good suitability is if the CFI is ≥ 0.9.

3. Results and discussions

Figure 1 is the first stage of the confirmatory factor analysis model that shows the model of structural equations influencing characteristics, subjective norms and entrepreneurial competencies that have not met the value criteria required in the fit model. The structural equation fit model is shown in Figure 2, which is the second stage of the confirmatory factor analysis model where the resulting value meets the required criteria. Test results from the first and second stages of confirmatory factor analysis are presented in Table 3 and Table 4.
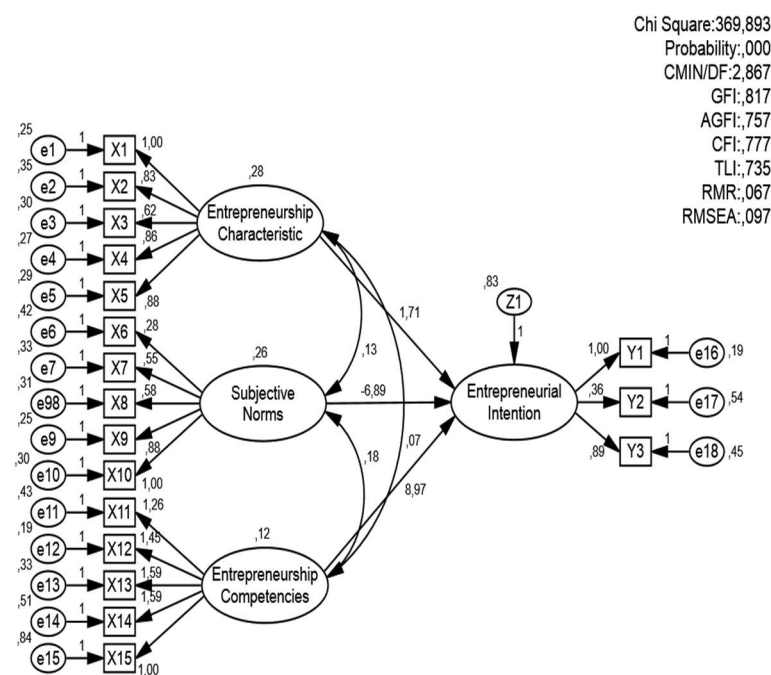

Figure 1. Model 1 CFA structural equations effects of characteristics, subjective norms and entrepreneurial intention.
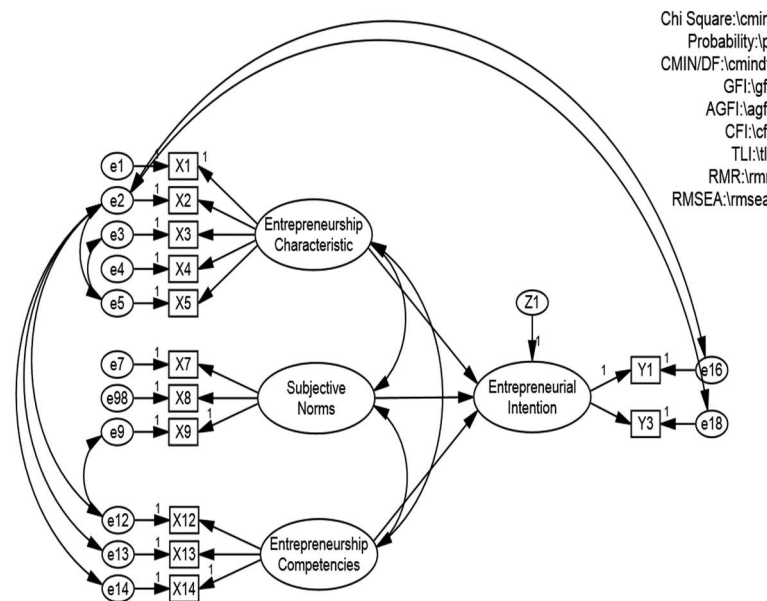
Figure 2. Model 2 CFA structural equations effects of characteristics, subjective norms and entrepreneurial intention.

3.1. Normality test

The data obtained is done by normality test first. The estimation with Maximum Likelihood requires that the tested variable must meet the assumption of multivariate normality. Data is said to be normal if multivariate c.r (critical ratio) meets the requirements - $2.58 < c.r < 2.58$. The results of the normality test obtained multivariate c.r value of 0.166, which means the data fulfilled the requirements for further analysis. The results of normality testing can be seen in table 2.

Table 2. Assessment of normality

Variable	Min	Max	Skew	C.R.	Kurtosis	C.R.
X9	2.000	5.000	0.198	1.143	-0.130	-0.374
X14	1.000	5.000	0.294	1.700	-0.585	-1.688
Y3	1.000	5.000	-0.412	-2.381	0.050	0.145
X5	2.000	5.000	0.088	0.507	-0.273	-0.789
X4	2.000	5.000	-0.149	-.861	-0.225	-0.650
X3	2.000	5.000	0.238	1.372	0.285	0.824
X8	2.000	5.000	0.255	1.472	0.036	0.105
X13	1.000	5.000	0.203	1.171	-0.035	-0.101
X12	2.000	5.000	0.668	3.858	0.050	0.144
X2	1.000	5.000	-0.477	-2.756	0.027	0.078
X7	2.000	5.000	-0.076	-0.437	-0.221	-0.638
Y1	1.000	5.000	-0.418	-2.415	-0.021	-0.062
X1	2.000	5.000	0.019	0.109	-0.275	-0.795
Multivariate					-0.465	-0.166

3.2. Evaluation of multicollinearity and singularity

The data were seen whether there are multicollinearity and singularity. Data containing multicollinearity and singularity can be seen from the matric determinant sample covariance values which are very small or close to zero. From the results of data processing, the value of the covariance matrix determinant sample is 736102930.741 which means that the data in this study can be analyzed further.

3.3. Model suitability test

The results of the suitability test model used were suggested by [23], namely Chi-square, Probability, CMIN / DF, GFI, AGFI, CFI, TLI, RMR and RMSEA. As table 2. Table 2 contained the results of data processing analysis of structural equation model (SEM) model of the relationship between entrepreneurial characteristic variables, entrepreneurial competence and entrepreneurial intentions that form a research model and meet established goodness of fit criteria. The probability value in this analysis shows a value above the significance limit of 0.448 or above 0.05, which means that this value indicates that the null hypothesis that there is no difference between the sample covariance matrix and estimated population covariance matrix cannot be rejected. Model suitability values can be seen in table 3 and in table 4, where in table 3 is the value of the Goodness of Fit initial measurement model before modification and in table 4 is the value of the Goodness of Fit measurement model after modification. Table 4 shows that the fit-built model is in accordance with the requirements and can provide sufficient confirmation of the undimensionality hypothesis.

3.4. Convergent validity test

Convergent validity tests are obtained from measurement model data, this test is carried out to determine the validity of each estimated indicator, by measuring the dimensions of the concepts tested in the study. If each indicator has a critical ratio that is greater than twice the standard error (standard error), indicating that the indicator has validity measured what should be measured in the model presented [24].

Table 3. Results of the goodness of fit measurement model before modification

Index	Cut off Value	Result	Model Evaluation
Chi Square	Close to 0	369.893	Marginal*
Probability	≥ 0.05	0.000	Marginal
CMIN/DF	≤ 2.00	2.867	Marginal
GFI	≥ 0.90	0.817	Marginal
AGFI	≥ 0.90	0.757	Marginal
CFI	≥ 0.90	0.777	Marginal
TLI	≥ 0.90	0.735	Marginal
RMR	≤ 0.05	0.067	Marginal
RMSEA	≤ 0.08	0.097	Marginal

Table 4. Result of the goodness of fit measurement model after modification

Index	Cut off Value	Result	Model Evaluation
Chi Square	Close to 0	51.662	Good**
Probability	≥ 0.05	0.448	Good
CMIN/DF	≤ 2.00	1.013	Good
GFI	≥ 0.90	0.961	Good
AGFI	≥ 0.90	0.931	Good
CFI	≥ 0.90	0.999	Good
TLI	≥ 0.90	0.999	Good
RMR	≤ 0.05	0.031	Good
RMSEA	≤ 0.08	0.008	Good

* Marginal, a value that does not meet the model fit criteria specified in SEM modeling.
** Good, a value that meets the model fit criteria specified in SEM modeling.

Regression weight is a reference for hypothesis testing. Hypothesis 1, because the value of t-value or C.R is 2.889>1.96 or P value of 0.004 <0.05, then H0 is rejected, which means that subjective norms have a significant effect on entrepreneurial intention with a coefficient of 0.703. Hypothesis 2, because the value of t-value or C.R is -3.865> 1.96 or the value of P ***, H0 is rejected, which means that entrepreneurship competencies have a significant effect on entrepreneurial intention with a coefficient

of -0.88. The third hypothesis, because the t-value or C.R is 3.635> 1.96 or P *** value, Ho is rejected, which means that characteristic entrepreneurship has a significant effect on entrepreneurial intention with a coefficient value of 0.462.

Table 5. Regression weights

Model			Estimate	S.E.	C.R.	P
Intention_Entrepreneurial	<---	Norm_Subjective	1.601	0.554	2.889	0.004
Intention_Entrepreneurial	<---	Competencies_Entrepreneurship	-1.192	0.308	-3.865	***
Intention_Entrepreneurial	<---	Characteristic_Entrepreneurship	0.638	0.176	3.635	***

The regression weight value in table 5 shows that the critical ratio has a value greater than twice the standard error, which means that all items in the study are valid for each research variable. The regression weight values for each construct are shown in table 6.

Table 6. Standardized regression weights

Model			Estimate
Intention_Entrepreneurial	<---	Norm_Subjective	0.703
Intention_Entrepreneurial	<---	Competencies_Entrepreneurship	-0.881
Intention-Entrepreneurial	<---	Characteristic_Entrepreneurship	0.462

3.5. Direct effects, indirect effects and total variable effects
Standardized direct effect, is the amount of influence of each standardized indirect effect and the standardized total effect shown in Table 7, Table 8 and Table 9.

Table 7. Standardized direct effects

	Competencies	Norm_Subjective	Characteristic
Intention_Entrepreneurial	-0.881	0.708	0.462

Table 8. Standardized indirect effects

	Competencies	Norm_Subjective	Characteristic
Intention_Entrepreneurial	0.000	0.000	0.000

Table 9. Standardized total effects

	Competencies	Norm_Subjective	Characteristic
Intention_Entrepreneurial	-0.881	0.703	0.462

The direct effect of entrepreneurial competence on entrepreneurial intentions is -0.881, the direct effect of subjective norms on entrepreneurial intentions is 0.708, and the direct effect of entrepreneurial characteristics on entrepreneurial intentions is 0.462. The indirect effect of entrepreneurial competence on entrepreneurial intentions is 0,000, the indirect effects of subjective factors on entrepreneurial intentions are 0,000 and the indirect effects of entrepreneurial characteristics on entrepreneurial intentions are 0,000. While the total effect of entrepreneurial competence on intention is -0.881, the total effect of subjective norms on entrepreneurial intention is 0.703 and the total effect of entrepreneurial characteristics on entrepreneurial intentions is 0.462 (lagging effect + indirect effect).

4. Conclusion

Based on the results of the study, structural equation models designed according to the goodness of fit meet the feasibility of the model which means it is in accordance with empirical conditions. According to the planned research model, the relationship between entrepreneurial characteristic variables and

entrepreneurial competencies was found to be very strong in forming the entrepreneurial intention variable. There is a significant influence between entrepreneurial characteristic variables and entrepreneurial competency variables on entrepreneurial intention variables.

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