Exploratory and Confirmatory Factor Analyses of Entrepreneurial Intention for Bidikmisi scholarship Students in Jambi University

¹Firman, ²Robin Pratama, ³Friscilla Wulan Tersta

ABSTRACT--This study examined the validity and reliability of the instrument to determine Factors Affecting Entrepreneurial Intention Among Jambi University students, the recipients of Bidikmisi Scholarship. A total of 250 students participated, selected using cluster random sampling. Survey design was used to investigate the structure of Entrepreneurial Intention factors. Quantitative data were analyzed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) using SPSS 23 and AMOS 23. EFA revealed a similar structure from previous studies and this study. The CFA approach verified the questionnaire concerning Factors Affecting Entrepreneurial Intention was satisfying for the context of students at Jambi University. This work concludes that factors Affecting Entrepreneurial Intention of Indonesian students has a four-factor structure. These findings imply the greater importance of validating and confirming the structure of students' Entrepreneurial Intention relative to translating a construct into a different language.

Keyword -- Factor Analysis, Entrepreneurial Intention, Bidikmisi Scholarship, Validity and Reliability

I. INTRODUCTION

The development of entrepreneurship in the last few years has indeed become an issue of economic institutions starting from the regional, national and international levels. This is due to the belief that entrepreneurship is the key to a number of desired social outcomes, including economic growth, lower unemployment rate, and the drive for technological modernization that contribute to innovation and reducing product replication (Baumol & Strom, 2007).

Entrepreneurship has become an international issue regarding the development of quality and increasing the number of entrepreneurs in each country because entrepreneurship has an important role for the advancement of a country, so the spirit of entrepreneurship needs to be fostered in Indonesian students as prospective university graduates and young people who will help continue the course of the wheels of the Indonesian economy, in order to become excellent human resources. According to Zimmerer (2012) one of the factors driving the growth of entrepreneurship in a country lies in the role of universities in organizing entrepreneurship education. The university is responsible for educating and providing entrepreneurial skills to its graduates and providing motivation to be dare to choose entrepreneurship as their career. The university needs to apply a concrete pattern of entrepreneurship learning based on empirical input to equip students with meaningful knowledge in order to encourage students' enthusiasm to become entrepreneurs.

¹ Faculty of Teacher Training and Education, Jambi University, Indonesia, firman.fkip@unja.ac.id.

²Faculty of Teacher Training and Education, Jambi University, Indonesia, robin.pratama@gmail.com.

³ Faculty of Humanities, Jambi University, Indonesia, friscillawulant@unja.ac.id.

Jambi University as a higher education institution in Jambi is expected to be able to create young entrepreneurs. In accordance with the vision of Jambi University, which is A World Class Entrepreneurship University. Jambi University also included entrepreneurship courses in each of its faculties where they were taught about the foundation of entrepreneurial theory, forming entrepreneurial attitudes and the mindset of an entrepreneur. Although the spirit of an entrepreneur is obtained from birth as a talent. However, if it is not honed through learning and motivated in the learning process, it will certainly not develop, and to sharpen the interests and abilities, entrepreneurs need to be developed through studying and learning processes (Paulina & Wardoyo, 2012). It is hoped that UNJA students can become entrepreneurs who can help the government and the wider community in providing employment in the future.

Intention or intention shows how hard someone dares to try and the planned effort someone to do (Wijaya, 2008). Entrepreneurial Intention's is a process of finding information to achieve business goals Katz & Shepherd, 2003). The greater one's entrepreneurial intention, the more likely it is to achieve its business goals.

The existing literatures show that comparative research is needed to examine whether the instruments received by Entrepreneurial Intention in general are truly universal. Empirical studies also show that the reliability of the Entrepreneurial Intention instrument is different, in terms of its context, for each country. The current research aims to determine the validity and reliability of the instrument of objectives adopted from Liñán & Chen (2009). Universal structures in the context of Indonesia are analyzed by conducting EFA and confirmatory factor analysis (CFA).

Research Questions

1. Is the structure of the four-factor related to the Entrepreneurial Intention instrument optimally compatible with the data in the context of Jambi University (Indonesia)?

2. Is the Entrepreneurial Intention instrument reliable and valid for measuring student entrepreneurial intention in the context of Jambi University (Indonesia)?

3. Does the perception of Jambi University students (Bidikmisi scholarship recipients) differ in the four dimensions of Entrepreneurial Intention?

II. LITERATURE REVIEW

Entrepreneurial intention can be interpreted as the first step of a process of establishing a business that is generally long-term (Lee & Wong, 2004). According to Krueger (1993), entrepreneurial intention reflects one's commitment to starting a new business and is a central issue that needs to be considered in understanding the entrepreneurial process of establishing a new business. Entrepreneurship intention has recently begun to receive attention for research because it is believed that an intention related to behavior has proven to be a reflection of actual behavior. To explore the relationship between EI and its predecessors, researchers have introduced several theoretical models of EI. The theoretical models are the Shapero (1984) and Ajzen (1991) models because these two models present the basic cognitive relationship of EI to entrepreneurial actions.

In general, the Shapero model (Shapero and Sokol 1982) describes the entrepreneurial event model (EEM) and is used to describe entrepreneurial processes in which intention is the main matter (Bird, 1988). This model

considers business creation as an event that can be explained by interactions between initiative, ability, management, relative autonomy and risk. The model shows that EI comes from perceptions of worthiness and desires influenced by cultural and social contexts. Based on the assumption that human behavior has weaknesses that can be interrupted or replaced by something, Shapero argues that the desire and worthiness determine the relative credibility of alternative behavior, and some parts of EI arise from exposure to entrepreneurial activities (Shapero and Sokol 1982).

The second model is the theory of planned behavior (TPB) (Ajzen, 1991) it is believed that factors such as attitudes, subjective norms will shape one's intention and subsequently will directly influence behavior. Behavioral theory, entrepreneurial intention indicates that the efforts made by a person will make them do the entrepreneurial behavior. So, this captures three factors, or antecedents, influencing behavior (Ajzen, 1991; Liñán, 2004) namely:

• Personal attitude (PA) refers to the extent to which individuals hold positive or negative personal judgments about being an entrepreneur (Ajzen, 2001). This includes not only affective (I like it, it's interesting), but also evaluative considerations (it has advantages).

• Subjective norm (SN) measures social pressures that are felt to carry out - or not to perform - entrepreneurial behavior. Specifically, it will refer to the perception that "reference people" will approve the decision to become an entrepreneur, or not (Ajzen, 2001).

• Perceived behavioral control (PBC) is defined as the perception of the ease or difficulty of being an entrepreneur. Therefore, this concept is very similar with self efficacy (SE) (Bandura, 1997), and for perceived worthiness (Shapero & Sokol, 1982). All three concepts refer to the notion of capacity related to the fulfillment of corporate creation by behaviour [penciptaan oleh perusahaan perilaku; *saya merasa aneh dengan frasa ini, jadi saya terjemahkan menurut feeling saya*]. However, recent work has emphasized the differences between PBC and SE (Ajzen, 2002). PBC not only includes feelings of being able, but also perceptions about behavioral control.

III. METHOD

Participants and Procedure

This study follows a survey research design (Cohen, Manion, & Morrison, 2002; Creswell, 2012; Fitzgerald, Rumrill, & Schenker, 2004; Fraenkel & Wallen, 2009). The cross-sectional survey research design is a procedure in quantitative research that provides the opportunity to administer the survey to samples or the entire population to describe the attitudes, opinions, behavior or characteristics of the population (Creswell, 2014). The current research population consists of students from one of the universities in Indonesia (Jambi University), namely students receiving Bidikmisi scholarships. This research was conducted by selecting individuals in groups, cluster random sampling was suitable for use (Fraenkel & Wallen, 2009). The participants consisted of 237 students receiving Bidikmisi scholarships. Female participants were 156 (65.9%) and male participants were 55 (34.1%). Respondents aged 18 to 22 years old. Students targeted in this study include those from the first year to the fourth year. However, this research only involved second and third year students because first year students were still not familiar with entrepreneurship and fourth year students were difficult to find because they have almost completed their final thesis.

IV. MEASURES

The Indonesian translation of the original questionnaire was used in this study to confirm whether the translation was correct. The researchers translated the questionnaire from English before the items were used in the pilot study. Then, the questionnaire items were translated back into Indonesian and consulted with three bilingual linguists. The questionnaire used was adapted from Liñán & Chen (2009) which consisted of four sub constructs classified as Personal Attitude (PA), Subjective Norm (SN), Perceived Behavioral Control (PBC), Perceived Entrepreneurial Intention (PEI). Each construct and each sub-construct has three to five statement items. The questionnaire consisted of 18 questions measured on a Likert scale with a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

V. DATA ANALYSIS

This stage of study aims to test the validity and reliability of the Entrepreneurial Intention (EI) instrument and to determine the suitability of Entrepreneurial Intention (EI) for students as research respondents. A total of 237 respondents participated, selected by using cluster random sampling. The survey design was used to investigate the structure of the Entrepreneurial Intention (EI) factor. To see the results of the validity of the instrument with quantitative data, the data were analyzed using exploratory factor analysis (EFA) employing SPSS 23.0. Before further analysis, this study also considered many issues related to data screening, such as handling missing data, multicollinearity and identifying outlier data using The Statistical Package Program for Social Sciences (SPSS) 23.0. Outliers were identified by the plot box for each sub-construction. For univariate normality of constructs in the measurement model for latent variables, the benchmark was that the skewness and kurtosis values for each item are in the range of -1.96 to +1.96 at a significance level of 0.05 (Hair, Black, Babin, & Anderson , 2010). Multicollinearity was recorded if the correlation of correlation matrix is more than 0.90 (Kline, 2005). Furthermore, the data in this study were analyzed by using EFA (Exploratory Factor Analysis), which was carried out to determine the structure and explore the factors in the indicator question for Entrepreneurial Intention (EI) variable.

Because this study used existing scales that were originally developed in western countries, it is important to refine the scales and check their validity. EFA as an analysis was used to explore how many factors can be used, whether these factors are correlated and the observed variables seem to best measure every single factor (Schumacker & Lomax, 2010). This study identified the Kaiser Meyer Olkin (KMO) value, Bartlett value, factor loading, eigen value, scree plot, and Oblimin rotation with Kaiser Normalization. The KMO index was located between 0 and 1, with values over 0.50 considered appropriate for factor analysis (Chua, 2014), while values more than 0.80 were considered very satisfying (Frohlich & Westbrook, 2001). Bartlett's Test of Sphericity was significant (p < 0.05). For Hair et al. (2010), the overall value of factor loading for each item that higher than 0.50 was significant to confirm the significance of the questionnaire. The eigenvalue and scree plot also showed the proportion of the contribution of the variance extracted by each factor through Factor analysis (Chua, 2014), where factors with an eigenvalue lower than 1.0 were removed from the factor list.

To do this, exploratory factor analysis (EFA) was used to establish constructs and convergent validity using component analysis technique principal with the Oblimin rotation method as shown in Table 1. The statistical criteria in this study were satisfying. The KMO value for SBM was 0.811> 0.60 (see Table 1), which provided

information on the availability of sufficient numbers of items for each factor analyzed (n = 237). In addition, the values of Bartlett's Test of Sphericity showed that the score that appeared statistically was significant [$\chi 2 = 5495.264$; p <0.000]. Therefore, the use of factor analysis was acceptable for the data collected in this study.

EFA's assumptions	Value (EI variable)
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.811
Bartlett's Test of Sphericity (Approx. Chi-Square)	5495.264
Bartlett's Test of Sphericity (Sig)	0.000

Table 1: Assumptions of fa	ctor analysis
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Preliminary analysis

The construct of the Entrepreneurial Intention (EI) variable was measured by a scale adapted from Liñán & Chen (2009). The initial analysis presented in this research was descriptive analysis, such as standard deviation, correlation matrix, skewness and kurtosis for the four dimensions of the EI variable shown in Table 2. The results of initial analysis of all Entrepreneurial Intention (EI) dimension items were Personal Attitude (PA), Subjective Norm (SN), Perceived Behavioral Control (PBC), Perceived Entrepreneurial Intention (PEI).

The initial analysis presented in this research was descriptive analysis, such as Standard deviation, correlation matrix, skewness and kurtosis for the six dimensions of the EI variable shown in Table 2. The initial analysis of all EI dimension items, namely Personal Attitude (PA), Subjective Norm (SN), Perceived Behavioral Control (PBC), Perceived Entrepreneurial Intention (PEI), resulted in univariate normality (skewness and kurtosis values were in the range of -1,152 to 0.013) (Table 2). In the case that multicollinearity did not occur, the value of inter-correlation between the four sub-constructs of EI was not achieved (<0.90), which ranged from -0.009 to 0.605. These results indicated that discriminant validity of the variables have been achieved because the correlation of correlation matrix was lower than 0.90 (Kline, 2005).

Dir	nensions of Variable (EI)	1	2	3	4
1.	Personal Attitude (PA)	1.000	.036	009	.605
2.	Subjective Norm (SN)		1.000	001	.009
3.	Perceived Behavioral Control (PBC)			1.000	056
4.	Perceived Entrepreneurial Intention (PEI)				1.000
	Skewness	179	241	193	.013
	Kurtosis	675	332	538	-1.152
	Μ	5.2068	4.9662	5.0515	5.3055
	SD	.90645	.97414	.92657	.98023

Tabel 2: Components of Correlation matrix, Means and Standard Deviations

Exploratory factor analysis (EFA)

EFA started by considering all 18 items measuring the four aspects of Entrepreneurial Intention (EI) dimensions, namely Personal Attitude (PA), Subjective Norm (SN), Perceived Behavioral Control (PBC), Perceived Entrepreneurial Intention (PEI). Each dimension aspect was measured by several items. The next step

was to identify the values of the extraction communalities, eigenvalues, percentage of variances and factor loading. Table 3 presents the detailed values of the extraction communalities, eigenvalues, percentage of variances and factor loading which are explained by the four sub-constructs of EI. First, extraction communality values represent the variance in each item that was calculated before and after factor analysis. The values of the communalities for each item that less than 0.50 were dropped from further analysis (Hair, Black, Babin, Anderson, & Tatham, 2006). The small value (<0.50) of the values of the extraction communalities indicated that all values of the extraction communalities described are sufficient. Furthermore, there are four factors with an eigenvalue of more than 1 arising from the EFA, explaining 82.258% of the total variance. The EI factors and their contribution are as follows:

Personal Attitude (PA) contributed 8.23%, Subjective Norm (SN) contributed 14.62%, Perceived Behavioral Control (PBC) contributed 34.73%, Perceived Entrepreneurial Intention (PEI) contributed 24.67%. The Component Matrix after oblimin rotation was used to identify items that are more related to each factor. In this study, (17 items) in the pattern matrix are recommended to measure EI because they meet the criteria with a fairly high factor loading with values ranging from 0.802 to 0.974 (> 0.50).

Factor	Dimension	-	Commu	Eige	Eige % of Pattern		tern Matr	n Matrix (Components)	
	S	Items nalities	nval ue	Variance	1	2	3	4	
		EI.PBC.1 0	.876			.974			
	Perceived Behavioral Control (PBC)	EI.PBC.1 2	.893			.972			
		EI.PBC.1 3	.790	5.905	905 34.733	.850			
		EI.PBC.1 1	.789			.849			
Entrepreneurial		EI.PBC.9	.581			.718			
Intention (EI)	Perceived	EI.PEI.16	.912				.954		
	Entrepreneu	EI.PEI.15	.912				.954		
	rial	EI.PEI.17	.895	4.194	24.671		.947		
	Intention	EI.PEI.14	.768				.871		
	(PEI)	EI.PEI.18	.700				.836		
	Subjective Norm (SN)	EI.SN.8	.886					.941	
		EI.SN.6	.868	2.486	14.621			.929	
		EI.SN.7	.739					.850	
		EI.PA.2	.923	1.400	8.233				.969

Table 3: Factor Loadings, Communalities, Eigenvalues and

 Percentage of Variances For Entrepreneurial Intention (EI)

International Journal of Psychosocial Rehabilitation	, Vol. 24, Issue 06, 2020
ISSN: 1475-7192	

Personal	EI.PA.3	.876	.929
Attitude	EI.PA.1	.775	.903
(PA)	EI.PA.4	.799	.802

Another method for selecting the correct number of factors to be extracted was by investigating the scree plot (Figure 1). As shown in Figure 1, the scree plot shows four factors that can used to determine eigenvalue (> 1).



Figure 1: Scree Plot (eigenvalue > 1)

Confirmatory Factor Analysis (CFA): Testing the Measurement Models

In this study, EFA suggests a structure of four factors for the construct of Entrepreneurial Intention (EI) variable, namely Personal Attitude (PA), Subjective Norm (SN), Perceived Behavioral Control (PBC), Perceived Entrepreneurial Intention (PEI). CFA was done to verify the factorial validity of EI. The CFA can provide further evidence of the suitability of the suggested model by taking into account the structure of the factors identified through the EFA. The results of the analyzed model will be compared using chi-square (χ 2), CFI, TLI and RMSEA.

Table 4. presents the model specifications for post hoc CFA. The CFA results for the four-factor model were hypothesized very well. The factor structure achieved an acceptable model that is appropriate for the research context (Jambi University). The measurement model of Entrepreneurial Intention (EI) in this Study showed an acceptable fit model, $\chi 2 = 291.614$, $\chi 2/df = 2.651$, RMSEA = 0.084, TLI = 0.959 and CFI = 0.967. Therefore, the CFA model presented in Figure 2. is the final measurement model that shows the structure of Entrepreneurial Intention (EI) in the context of the research site.

Goodness-of-fit index	Cut off-value	Results	Information		
χ2		291.614			
χ2/df		2.651			
TLI	≥ 0.90	0.959	Good/Fit		
CFI	≥ 0.90	0.967	Good/Fit		

Table 4: Testing Index of Confirmatory Factor Analysis (CFA)

RMSEA	≤ 0.08	0.074	Good/Fit

Note. χ2: Chi -square goodness of fit; df: Degrees of Freedom; CFI: Comparative Fit Index; TLI: Tucker-Lewis fit index; RMSEA: Root Mean Square Error



Figure 2: Finalised measurement model of CFA

Figure 2 illustrates the Entrepreneurial Intention (EI) measurement model between observed variables and latent variables using the AMOS 23.0 program. All factors include four Entrepreneurial Intention (EI) subconstructs ranging from 0.51 to 1.00. The results show that Factor Loadings exceed the desired standard of 0.50 (Hair et al., 2010), which show the acceptability of the convergent validity test. In addition, the correlation between the four sub-constructs of Entrepreneurial Intention (EI) ranging from 0.00 to 0.58, which shows acceptable discriminant validity.

VI. RELIABILITY

In terms of the reliability of the Entrepreneurial Intention (EI) instrument to be used, as suggested by Pallant (2005). The data used in this reliability testing is the same as those used in the validity test above (EFA), namely 237 same respondents. Table 5 shows that the four dimensions of the EI construct indicate acceptable reliability and consistency. The resulting scores indicate that Cronbach's alpha is acceptable (Pallant, 2005) because the four constructs of EI produce a value of (> 0.70).

Construct	Dimension	Total of	Cronbach's alpha,
	Dimension	Question	(>0.7) is Reliable
Entrepreneurial	Perceived Behavioral Control (PBC)	5	0.929
Intention (EI)	Perceived Entrepreneurial Intention (PEI)	5	0.950
	Subjective Norm (SN)	3	0.892
	Personal Attitude (PA)	4	0.915

Tabel 5: Reliability statistics for constructs and dimensions

VII. DISCUSSION, LIMITATIONS, AND SCOPE FOR FUTURE RESEARCH

This research has used an ideal research method to present some of the most important empirical data in placing validity on the proposed Entrepreneurial Intention (EI) dimension. This instrument has developed a validated Entrepreneurial Intention (EI) measure in the research context, namely the students at Jambi University. There is a few empirical research carried out to develop the Entrepreneurial Intention (EI) measure. This article brings a number of implications and research directions for academics and practitioners to investigate Entrepreneurial Intention (EI) among students. The prescribed framework offers a thorough understanding of the nature and subtleties of EI. Proposals of researchers and practitioners must use insights from factors explored to foster and create entrepreneurial intention in students.

Construct Validity is an important obstacle to the development of a scientific scale like this. The construct validity basically increases over time and through a lot of research. This scale requires further adjustments to increase the level of reliability and its ability to explain the variance associated with the construct measured in different contexts. Future research guarantees to be examined, with randomly selected samples, generalizations and model validity. It is also proposed to cross-validate instruments in different cultures with a variety of methods that include habits, focus group discussions with interviews with peers and face to face. To develop strong and testable theories on the construct of Entrepreneurial Intention (EI), moderator and mediator variables, as well as other related variables need to be identified by future researchers to broaden their extent and scope.

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