Dimensions of Entrepreneurial Character: Evidence from Indonesia

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Abstract: - Entrepreneurship education is to be a solution to the unemployment problem. Entrepreneurial character is for someone to act as an entrepreneur. The purpose of this study is to evaluate the instrument of entrepreneurship character among students from various universities in Indonesia who adopt entrepreneurship education in the curriculum. The research focused on the operational process of entrepreneurial characteristics of 23 dimensions. The subjects of this study were 357 undergraduate students attending entrepreneurship education. Psychometry is the research method, and SPSS and AMOS-assisted factor analysis to analyze the results. The results showed that there was one indicator (Kbtp 10) that dropped in the factor analysis because it did not meet the requirements ($0.486 < 0.5$). For EFA calculation, two (2) dimensions dropped because they were accommodated in other dimensions/indicators and did not meet the calculation requirements. In the end, five (5) new dimensions represent the existing 23 dimensions of entrepreneurial character.

Keywords: - Dimensions, Entrepreneurship Character, and Psychometry.

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1 Introduction

The problem of unemployment is part of the world's attention that affects the achievement of sustainable development as stated in the Sustainable Development Goals (SDGs) as aspired by the United Nations in 2030. Unemployment has the potential to hinder 17 (seventeen) issues that are the main goals of the SDGs, and at least 6 (six) issues are directly related. The six problems include eradicating poverty, ending hunger, quality education, decent work, economic growth, reducing inequality, and responsible consumption and production. This research aims (1) to describe the importance of the instruments. (2) to expose the entrepreneurial character instruments that are relevant in Indonesian universities.

In Indonesia, the opportunity for university graduates to work outside the scientific field is quite open. Therefore, entrepreneurship education is needed, the process needs to maximize, and its success is measured appropriately [1], [2]. Several universities in Indonesia have presented entrepreneurship courses. Currently, entrepreneurship education is into learning in the "Merdeka Belajar-Kampus Merdeka" (MBKM) curriculum, by giving students the right to be independent in learning in Indonesian universities, as well as opening up space for the involvement of various parties [3]. The process to produce what Freire termed conscientization, namely the developing awareness between educators and students from magical and naive understanding to critical attention [4]. However, entrepreneurship education in Indonesian universities does not yet have a transparent model [5]. At least first, the measurement of the success of entrepreneurship education in various universities has not been optimal. Second, the competence of university graduates has not fully met the expectations of the job market. Third, graduates have not been equipped with life skills, adapted and socialized with the work environment and long life education [6], to data that

university graduates contribute to the unemployment rate reaching 12.49% [7], [8].

Unfortunately, questionnaires that can reveal real needs are still rare. For this purpose, this research was conducted. Currently, measuring the success of entrepreneurship education in Indonesian universities has not been able to evaluate the success achieved by students. The measuring success of entrepreneurship education that is carried out places more emphasis on book-smart and street-smart. With a pattern like this, the efforts to encourage the birth of an entrepreneurial spirit through formal education ultimately succeed indirectly. Silberman's opinion is that the first source of failure of an entrepreneur is because he relies more on formal education but lacks field experience. Therefore, the combination of education and experience is the main factor that determines entrepreneurial success [9]. Measurement pattern causes the reactionary entrepreneurship lecture in an in-depth study, so, naturally, university graduates contribute to a significant unemployment rate. Entrepreneurship lectures are on studies. The formation of entrepreneurial character is not measured correctly. However, in Indonesian universities, the instrument of entrepreneurial qualities has not yet been developed as one of the formations. Thus, the study of the entrepreneurial character instrument is important. This research contributes to the awareness to test and retest and that not all instruments can apply anywhere and presents a new questionnaire with Indonesian characteristics.

1.1 Identification of Problems

To measure the success of entrepreneurship is to get student entrepreneurship. Several relevant studies on instruments for measuring the success of entrepreneurship learning have developed. Based on these various literature studies, researchers are interested in developing the instrument's entrepreneurial character. This instrument is unique because it measures the success of entrepreneurship education through an evaluation of the entrepreneurial personality that is formed [10]. The researchers' interest first is the development of this instrument in educational institutions; Second, the similarity of socio-cultural diversity; Third, the equality of the socio-economic development, as seen from GDP growth; and recognition of gender and religion [11]-[13].

However, the instrument contains several weaknesses in measuring the success of entrepreneurship learning in Indonesian universities. First, the scope of the area in developing the measurement of entrepreneurial character is still too narrow the instrument needs to be replicated more widely by involving subjects from different backgrounds (socio-economic, socio-cultural, socio-political). Second, demographic and sociocultural factors provide their characteristics in entrepreneurial character [14]. Third, there are still overlapping dimensions and indicators of the entrepreneurial character instrument, while each claims its reliability in predicting entrepreneurial success. The claim has opened up opportunities for researchers to develop for measuring entrepreneurial character that accommodates various uniqueness in Indonesia.

1.2 Problem Formulation

Entrepreneurship learning is an important mechanism to be developed in universities as an effective and efficient effort to reduce the number of educated unemployed, in line with the human capital theory that mainstreams individual productivity. Entrepreneurial character is a factor of unique productivity, so measurement becomes to achieve the success of relevant entrepreneurship learning because it is considered a determinant of entrepreneurial behavior tendencies.

The instrumental operational process of the concept of entrepreneurial characteristics [10], [15]-[18] is developing in various countries while demographic and socio-cultural factors provide their peculiarities. Therefore, the instrument through adapted a series of psychometric processes. This study answered the following research questions: (1) Has there been a repositioning of the dimensions of the entrepreneurial character instrument after the revaluation? (2) What dimensions of entrepreneurial character are relevant in Indonesian universities?

2 Literature Review

2.1 Entrepreneurship in Higher Education

Many countries, including Indonesia, continue to strive for unemployment alleviation through various methods. These methods include knowledge, attitudes, and skills. First, learning integrates public policy with inter-connected studies, which include theory and practice [19]. Second, the training provides as per the interests and talents of students by emphasizing fostering basic academic skills, entrepreneurship, knowledge of entrepreneurship, and managing social entrepreneurship [20]. Third, practical experience in the field by apprenticed students to existing entrepreneurs [21]-[24]. Fourth, build an entrepreneurial ecosystem through the institutional career development unit [25].

The human capital theory considers education for individual productivity to increase personal income [26]. Therefore, entrepreneurship education generates human capital. Human capital says that the higher education a person has, the more opportunity and may generate higher income [27]. So, entrepreneurial education must concern with human capital. Human capital needs an entrepreneurial character too.

Entrepreneurship education is not enterprise education [28]. Therefore, entrepreneurship education accommodates changes in social life, cultural environment, the world of work, and technological progress. The learning must also involve various parties [29]. Entrepreneurship education is to develop with diverse characteristics, and its success must also be relevant.

2.2 Entrepreneurial Character

Entrepreneurs have unique characteristics, attitudes, and values that encourage them and differentiate them from others [10]. Entrepreneurship education in universities in Indonesia must be interpreted as education to build entrepreneurial character because this is considered a determinant of the tendency to become entrepreneurs [30]. This character is relevant to the needs of students to succeed in life in society, where the character factor is dominant in supporting one's success [31].

The researchers identified that at least 23 dimensions represent the entrepreneurial character variables and are needed to measure the success of entrepreneurship learning.

Table 1. The Concept of Entrepreneurial Character

Variable	***Dimension***
Entrepreneurial Characteristic	*Commitment*
	Clearness of purpose
	Perseverance
	Need for Achievement
	Opportunity oriented
	Initiative
	Responsibility
	Persistence in Solving the Problem
	Seeking feedback
	Locus of control
	Tolerance for ambiguity
	Risk-taking propensity
	Integrity
	Reliability
	Tolerance for failure
	High Energy Level
	Creativity
	Innovativeness
	Vision
	Self Confidence
	Optimism
	Independent
	Team building

Source: [10, 15-18]

The dimensions of entrepreneurial character relate to individual students. The assumption is that entrepreneurs' measurements have orientations and values that create incentives that distinguish them from others [32]. These characteristics influence the intention to start and succeed in entrepreneurship [33]-[35]. Certain personality traits can influence the decision to engage in entrepreneurial ventures and vary according to the socio-economic and cultural makeup of different regions and countries [36].

2.3 Development of Entrepreneurial Character Measurement Instruments

Adaptation test refers to a series of psychometric studies to adapt a test to the local culture, including language translation. Adopting or translating the text into the Indonesian language/culture is carried out [37]. While the term 'test standardization' is the uniformity of administering and scoring tests [38]. An instrument is said to be standardized if the tester's words and actions, the tools/tools used in the test, and the scoring rules have been determined with certainty so that the scores collected at different times and places can be comparable [39]. In other words, standardization concerns the uniformity of procedures, and tests adapted to the local culture, and adaptation to standardization procedures must also be carried out, including creating norms using standardized samples of local people [40].

Psychological understanding and psychometric methods can adapt to entrepreneurship research [41], [42]. This study, it is to use psychometric methods to create new dimensions and test their constructs on entrepreneurial character variables according to Indonesian characteristics. That is for predicting entrepreneurial behavior in Indonesia.

Adaptation of psychological instruments is a complex process that requires high methodological rigor since there is no consensus in the literature on the steps. Based on various considerations, the researchers determined the cross-cultural adaptation of the entrepreneurship character instrument, including 1) instrument translation into the new language, 2) synthesis of the translated versions, 3) evaluation of the synthesized version by experts, 4) evaluation by the target population, 5) back-translation, 6) pilot study, 7) make a statistical

analysis of the quality of the test and compare it [37], [40],[43], [44].

3 Method

3.1 Participants

This research is descriptive, using the psychometric method. Data using questionnaires were distributed electronically with Google Forms with non-random snowballs. This procedure was active for two months, and students from various universities in Indonesia who have taken/are taking entrepreneurship courses are populated. After eliminating those who showed behavior that was not strict enough when responding to a questionnaire measured by the attention control scale, the sample in this study is 357 students spread across western, central, and eastern parts of Indonesia. The questionnaire used so far was tested psychometrically by factor testing using SPSS V.23 software and for the exploratory factor analysis test using Amos V.23.

Factor analysis is an extension of principal component analysis. It is also used to identify a relatively small number of factors that can be used to explain a large number of interrelated variables. So that the variables in one factor have a high correlation, while the correlation with the variables in other factors is relatively low. Each group of variables represents a basic construct called a factor. A transformation must be carried out on the loading matrix to increase the power factors. The authors use varimax methods to transform to rotate the matrix. The results of this rotation will cause each of the original variables to have a high correlation with certain factors only so that each will be easier to interpret.

While Factor analysis is a statistical method used to explain the variability between observed variables (manifest variables) or variables correlated with numbers that describe the number of unobserved variables called factors. EFA is used when research is looking for a structure of a variable, or it is called a data reduction method. EFA can trace correlations based more on actual data than on theory. The purpose of EFA is to reduce the number of variables and detect the relationship between variables, to classify variables.

3.2 Instruments

The questionnaire evaluates the 23 dimensions identified from the literature most relevant to characterizing entrepreneurship. The questionnaire is according to a Likert-type format with five answer categories (1 strongly disagree - 5 strongly agree), in line with the well-established psychometric literature showing that these answer categories produce better psychometric indicators [45]. The questionnaire was adapted from the operational process of the concept of entrepreneurial characteristics [10], [15]-[18] and showed psychometric properties.

The use of an instrument sourced from a different demographic cannot use as taken for granted, so adaptation is necessary. The device has twenty-three dimensions of entrepreneurial character reformulated to the socio-cultural characteristics of students in Indonesia. New items are created and addressed directly to the research sample. After a thorough literature review on these dimensions, the analysis began with a collection of 57 statement items and evaluated by four experts in the psychological assessment rate each item on a scale of 1 to 10. Scores less than eight are rejected or reformulated. After this first filter, 12 experts (academics, entrepreneurs, humanists, and psychologists) participate in measuring the dimensions of entrepreneurial character. Item score less than 9, on a scale of 1-10, revised. This research evaluated the discrimination index and exploratory factor analysis. After eliminating items that did not meet the psychometric quality criteria, the sub-dimensional consisted of 55 items with a 5 Likert scale with response categories. The aim is to detect participants who respond to the evaluation instrument randomly or haphazardly. The questions are typed "must choose the option fully agree." Participants who incorrectly to two or more items were dropped. By this criterion, 74 participants were from the study.

4 Results

4.1 Factorial Test with SPSS

The factor analysis technique assisted by the SPSS version 25 application for grouped factors from the entrepreneurial character variable and filter the superior dimensions or most dominant in the study. In other words, this technique groups the many or overlapping dimensions into a new factor according to the characteristics of the research subject. In addition, the factor analysis can distinguish priority variables based on existing rankings. The factor analysis of the variable dimensions in this study is as follows:

4.1.1 Analysis Prerequisite Test

The first step of this test is based on the Kaiser-Meyer-Olkin (KMO) test, the following output is the results presented in Table 2.

Table 2. Feasibility Analysis Results of Entrepreneurial Character Variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.967
Bartlett's Test of Sphericity	Approx. Chi-Square	15083.023
	Df	1596
	Sig.	.000

Source: Data results, 2022

Based on the SPSS output in Table 2, the value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO MSA) is 0.967> 0.50, and Bartlett's Test of Sphericity at (Sig.) 0.000 <0.05. The output is the first requirement. It tells us that the analysis can be continued.

After the first requirement is gained, data proceed with the second eligibility prerequisite test for the entrepreneurial character variable by looking at the Measures of Sampling Adequacy (MSA) value on the anti-image correlation matrices. Based on the SPSS output in Table 2, the letter code (a) is the sign for MSA. The table above shows the MSA value for all the variables studied is > 0.50. It fulfilled the second requirement for proceeds to factor analysis.

4.1.2 Factor Analysis

The value of the variable indicators is considered capable of explaining the variable if it has an extraction value greater than 0.5. Based on the SPSS output in the table above, there is one indicator that is not able to explain the entrepreneurial character variable, namely the dimension "need for achievement" indicators "desire to compete with others" (Kbtp 10) because it has an extraction value of 0.486 < 0.5. So based on this, the indicator "the desire to compete with others" (Kbtp 10) is dropped in this study.

Furthermore, to find out the value of each component in the variable, the Total Variance Explained table can be seen as illustrated in Table 3:

Table 3. Total Variance Explained Entrepreneurial Character Variables

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	25.276	45.135	45.135	25.276	45.135	45.135	8.019	14.319	14.319
2	2.930	5.233	50.368	2.930	5.233	50.368	6.382	11.396	25.716
3	2.454	4.383	54.751	2.454	4.383	54.751	6.266	11.189	36.904
4	1.492	2.664	57.414	1.492	2.664	57.414	5.904	10.542	47.446
5	1.304	2.328	59.743	1.304	2.328	59.743	5.708	10.192	57.639
6	1.156	2.064	61.807	1.156	2.064	61.807	1.909	3.409	61.048
7	1.062	1.896	63.703	1.062	1.896	63.703	1.300	2.321	63.369
8	1.019	1.820	65.523	1.019	1.820	65.523	1.206	2.154	65.523

Source: Data Analysis, 2022

There are 56 items whose values can represent the entrepreneurial character variable. The analysis that can explain variance in this study is to look at the Initial Eigenvalues indicating the components formed. Based on the output table of Total Variance Explained, in the Initial Eigenvalues section, there are components formed from 56 indicators analyzed. Where the requirement is to be a component, the Initial Eigenvalues must be greater than 1. Table 3 tells us that 56 items become 8 components.

To find out the correlation value or the relationship between each factor and the component, you can see the component matrix as described in Table 4:

Table 4. Component Matrix of Entrepreneurial Character Variables

Component Matrix								
	Component							
	1	2	3	4	5	6	7	8
Itg2	.783	.153	-.085	-.078	-.075	.140	.026	-.003
Mnd2	.772	-.057	.026	-.206	-.071	-.079	.006	-.002
Pdr1	.768	-.195	.037	-.222	-.273	-.076	.059	-.093
Pdr2	.768	-.203	.031	-.300	-.180	-.139	.088	.016
Opt1	.763	-.227	.050	-.323	-.230	-.026	.058	-.037
Inv1	.758	-.125	.175	-.214	.020	.001	-.053	-.064
Itg1	.751	.234	.073	.034	-.115	.115	.032	-.040
Krt2	.750	.120	.045	-.138	.034	.098	-.117	.030
Inv2	.743	-.005	.208	-.010	-.019	.072	-.132	-.020
Kmr2	.736	.273	-.002	.049	-.120	.046	.069	-.052
Kmr1	.727	.232	.183	.200	-.042	-.133	-.118	.027
Tuk2	.723	.289	.138	.274	-.095	-.116	.129	.080
Tj1	.717	.118	-.150	.070	.063	-.051	-.218	-.047
Kmm1	.716	.269	-.240	.001	.128	.063	-.223	.079

Cc2	.716	.008	.172	-.051	-.049	-.183	-.274	.024
Krt1	.714	-.236	.293	-.138	.070	.109	.050	-.046
Brtp2	.712	-.291	.218	.180	.082	-.042	-.060	-.010
Prk1	.712	-.256	.090	.162	.065	-.044	-.076	-.022
Mnd1	.711	.124	.097	-.129	-.202	-.167	-.098	.073
Tj2	.707	.218	-.191	.041	.155	.026	-.246	.050
Mbt1	.707	-.026	-.064	-.217	.061	-.288	-.066	.052
Kbtp11	.700	-.244	-.170	.008	.096	-.015	.103	-.249
Mbt2	.698	.174	.089	-.010	-.101	-.266	.112	.235
Mub1	.698	.367	-.217	.065	-.049	-.059	.034	-.019
Brtp1	.694	-.235	.088	.290	.079	-.088	-.107	-.102
Pd1	.690	.237	.009	.114	-.134	.116	.145	-.037
Bk1	.686	.243	-.191	-.178	-.028	.250	.008	.032
Cc1	.685	-.233	-.085	-.166	-.130	-.031	-.041	.082
Kggn1	.685	-.349	-.002	.131	.008	.159	-.142	.014
Kmm2	.682	.342	-.212	.126	-.144	.039	-.040	.043
Bk3	.675	.108	-.024	-.206	.053	.215	.220	-.079
Kggn2	.674	-.359	-.108	.003	-.041	.266	-.041	-.095
Kbtp9	.672	-.317	-.067	.115	.048	-.019	.173	.094
Pd2	.668	.286	-.057	.223	-.038	-.093	.128	-.119
Kbtp7	.665	-.180	-.231	-.126	.117	-.279	-.025	.226
Mub2	.663	.285	-.263	.088	-.032	.035	.202	.041
Kbtp5	.662	-.117	-.274	-.201	.098	-.122	.017	.022
Tlrg1	.656	.255	.349	-.171	.070	.077	.001	-.005
Prk2	.655	-.196	.268	.311	.110	-.119	-.069	-.012
Tlrg2	.649	.188	.096	-.205	-.081	.224	.029	.012
Knd1	.649	.243	.443	.115	.126	.190	-.079	-.049
Kbtp8	.645	.003	-.336	.054	.077	.029	-.003	.021
Tuk1	.631	.305	-.066	.293	-.053	-.131	.246	.198
Kbtp1	.625	.019	-.413	-.027	.094	.177	-.243	-.069
Tjn2	.625	-.343	.094	.238	-.003	.039	-.211	.127
Kbtp2	.619	.075	-.476	.041	.081	.127	.011	-.115
Tjn1	.617	-.433	-.148	.188	-.115	.132	.021	.114
Kbtp6	.614	-.193	-.078	-.149	.213	-.117	.072	.346
Kmtn1	.599	-.346	-.109	.185	-.185	.154	.202	.057
Kmtn2	.597	-.345	.092	.225	-.044	.130	.242	.134
Knd2	.562	.208	.421	-.036	.157	.067	-.234	-.014
Kbtp3	.553	-.153	-.170	.003	.233	-.040	.075	-.479
Bk2	.523	-.013	.417	-.032	.222	.015	.297	-.157
Opt2	.488	.146	.344	-.020	-.141	-.229	.065	-.312
Bk4	.194	.102	.280	-.167	.541	.246	.188	.352
Kbtp4	.378	.064	-.244	-.015	.519	-.324	.173	-.181

Extraction Method: Principal Component Analysis.

a. 8 components extracted.

Source: Data Analysis, 2022

Table 6 shows the correlation value or the relationship between each variable and the formed components. For example, Kmtn1 correlates with component 1 of 0.599, component 2 of -0.346, component 3 of -0.109, component 4 of 0.185, component 5 of -0.185, component 6 of 0.154, component 7 of 0.202, and component 8 of 0.057.

Furthermore, to determine that a dimension in the better component, can be seen from the Rotated Component Matrix as shown in Table 5:

Table 5. Rotated Component Matrix of Entrepreneurial Character Variables

Rotated Component Matrix

	Component							
	1	2	3	4	5	6	7	8
Tjn1	.733	-.009	.241	.149	.221	-.017	-.006	.044
Kmtn2	.690	.115	.018	.270	.157	.024	.152	.141
Tjn2	.674	.270	.192	.098	.161	-.027	.009	-.189
Kggn1	.672	.249	.312	.058	.195	.032	.012	-.001
Kmtn1	.669	-.013	.157	.265	.205	-.007	-.012	.205
Brtp2	.634	.409	.098	.160	.214	.160	.042	-.081
Kggn2	.631	.170	.382	.011	.240	.054	-.017	.212
Kbtp9	.618	.072	.156	.250	.291	.187	.126	.046
Brtp1	.610	.350	.180	.210	.122	.235	-.083	-.129
Prk1	.595	.330	.192	.175	.227	.175	.004	-.080
Prk2	.580	.441	.033	.245	.100	.188	.017	-.176
Kbtp11	.496	.154	.319	.145	.282	.392	-.061	.175
Krt1	.488	.482	.114	.060	.365	.108	.167	.180
Knd1	.231	.733	.187	.297	.002	.007	.179	.062
Knd2	.122	.710	.192	.140	.120	.008	.157	-.085
Tlrg1	.087	.631	.195	.277	.282	.033	.207	.120
Opt2	.075	.534	-.079	.297	.253	.200	-.225	.113
Inv2	.380	.522	.275	.215	.280	.015	.037	.022
Kmr1	.259	.511	.233	.494	.178	.063	-.036	-.162
Bk2	.258	.508	-.110	.201	.148	.301	.242	.249
Cc2	.292	.497	.250	.208	.410	.049	-.068	-.210
Inv1	.369	.469	.240	.103	.468	.127	.068	.098
Tlrg2	.143	.405	.355	.265	.311	-.075	.135	.253
Kbtp1	.285	.087	.721	.104	.170	.132	-.028	.000
Kmm1	.158	.266	.662	.333	.201	.097	.099	-.126
Kbtp2	.265	-.024	.637	.280	.139	.249	-.020	.126
Tj2	.198	.298	.611	.300	.177	.132	.077	-.165
Bk1	.128	.230	.585	.317	.284	-.012	.136	.224
Tj1	.271	.307	.510	.292	.219	.170	-.056	-.136
Kbtp8	.333	.031	.502	.294	.218	.198	.045	.004
Itg2	.267	.311	.472	.381	.322	.036	.058	.177
Krt2	.240	.433	.434	.240	.339	.036	.119	.046
Tuk1	.219	.137	.188	.748	.121	.094	.114	-.051
Tuk2	.264	.391	.157	.687	.145	.069	.025	-.039
Pd2	.196	.288	.285	.591	.101	.225	-.079	.056
Mub2	.169	.083	.435	.582	.184	.144	.075	.137
Mub1	.090	.214	.482	.568	.219	.151	-.032	.022
Mbt2	.196	.277	.117	.559	.452	.052	.109	-.120
Kmm2	.151	.205	.511	.557	.169	-.004	-.062	.009
Pd1	.246	.317	.308	.527	.152	.025	.006	.203
Kmr2	.197	.365	.361	.514	.229	.058	-.021	.142
Itg1	.240	.432	.354	.458	.222	.004	.010	.159
Pdr2	.382	.248	.174	.202	.689	.096	-.013	.137
Opt1	.404	.283	.208	.139	.663	.031	-.048	.224
Pdr1	.415	.285	.193	.213	.609	.060	-.142	.201
Mbt1	.219	.248	.285	.224	.567	.248	.045	-.138
Kbtp7	.360	.008	.302	.213	.540	.238	.145	-.227
Mnd2	.322	.328	.283	.241	.533	.118	.025	.078
Cc1	.437	.149	.287	.138	.519	.023	-.003	.037
Mnd1	.188	.388	.239	.364	.496	-.026	-.066	-.062
Kbtp5	.292	.048	.404	.161	.484	.276	.078	.001
Kbtp6	.379	.058	.214	.171	.467	.151	.378	-.145
Kbtp4	.039	.026	.218	.174	.131	.714	.169	-.095
Kbtp3	.326	.201	.315	.038	.131	.570	-.135	.206
Bk4	.020	.253	.030	.007	-.002	.060	.772	.040
Bk3	.202	.285	.359	.270	.303	.145	.198	.371

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 23 iterations.

Source: Data Analysis, 2022.

Determination of a dimension into the formed factor by selecting the highest correlation value

between the indicators and the component. As described in Table 6:

Table 6. Grouping of Entrepreneurial Character Indicators into Formed Component

Component	Indicators
1	Tjn1, Kmtn2, Tjn2, Kggn1, Kmtn1, Brtp2, Kggn2, Kbtp9, Brtp1, Prk1, Prk2, Kbtp11, Krt1
2	Knd1, Knd2, Tlrg1, Opt2, Inv2, Kmr1, Bk2, Cc2, Inv1, Tlrg2
3	Kbtp1, Kmm1, Kbtp2, Tj2, Bk1, Tj1, Kbtp8, Itg2, Krt2
4	Tuk1, Tuk2, Pd2, Mub2, Mub1, Mbt2, Kmm2, Pd1, Kmr2, Itg1
5	Pdr2, Opt1, Pdr1, Mbt1, Kbtp7, Mnd2, Cc1, Mnd1, Kbtp 5, Kbtp6
6	Kbtp4, Kbtp3
7	Bk4
8	Bk3

Source: Data Analysis, 2022.

Based on these groupings, components 1 - 13 indicators, components 2 - 10 indicators, components 3 - 9 indicators, components 4 - 10 indicators, components 5 - 10 indicators, components 6 - 2 indicators, components 7 - 1 indicator, and components 8 - 1 indicator.

Furthermore, to determine the feasibility of the components formed can be seen from the Component Transformation Matrix, as shown in table 7:

Table 7. Component Transformation Matrix of Entrepreneurial Character Variables

Component	1	2	3	4	5	6	7	8
1	.493	.427	.432	.416	.423	.168	.063	.056
2	-.724	.262	.266	.537	-.201	-.069	.055	-.003
3	.031	.743	-.614	-.072	-.037	-.194	.157	.014
4	.434	-.049	-.110	.423	-.705	.025	-.199	-.286
5	-.035	.115	.144	-.262	-.273	.619	.624	-.224
6	.182	.083	.385	-.221	-.410	-.445	.278	.565
7	.034	-.313	-.426	.435	.051	.274	.306	.599
8	.085	-.275	-.055	.217	.195	-.522	.607	-.433

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Source: Data Analysis, 2022.

Based on the Component Transformation Matrix analysis, the correlation formed shows that the value obtained is getting closer to 1 (either -1 or +1), which indicates the stronger. Components correlate 0.00-0.30 in the moderate, 0.31-0.70 in the good, and 0.71-1.00 in the very good without seeing the plus or minus sign.

4.2 Exploration Factor Analysis with AMOS

4.2.1 Goodness of Fit (GOF)

Data analysis follows standard educational and psychological testing procedures used to seek validity [46]. First, eight dimensions of entrepreneurial characteristics were analyzed using 357 participants. EFA using the Varimax correlation matrix. Maximum Likelihood Estimation as the extraction method, and the number of factors determined by parallel analysis [47], the model fit index was based on a suitable and independent estimation method [48]. Model fit is adequate when the Chi-square/df, RMSEA, GFI, AGFI, CFI, and TLI.

The Model of Fit provides a statistically significant value. The value of CMIN/DF is a good fit on the dimensions of Entrepreneurial Visionary, Entrepreneurial Intelligence, and Actualization. However, the dimensions of Entrepreneurial adaptation and Entrepreneurial flexibility are in the marginal fit category. RMSEA, AGFI, and TLI values are in the marginal fit. The GFI value is a good fit category for Entrepreneurial intelligence, Actualization, and Entrepreneurial adaptation dimensions. However, entrepreneurial vision and flexibility dimensions are in the marginal fit category. The CFI value is a marginal fit, except for Actualization. Interestingly, self-development, encouragement of healthy eating, and encouragement of exercise are dropped in the calculation because they did not meet the requirements of the exploratory test.

Second, Exploration factor analysis using the Chi-square/df estimator, RMSEA, GFI, AGFI, CFI, and TLI as adjustment indices. There was a good agreement when Chi-square/df < 5, GFI and AGFI 0.95, CFI and TLI 0.95, and RMSEA 0.08 [49, 50].

Table 8. Overall Goodness of Fit

GOF Indices	Parameter		Result	Information
	Good Fit	Marginal Fit		
CMIN/DF	≤ 5,00	-	2,629	Good Fit
RMSEA	≤ 0,08	-	0,068	Good Fit
GFI	≥ 0,90	>0,05 - ≥ 0,90	0,710	Marginal Fit
AGFI	≥ 0,90	>0,05 - ≥ 0,90	0,683	Marginal Fit
TLI	≥ 0,95	>0,05 - ≥ 0,90	0,835	Marginal Fit
CFI	≥ 0,95	>0,05 - ≥ 0,90	0,843	Marginal Fit

Source: Data Analysis, 2022.

As a result, the overall values of CMIN/DF and RMSEA are a good fit. While the GFI, AGFI, TLI, and CFI are in the marginal fit category. Based on various considerations, the fit model can for interpreted.

4.2.2 Convergent Validity

The extracted mean variance from the full sample. The result is that all dimensions are in the satisfactory category for some dimensions but slightly lower in other dimensions: Entrepreneurial Visionary = 0.728, Entrepreneurial Intelligence =

0.697, Actualization = 0.739, Entrepreneurial Adaption = 0.751, and Entrepreneurial Flexibility = 0.743.

4.2.3 Discriminant Validity

Discriminant validity by looking at the ratio of the between-trait correlation to the within-trait correlations [51]. If the HTMT value is < 0.9 then discriminant validity is achieved (Henseler, Ringle, & Sarstedt, 2015). In this study, discriminant validity was achieved in all cases both Entrepreneurial Visionary - Entrepreneurial Intelligence (0.79), Entrepreneurial Visionary - Actualization (0.77), Entrepreneurial Visionary - Entrepreneurial Adaption (0.72), Entrepreneurial Visionary - Entrepreneurial Flexibility (0,87), Entrepreneurial Intelligence - Actualization (0.79), Entrepreneurial Intelligence - Entrepreneurial Adaption (0.86), Entrepreneurial Intelligence - Entrepreneurial Flexibility (0.83), Actualization - Entrepreneurial Adaption (0.90), Actualization - Entrepreneurial Flexibility (0.85), and Entrepreneurial Adaption - Entrepreneurial Flexibility (0.79).

4.3 Discussion

In the last few decades, entrepreneurship has developed to achieve higher education in Indonesia. As a result, various academic sectors develop this vision through learning, training, career guidance, and field experience practice. Entrepreneurship learning is one of the main focuses, with character as one of the strong predictors of success. In this regard, there is no measuring instrument designed to evaluate entrepreneurship in universities in Indonesia. This study evaluates the process of entrepreneurial characteristics [10], [15]-[18] of 23 dimensions to collect evidence about the repositioning instruments and the entrepreneurial character in Indonesian universities.

RQ1: Has a repositioning of dimensions on the entrepreneurial character instrument after the revaluation?

After translated instrument, the prerequisite test using SPSS carried out with 23 dimensions with 57 indicators, all of which met the prerequisite tests for KMO (0.967>0.50), BTS (0.000<0.05), and MSA (>0.50). The results of factor analysis formed eight (8) components based on the Eigenvalues.

Table 9. Grouping of Entrepreneurial Character Variable Dimensions into Formed Factors

Component	Indicators	New Component
Component 1	Tjn1, Kmtn2, Tjn2, Kggn1, Kmtn1, Brtp2, Kggn2, Kbtp9, Brtp1, Prk1, Prk2, Kbtp11, Krt1	Entrepreneurial Visionary
Component 2	Knd1, Knd2, Tlrg1, Opt2, Inv2, Kmr1, Bk2, Cc2, Inv1, Tlrg2	Entrepreneurial Intelligence
Component 3	Kbtp1, Kmm1, Kbtp2, Tj2, Bk1, Tj1, Kbtp8, Itg2, Krt2	Actualization
Component 4	Tuk1, Tuk2, Pd2, Mub2, Mub1, Mbt2, Kmm2, Pd1, Kmr2, Itg1	Entrepreneurial Adaption
Component 5	Pdr2, Opt1, Pdr1, Mbt1, Kbtp7, Mnd2, Cc1, Mnd1, Kbtp 5, Kbtp6	Entrepreneurial Flexibility
Component 6	Kbtp4, Kbtp3	Self-development
Component 7	Bk4	Self-resilience
Component 8	Bk3	

Source: Data Analysis, 2022.

In factor analysis, the Kbtp 10 indicator (the desire to compete with others) is dropped in this study because it has a value of 0.486 < 0.5. Researchers identify that Kbtp10 has two (2) indicators of dimension stated in the tolerance dimension [52].

Component 1 forms the Entrepreneurial Visionary dimension that reflects personality and attitudes related to entrepreneurial prospects [6]. The dimensions play an important role in entrepreneurial sustainability and inspire new entrepreneurs. Component 2 forms Entrepreneurial Intelligence as a form of adaptability to future entrepreneurial developments [53], and the indicators reflect four (4) types of Entrepreneurial Intelligence proportions in Schwab's version [54]. Component 3 forms the Actualization dimension. This dimension is a reliable mediator in increasing entrepreneurial intentions [55], and the indicators are mediators, especially for the environment and self-actualization. Component 4 forms the Entrepreneurial Adaption dimension medium-term strategy to maintain entrepreneurship with limited resources and weak institutions [56]. The indicators person's adaptive ability to be entrepreneurial amid their limitations. Component 5 forms the dimension of Entrepreneurial Flexibility of the antecedents for the speed of strategic change in entrepreneurship [57]. The indicators formed are part of the flexibility of resources and coordination. Component 6 forms the self-development- dimension. This dimension is closely related to self-actualization, even mediating entrepreneurial intentions [57]-[59]. Therefore, this dimension becomes self-actualization. Components 7 and 8, each of which consists of 1 indicator, form

the dimensions of Self-resilience. This dimension is closely related to entrepreneurial adaptation [60], [61]. Therefore, entrepreneurial adaptation becomes self-resilience.

RQ2: What are the dimensions of the relevant entrepreneurial character in Indonesia?

The results of the Exploratory Factor Analysis (EFA) with AMOS show that the Maximum-Likelihood Estimation matrix extraction method and the fit model are considered adequate for all estimators (Chi-square/df, RMSEA, GFI, AGFI, CFI, and TLI). An equally important part of this research is convergent and discriminant validity.

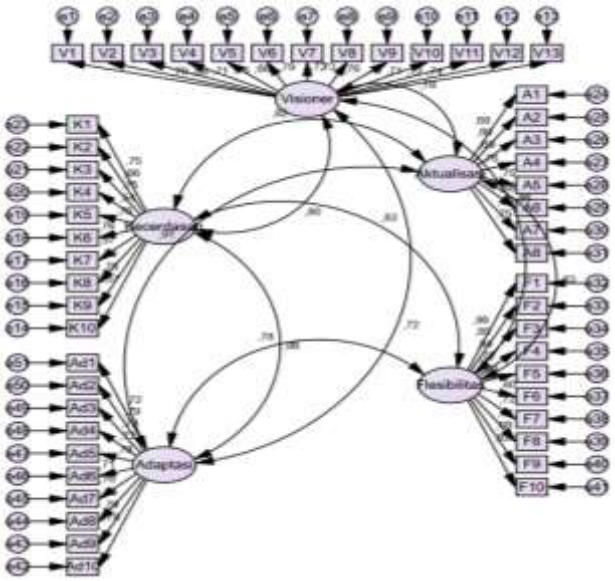

Fig. 1: EFA Models

EFA calculations prove that the dimensions of self-development and resilience are not part of the new dimension as discussed earlier (represented in indicators in other). Convergent validity results show that the average loading factor is good (> 0.5), so there is a correlation between the same construct [62]. While discriminant validity using the Heterotrait-Monotrait (HTMT) method, the results show that the different dimensions are not correlated (< 0.9) [63].

The EFA test confirmed that the adaptation of the operational process of the concept entrepreneurial characteristics instrument implemented in Indonesian universities resulted in 5 dimensions, namely: entrepreneurial visionary, which consisted of 13 indicators; entrepreneurial intelligence, which consists of 10; entrepreneurial adaptation, which consists of 10; Actualization, which consists of 9; and entrepreneurial flexibility, which consists of 10 indicators.

4 Conclusion

Of the previous 23 dimensions and 57 indicators using factor analysis (SPSS) and EFA (AMOS), 52 indicators were created and spread into five (5). One (1 indicator) failed in the factor analysis test because it had an extraction value of 0.486 < 0.5. Furthermore, based on the EFA test, the dimensions of self-development (2) and resilience (2 indicators) failed because they did not meet the test requirements. In conclusion, instruments originating from different demographics a different results (reliable, valid: convergent and discriminant validity). However, this research needs to be replicated on a large and more varied setting to hold a robust.

Limitations

This psychometric instrument evaluates the operational process of the concept of entrepreneurial characteristics to measure the success of entrepreneurship education in Indonesian universities. This research needs further investigation with a qualitative design to search for and complete the findings.

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