Analysis of factors that influencing the interest of Bali State Polytechnic’s students in entrepreneurship

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Abstract. The high rate of unemployment results the economic growth to be hampered. To solve this situation, the government try to change the students’ mindset from becoming a job seeker to become a job creator or entrepreneur. One real action that usually been held in Bali State Polytechnic is Student Entrepreneurial Program. The purpose of this research is to identify and analyze the factors that influence the interest of Bali State Polytechnic’s Students in entrepreneurship, especially in the Entrepreneurial Student Program. Method used in this research is Factor Analysis including Bartlett Test, Kaiser-Mayer Olkin (KMO), Measure of Sampling Adequacy (MSA), factor extraction using Principal Component Analysis (PCA), factor selection using eigen value and scree plot, and factor rotation using orthogonal rotation varimax. Result shows that there are four factors that influencing the interest of Bali State Polytechnic’s Students in Entrepreneurship which are Contextual Factor (including Entrepreneurship Training, Academic Support, Perceived Confidence, and Economic Challenge), Self Efficacy Factor (including Leadership, Mental Maturity, Relation with Entrepreneur, and Authority), Subjective Norm Factor (including Support of Important Relative, Support of Friends, and Family Role), and Attitude Factor (including Self Realization).

1. Introduction
Unemployment is one of the economic benchmarks in a country. The high rate of unemployment resulted in the weakness of the economy and hampered development in various fields. This causes the unemployment rate to be one problem that cannot be underestimated, especially for developing countries like Indonesia.

Unemployment rate in Indonesia has increased from year to year. BPS [1] data states that the unemployment rate in February of 2015 was 7.45 million and increased in August 2015 to 7.56 million. Sadly, from this high rate, 11.97% or 900 thousand are intellectual unemployed from college graduates (academic / diploma / university).

The root of this problem is the college graduates’ mindset which choose to be a job seeker rather than being a job creator or entrepreneur. To solve this problem, Directorate General of Higher
Education through college in Indonesia, including Bali State Polytechnic, hold an event called Student Entrepreneurial Program.

Entrepreneurship, according to [2], is the practice of starting new organizations or revitalizing mature organizations, particularly new businesses generally in response to identified opportunities. Entrepreneurship can be conceptualized as the discovery of opportunities and the subsequent creation of new economic activity, often via the creation of a new organization [3]. While [4] have defined an entrepreneur as a person who habitually creates and innovates to build something of recognized value around perceived opportunities.

Based on Theory of Planned Behavior, interest is the connecting variable that causes the behavior of an attitude or from other variables [5]. In other words, interest is a mediator between motivational and behavioral variables.

One form of students’ interest in entrepreneurship can be seen by their participation in Student Entrepreneurial Program. To increase the students’ interest about entrepreneurship, a research about the factors that influencing the students’ interest in entrepreneurship needs to be done. The result of the research can be used as basis in forming a strategy in the future so that the number of students especially the students of Bali State Polytechnic who become entrepreneur can be increased and hopefully can solve the problem of high rate unemployment in Indonesia.

There are some similar researches that have been done before that gave some various results. The research done by [6] showed that family background and social environment factors have an impact on students’ intentions in entrepreneurship. [7] showed that financial and socio-economic factors significantly influence the entrepreneurship behavior. The research done by [8] showed that self efficacy have no significant affect to the students’ interest in entrepreneurship. Education and motivation factors have significant affect to be an entrepreneur in the research of [9] also [10] said that entrepreneurship education and training are expressed to have an influence on entrepreneurship interest.

The occurrence of research gaps in previous studies must be based on the differences in objects studied. For that the writer feel the need to examine the factors that influence the interest of the students of Bali State Polytechnic in entrepreneurship. The method used in this study is factor analysis, which is a method that reduces some variables into several factors based on the correlation structure between variables.

Factor analysis is an interdependency technic in which there is no division of variables into dependent variables and independent variables. It aims to define the structure between variables in analysis. In the other word, this analysis describes the relationship structure between variables by concerning the correlation between those variables.

There are some data requirements in this analysis. One of them is called the value of Kaiser-Mayer Olkin (KMO) of a set of variables, a popular diagnostic measure, tests whether the partial correlations among variables are small. It is a measure of a homogeneity of variables (Sharma, 1996 in [11]). The value of KMO measures the adequacy of sampling thoroughly and measures the sampling adequacy for each variable. The value of KMO is computed using the following formula [12]:

\[
KMO = \frac{\sum \sum r_{ij}^2}{\sum \sum r_{ij}^2 + \sum \sum a_{ij}^2}
\]  

(1)

where: 
- \( r_{ij} \) = simple correlation between i-th and j-th variable
- \( a_{ij} \) = partial correlation between i-th and j-th variable

To be considered feasible in factor analysis, the value of KMO should be equal or higher than 0.5 [13] and [14].
Beside KMO, it is also necessary to review the comparison index of distance between correlation coefficient and its partial correlation partially in each variable. It is called the value of Measure of Sampling Adequacy (MSA). MSA is computed using the following formula:

$$MSA_i = \frac{\sum r_{ij}^2}{\sum r_{ij}^2 + \sum a_{ij}^2}$$

(2)

Where:
- $r_{ij} =$ simple correlation between i-th and j-th variable
- $a_{ij} =$ partial correlation between i-th and j-th variable

the value of MSA should be equal or higher than 0.5. If the MSA value of a variable smaller than 0.5, that variable should be exclude from analysis [13] and [14].

To test the correlation matrix, Bartlett’s test of sphericity is used [11]. This method test is the correlation matrix similar with identity matrix (it means that each variable correlate only with itself). The hypothesis tested are:

$H_0 :$ correlation matrix is an identity matrix (the factor analysis is inappropriate)

$H_1 :$ correlation matrix is not an identity matrix (the factor analysis is appropriate)

The statistic test in this method follows the distribution of $\chi^2$ and degree of freedom $(p(p-1)/2)$. The statistic test can be computed using this formula [15]:

$$\chi^2 = -(n - 1 - \frac{2p + 5}{6})ln|R|$$

(3)

where:
- $n =$ number of sample
- $p =$ number of variables
- $R =$ correlation matrix of variables

$H_0$ rejection criteria is when $\chi^2_{value} > \chi^2_{table}$ or significant value less than alpha. In brief, if KMO and MSA are higher than 0.5 and the Bartlett’s test of sphericity indicates the item correlation is not an identity matrix, then the research can move forward with the factor analysis [16].

In determining the number of factors selected, there are some criteria that can be used, which are eigen value criteria (the number of factor selected is the factors that have eigen value equal or larger than 1), a priori criteria (the number of factors selected is according to some theory), percentage variance criteria (the number of factors selected according to the cumulative variance, usually above 80%), scree test criteria (the numbers of factors selected is according to the convergence of line in the scree plot), and respondent criteria [17].

The next step in factor analysis is factor extraction. Factor extraction is a method to reduce data from some variables into some fewer factor which able to describe correlation between observed variables. Every variable will be formed into a factor. A factor includes some variables that have correlation to each other. Thus, the basic principle of factor extraction is to group the observed variables into several factors based on their level of correlation.

There are several methods that can be used to perform factor extraction. Some of them are principal component analysis, principal axis factoring, unweighted least squares, generalized least squares and maximum likelihood. Each factor will have different value of loading factor (vector eigen). The value of loading factor is what will determine a variable belonging to a certain factor.

If the loading factor of a variable is equally high on some factors then it is difficult to decide on which factor the variable should be included, whereas the target factor analysis is that each variable goes to one factor only. For that after extraction, the factors formed need to be rotated. The purpose of the rotation is to extract the variable loading factor. Rotation is done by rotating the axis of the factor, from its center point to the point to be addressed. Some rotational methods, namely Orthogonal Rotation (quartimax, varimax, and equimax), Oblique rotation (oblimax, quartimin, covarimin, oblimin).
2. Methodology
This research takes place in Bali State Polytechnic, Badung Regency, Bali Province, Indonesia. The data used in this research is primary data, collected by using questionnaire. The population of this research is the students of Bali State Polytechnic and the number of sample used is 100 students. The samples taken by using purposive sampling technique, which is choosing the students who participated in the Student Entrepreneurial Program in the year of 2016. There are 15 variables used in this research, which are as the following table:

| No | Variable                                |
|----|----------------------------------------|
| 1  | Autonomy/authority                     |
| 2  | Economic challenge                     |
| 3  | Self realization                       |
| 4  | Avoid responsibility                    |
| 5  | Social Career                          |
| 6  | Perceived Confidence                   |
| 7  | Family role                            |
| 8  | Support of significant people           |
| 9  | Support of friends                     |
| 10 | Leadership                             |
| 11 | Mental Maturity                        |
| 12 | Family background                      |
| 13 | Relation with entrepreneur             |
| 14 | Academic support                       |
| 15 | Entrepreneurship training              |

3. Result

3.1. Validity and Reliability Test of Questionnaire

| Item | r-value | Validity | Item | r-value | Validity |
|------|---------|----------|------|---------|----------|
| 1    | 0.700   | Valid    | 26   | 0.854   | Valid    |
| 2    | 0.747   | Valid    | 27   | 0.910   | Valid    |
| 3    | 0.526   | Valid    | 28   | 0.852   | Valid    |
| 4    | 0.605   | Valid    | 29   | 0.761   | Valid    |
| 5    | 0.596   | Valid    | 30   | 0.618   | Valid    |
| 6    | 0.569   | Valid    | 31   | 0.446   | Valid    |
| 7    | -0.034  | Not Valid| 32   | 0.572   | Valid    |
| 8    | 0.392   | Valid    | 33   | 0.363   | Valid    |
| 9    | -0.078  | Not Valid| 34   | 0.570   | Valid    |
| 10   | 0.428   | Valid    | 35   | 0.604   | Valid    |
| 11   | 0.390   | Valid    | 36   | 0.724   | Valid    |
| 12   | -0.141  | Not Valid| 37   | 0.770   | Valid    |
| 13   | 0.105   | Not Valid| 38   | 0.370   | Valid    |
| 14   | 0.362   | Valid    | 39   | 0.240   | Not Valid|
| 15   | 0.106   | Not Valid| 40   | 0.529   | Valid    |
| 16   | 0.473   | Valid    | 41   | 0.836   | Valid    |
| 17   | 0.747   | Valid    | 42   | 0.387   | Valid    |
| 18   | 0.800   | Valid    | 43   | 0.806   | Valid    |
| 19   | 0.551   | Valid    | 44   | 0.581   | Valid    |
| 20   | 0.428   | Valid    | 45   | 0.362   | Valid    |
| 21   | 0.746   | Valid    | 46   | 0.137   | Not Valid|
| 22   | 0.368   | Valid    | 47   | 0.545   | Valid    |
| 23   | 0.519   | Valid    | 48   | 0.545   | Valid    |
| 24   | 0.362   | Valid    | 49   | 0.649   | Valid    |
| 25   | 0.639   | Valid    |

Valid Item Total = 42
Not Valid Item Total = 7
Cronbach’s Alpha = 0.942 (Reliable)
Before using the questionnaire, it is necessary to test the validity and reliability of the questionnaire. Validity analysis is done by comparing the r-value (correlation value between each item and the total item) with the r-table (degree of freedom n-2) in this case, r-table is 0.361. If the r-value is greater than r-table, then the item in the questionnaire is stated valid. The questionnaire is stated reliable if the value of Cronbach’s Alpha is larger than 0.6. The result of validity and reliability analysis is shown in the Table 2.

The result shows that there are 7 items that are not valid in that questionnaire and 42 items are valid. In the next analysis, the 7 not valid items are excluded from analysis. The value of Cronbach’s Alpha is 0.942 which is larger than 0.6, so the questionnaire is reliable

3.2. Feasibility of Factor Analysis Data

The feasibility of factor analysis data is viewed by 3 values, which are KMO, MSA, and Bartlett Test. The value of KMO obtained is 0.659 which is larger than 0.5, so it is said that the data is feasible. The Bartlett’s test of sphericity also shows that the Chi Square value is 746.340 with significant value 0.000, so it is said that the correlation matrix is not an identity matrix. But if it is reviewed from MSA value, there are 3 variables (X4-Avoid Responsibility, X5-Social Career, and X12-Family Background) that have MSA value less than 0.5. It is indicated that those variables can not be analyzed by factor analysis. The factor analysis will be done by excluding those variables. The KMO, MSA, and Bartlett’s test using only 12 variables are shown in Table 3.

| Variable                      | MSA     | Variable                      | MSA     |
|-------------------------------|---------|-------------------------------|---------|
| X1 - Autonomy/Authority       | 0.861   | X9 – Support of Friends       | 0.639   |
| X2 - Economic Challenge       | 0.862   | X10 - Leadership              | 0.710   |
| X3 - Self Realization         | 0.779   | X11 – Mental Maturity         | 0.782   |
| X6 - Perceived Confidence     | 0.834   | X13 – Relation with Entrepreneur | 0.712 |
| X7 – Family Role              | 0.778   | X14 – Academic Support        | 0.836   |
| X8 – Support of Significant People | 0.579 | X15 – Entrepreneurship Training | 0.706 |

KMO = 0.753
Bartlett's test Chi Square = 538.063
Bartlett's test sign= 0.000

Table 3 shows that according to MSA, KMO value, and Bartlett’s test, the feasibility of factor analysis is fulfilled.

3.3. Factor Extraction and Selecting Number of Factors

The following step in factor analysis is factor extraction. The method used as factor extraction in this research is principal component analysis (PCA). There are 12 components/factors obtained by factor extraction. But based on eigen value (shown in Table 4), there are only four components/factors that have eigen value greater than 1.0. It is also supported by the scree plot in Figure 1. The plot after the fourth component/factor is tend to be straight line. So according to eigen value and scree plot criteria, there are four factors obtained in this research.
Table 4. Eigen value of factor extraction

| Component | Initial Eigen Values | Total | % of Variance | Cumulative % |
|-----------|----------------------|-------|---------------|--------------|
| 1         | 4.655                | 38.796| 38.796        |              |
| 2         | 1.638                | 13.652| 52.448        |              |
| 3         | 1.439                | 11.989| 64.437        |              |
| 4         | 1.060                | 8.831 | 73.269        |              |
| 5         | 0.654                | 5.446 | 78.715        |              |
| 6         | 0.554                | 4.613 | 83.328        |              |
| 7         | 0.514                | 4.286 | 87.614        |              |
| 8         | 0.489                | 4.074 | 91.688        |              |
| 9         | 0.337                | 2.810 | 94.498        |              |
| 10        | 0.307                | 2.562 | 97.060        |              |
| 11        | 0.208                | 1.737 | 98.797        |              |
| 12        | 0.144                | 1.203 | 100.000       |              |

Figure 1. Scree Plot

After obtaining the number of factors, it is necessary to compute the loading factor of each variable. It is done to determine which factor should a variable be in. Loading factor of each variable are shown in Table 5.
Table 5. Loading factor

| Variable                          | 1         | 2         | 3         | 4         |
|-----------------------------------|-----------|-----------|-----------|-----------|
| X2 - Economic Challenge           | 0.785     | -0.024    | -0.156    | 0.202     |
| X6 - Perceived Confidence         | 0.782     | -0.027    | -0.296    | -0.034    |
| X10 – Leadership                  | 0.736     | -0.356    | 0.411     | -0.171    |
| X1 - Autonomy/Authority           | 0.640     | -0.376    | 0.053     | 0.194     |
| X14 – Academic Support            | 0.602     | 0.013     | -0.453    | -0.260    |
| X8 – Support of Significant People| 0.543     | 0.502     | 0.514     | -0.020    |
| X9 – Support of Friends           | 0.567     | 0.653     | 0.053     | -0.093    |
| X11 – Mental Maturity             | 0.559     | -0.582    | 0.313     | -0.114    |
| X7 – Family Role                  | 0.483     | 0.559     | 0.265     | 0.135     |
| X15 – Entrepreneurship Training  | 0.527     | 0.116     | -0.707    | 0.166     |
| X3 - Self Realization             | 0.553     | -0.152    | 0.119     | 0.668     |
| X13 – Relation with Entrepreneur  | 0.606     | -0.051    | -0.027    | -0.608    |

The result in Table 5 shows that almost all variable has the highest loading factor in component 1. The result is considered to be biased. So, it needs to be sharpen by using rotation factor.

3.4. Factor Rotation

Factor rotation method used in this research is orthogonal rotation, which is varimax. Table 6 shows the loading factor after rotation.

Table 6. Loading factor after rotation using varimax

| Variable                          | 1         | 2         | 3         | 4         |
|-----------------------------------|-----------|-----------|-----------|-----------|
| X15 - Entrepreneurship Training   | 0.860     | -0.134    | 0.029     | 0.247     |
| X14 - Academic Support            | 0.752     | 0.225     | 0.100     | -0.094    |
| X6 - Perceived Confidence         | 0.705     | 0.348     | 0.218     | 0.186     |
| X2 - Economic Challenge           | 0.568     | 0.331     | 0.279     | 0.416     |
| X10 - Leadership                  | 0.118     | 0.877     | 0.248     | 0.150     |
| X11 – Mental Maturity             | 0.065     | 0.849     | -0.053    | 0.188     |
| X13 – Relation with Entrepreneur  | 0.459     | 0.571     | 0.242     | -0.381    |
| X1 - Autonomy/Authority           | 0.293     | 0.554     | 0.029     | 0.445     |
| X8 - Support of Significant People| -0.039    | 0.245     | 0.863     | 0.075     |
| X9 – Support of Friends           | 0.357     | -0.011    | 0.793     | -0.042    |
| X7 – Family Role                  | 0.105     | 0.015     | 0.770     | 0.176     |
| X3 - Self Realization             | 0.144     | 0.241     | 0.182     | 0.823     |

* The highest value of loading factor in each variable

Result shows that the loading factor of each variable has been grouped and distributed substantially into four factors that are formed. The loading factor that have been distributed to four factors, still have to pass the cut off criteria. According to [14] the value of cut off for 100 samples at 5% significant level is 0.55. It means that the variable that has loading factor higher than 0.55 one of the
four factors, is stated significant to be in that factor. In summary, Table 7 shows the result of grouping variable and identification of factor.

**Table 7. Grouping variable and factor identification**

| No | Factor       | Variable                                                                 |
|----|--------------|--------------------------------------------------------------------------|
| 1  | Contextual   | X15 – Entrepreneurship Training                                           |
|    |              | X14 - Academic Support                                                   |
|    |              | X6 - Perceived Confidence                                                |
|    |              | X2 - Economic Challenge                                                 |
| 2  | Self Efficacy| X10 – Leadership                                                         |
|    |              | X11 – Mental Maturity                                                    |
|    |              | X13 – Relation with Entrepreneur                                         |
|    |              | X1 - Autonomy/Authority                                                  |
| 3  | Subjective Norm| X8 – Support of Significant People                                       |
|    |              | X9 – Support of Friends                                                  |
|    |              | X7 – Family Role                                                         |
| 4  | Attitude     | X3 - Self Realization                                                   |

The first factor consisting of entrepreneurship training, academic support, perceived confidence, and economic challenge are identified as contextual factors, which is factors that derived from external of the students. Entrepreneurship training is held by the university where in this training students are trained to compose business proposal conduct the business, and manage the financial. This training is expected to make the students have a clear view about entrepreneurship so their interest can be developed. It is also supported by academic support, where entrepreneurship is one of the compulsory course in all study program in Bali State Polytechnic.

Perceived confidence that the students get from training and academic support can also rise the students’ interest in entrepreneurship. So also with the economic challenge. Bali State Polytechnic students feel the current economic challenges are pushing them to become entrepreneurs.

The second factor that includes leadership, mental maturity, relation with entrepreneur, and autonomy/authority are identified as self efficacy factors. Self-efficacy is a person's belief in his/her ability to complete a job. Leadership, mental maturity, having a relation with entrepreneur, and autonomy/authority (the power over self-decisions) is a reflection of the students’ belief in their selves to do a job.

Support of significant people, support of friends, and family roles form a factor that is identified as a subjective norm factor, a factor derived from social pressures on something. This is in line with [5] in The Theory of Planned Behavior which states that one of the principal aspects of the subjective norm factor (perceived social norms) is the existence of references or views of others that are considered important by the individual to perform a behavior. In this case, the entrepreneurial interest of the students of Bali State Polytechnic can arise because of the support of important people, friend support, and family role.

While factors that include self realization (self-awareness) identified as attitude factor. Attitude factor is a factor that comes from self-awareness to do something and have the assumption that something that has benefits against itself.
4. Conclusion
According to the analysis that have been done, conclusion obtained is there are four factors that influencing the interest of Bali State Polytechnic’s students in entrepreneurship. The four factors are: contextual factor (including entrepreneurship training, academic support, perceived confidence, and economic challenge), self efficacy factor (including leadership, mental maturity, relation with entrepreneur, and family role), and attitude factor (including self realization).

There are some suggestions to the leaders of Bali State Polytechnic to improve the students’ interest in entrepreneurship, which are as following:
1. The continuity of entrepreneurship training is needed
2. The academic support in every entrepreneurship class needs to be maintained
3. In every campus activity, the soft skill training is needed so the students can maintain the leadership and their mental maturity
4. It is needed to be formed a group of students who have interest in entrepreneurship so they can support each other, and also can support other students to be entrepreneur
5. Students’ introduction to entrepreneurial figures needs to be improved by holding motivational seminars that invite entrepreneurial figures. It aims to improve student relationships with entrepreneurs and can maintain students’ self realization of entrepreneurship.

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