Strategies to Grow The Technopreneurship in Polytechnic Student

Ganjnar Ilkhiagung
Mechanical Engineering
Cilacap State Polytechnic
Cilacap, Indonesia
galihma@gmail.com

Galih Mustiko Aji
Electrical Engineering
Cilacap State Polytechnic
Cilacap, Indonesia

Abstract—This research explains that to increase entrepreneurship interest in technological fields to students in science can be influenced by several factors, it will increase student interest in entrepreneurship. Besides, with good academic management in Polytechnic, it will improve students' self-effectiveness for entrepreneurship. And the last Academic Support as a pull-factor affecting entrepreneurship interest in Polytechnic students. The sample used was 309 students from Cilacap State Polytechnic, Bandung Manufacturing Polytechnic, Indramayu State Polytechnic, Batam State Polytechnic, and Polytechnic of Caltex Riau. The research is Polytechnic implementing Polytechnic Education Development Project. The model of the theoretical framework constructed illustrates the existence of several hypotheses that have been developed used multiple regression analysis with the mediating model or path analysis. The result of hypothesis 1 shows the pattern of vocational learning outcome as Academic Support supports student entrepreneurship interest, the hypothesis 2 shows the role of Academic Support in the research object has a significant impact on the increase of student attitudes, hypothesis 3 shows that the attribute influences the student interest for entrepreneurship, whereas hypothesis 4 show Academic Support has a significant effect on Student Self-Efficacy and Hypothesis. Hypothesis 5 Self-efficacy has a significant effect on student entrepreneurs' interest in technology fields. The mediation test proved that the variable of attitude factor and the variable of self-efficacy play a role in the entrepreneurship interest variable in the technology field.

Keywords—academic support, attitude factors, self-efficacy, entrepreneurial intention, technopreneur

I. INTRODUCTION

Vocational-based education in Indonesia has an important role in the development of society as a whole. Includes cognitive development, physical strength, and mastery of science, technology, art, and sports. While vocational education in Indonesia is a place to develop student competence. Thus, vocational education is directed at special education, this is based on the needs of students for certain occupations or professions. By looking at the needs of students, the implementation of vocational education, in this case, the polytechnic must have different characteristics.

The learning outcomes of vocational education practices in both process and product outcomes are heavily influenced by the learning approach applied, both from management and on learning methods and facilities. Vocational education following LAW No. 12 of 2012 on higher education, stating that higher education diploma programs prepare students to work according to the skills applied. Through the law, a vocational education provider at a tertiary level is organized by the Polytechnic.

The implementation of vocational education at the Polytechnic must have a link between education and the business or industry (DUDI) for this, so the curriculum and learning programs at the Polytechnic must link and match the needs of the workforce. The concept of learning using PBE (Production Base Education) is an alternative to Dual System or Competency-Based Learning that has been widely known in the education system of higher education in Indonesia. By using the PBE concept in the learning system at the Polytechnic, there are various advantages, one of which is to improve student competence through a finished product that has use-value or has commercial value in the community. From this output, increasing competence in the PBE system has a very complete spectrum to form professional attitudes within the campus [1].

With this connection, vocational education organized by polytechnics can reduce unemployment [1]. But based on a report from the International Labor Organization (ILO), the number of open unemployment in 2009 in Indonesia amounted to 9.6 million (7.6 %), and 10% of them were scholars. As quoted in Article Data Indonesia (2017), the Indonesian Central Bureau of Statistics recorded in August 2016 to August 2017 supporting the ILO statement which showed that a portion of the number of unemployed people in Indonesia was an educated Diploma / Academy / and University graduates. Indonesia is now facing limited employment opportunities for college graduates, thereby increasing the amount of intellectual unemployment [2].

Today's challenges faced by Indonesian society are increasingly high, one of which is the competitive situation of the ASEAN Economic Community or MEA, where the challenge will confront Indonesian tertiary education graduates to compete freely with graduates from foreign universities [3]. From the statement [4], said that graduates or candidates for Polytechnic graduates need to be directed and supported not only to be oriented as job seekers but also to be able to become job creators as well. In this position, Polytechnics need to be mediating between the need for employment by increasing interest in entrepreneurship (Entrepreneurial Intention) among students, in this case, Polytechnic students. According in article [5], competition of the current business and in the future that relies more on knowledge and intellectual capital, to become the competitiveness of the nation, the development of young entrepreneurs need to be directed to a group of young people who Educated in this regard students as candidates of college students.
graduates need to be encouraged and their interest in entrepreneurship in the field of technology through the educational system at the polytechnic grows.

Entrepreneurial Intention or interest in entrepreneurship is the initial process of an established process that is generally long-term [6], so that the statement can be interpreted that by cultivating an entrepreneurial spirit among students is a way out to reduce unemployment, because graduates from polytechnics expected to be educated entrepreneurs who are able to pioneer their own business, considering that in 2015 the number of entrepreneurs in Indonesia was only 1.65 percent of the population reaching 250 million people and very low compared to a number of neighboring ASEAN countries such as Singapore which reached 7%, Malaysia 5%, Thailand 3% where the population of the country is less than Indonesia so the government targets the number of our entrepreneurs to reach 2 percent of the population [7].

The Global Entrepreneurship and Development Institute (GEDI) noted that Indonesia is a strong country in terms of networking, but weak in terms of technology utilization based on fourteen pillars which are index indicators issued by the GEDI as parameters performance, then Indonesia has high scores in terms of networking (0,53), product innovation (0,49), and ability to start a business (0,39), has moderate value in terms of risk acceptance (0,25), perception of opportunities (0,24), process innovation (0,20), and human resources (0,19), and have a low value in terms of growth continuity (0,09), internationalization (0,04), and absorption of technology (0,03) [8]. The weak utilization of technology will have an impact on the weakness of the nation's competitiveness, therefore the role of the polytechnic as vocational education must be able to optimize resources to increase the uptake of technology for its students.

One of the factors driving the growth of entrepreneurship in a country lies in the role of higher education through the provision of education [9]. The University of the Polytechnic must be responsible for educating and delivering entrepreneurial skills to their graduates and giving the motivation to dare to choose entrepreneurship as their career. Higher education institutions need to apply concrete entrepreneurial learning patterns based on empirical input to equip students with meaningful knowledge to encourage student enthusiasm for entrepreneurship [10] [11]. The problem is how to foster entrepreneurial motivation among students and what factors influence student motivation or interest in choosing an entrepreneurial career after they graduate, are still questions and require further study.

Many factors can shape a person's entrepreneurial behavior, showing that one's entrepreneurship can be learned and shaped [12], from the statement that it can be interpreted using the Production Based Education or PBE learning method applied at the Polytechnic able to produce entrepreneurs. The main concept of system implementation Production Based Education is to provide direction in implementing the educational process with a production approach [13]. In polytechnic education, students learn to understand what is needed for certain work interests, practice, demonstrate practical and procedural knowledge. Polytechnic students fulfill almost 75% of their time practicing in the field to apply their knowledge [14]. In principle, the output of PBE is that students in practicing practice will produce manufacturing products so that the problem of absorption of technology can be overcome by this PBE learning pattern.

Learning patterns Production Based Education as academic support to provide more value in this aspect of the experience, namely the experience of making something real, the pattern of vocational learning with the concept of the PBE is expected to create an entrepreneur in the field of technology among college student [13]. Therefore personality attributes such as the need for achievement, strong internal locus of control, high creativity and innovation, play a role in shaping people's interest in entrepreneurship [15] [16], while a person's attitude toward entrepreneurial activity is also believed to form an entrepreneurial interest, that contextual factors that receive considerable attention are academic support, social support, and environmental conditions of the business [17].

Two theories regarding the impetus for entrepreneurship, push theory and pull theory. Push theory, individuals are encouraged to become entrepreneurs because of negative environmental incentives, such as dissatisfaction with work, difficulty finding work, flexibility in working hours or insufficient salary [18]. Conversely, pull theory holds that individuals are interested in becoming entrepreneurs because they are indeed looking for things related to the entrepreneurial characteristics themselves, such as independence or indeed because they believe entrepreneurship can provide prosperity. The driving and pulling factors can affect the motivation of students to work / careers to become entrepreneurs. The motivation of students to become entrepreneurs in the review of the career can be seen from the level of attractiveness of the career, feasibility, and belief in self-efficacy [19].

Thus, the development of entrepreneurship souls towards production bases through vocational education organized by Polytechnic can be a supporter of sustainable development. Besides, innovations in technology conducted by students can be a driving force for developing countries to become the target of the world's industrial investments. Based on the background and urgency of the research described above, the research is focused on knowing the effects of various tensile factors, both regarding the education of the production base (PBE) learning methods as a contextual factor, attitudes to entrepreneurial interests. Polytechnic University of Technology (Technopreneur).

II. LITERATURE REVIEW

Entrepreneurship is seen as something that can be taught and some things are seen as personal characteristics as being born from birth [20]. That learning through experiential learning has been proven to be used as a framework for developing new learning-centered methods and curricula [21]. The learning model is needed to improve competence and build the entrepreneurial spirit of students [22], that the learning model must make students experience firsthand the atmosphere of the industry while at the same time developing and achieving competence, as well as developing an entrepreneurial spirit [22]. As well as the educational process Experiential learning, Production Base Education,
has been used in interdisciplinary and multi-disciplinary. So that it can be concluded that Experiential learning, in this case, is vocational education with a production base education approach as a means of education and management. Personal experience is the most important factor influencing the development of self-efficacy. Bandura, 1991 [23] it is an important thing in the application of entrepreneurial teaching is related to practice-based methods (field-based) and little supported by classroom-based methods. However, this was not found in the study [24] where there was no significance between academic support for students' entrepreneurial intentions. Another study that is also related to the education curriculum, it was found that entrepreneurship programs through internships in companies for high school students have a positive effect on the willingness of students to become entrepreneurs [25]. Based on the statement, the hypotheses to be answered in this study are formulated as follows:

H1: The better Academic Support will increase the interest of Entrepreneurial Intention students in the field of technology or technopreneurship.

Attitude can be influenced by two factors namely indigenous and exogenous factors. Endogenous factors are factors that originate from a person such as intimidation, suggestion, identification, and sympathy, while exogenous factors are external factors such as the family environment, community environment and educational environment [20]. Concerning this study which focuses on exogenous factors namely the educational environment, In connection with this research which focuses on exogenous factors namely the educational environment, that the educational environment has a strong role. Where attitude factors are formed from motivation, self-success, and feelings of freedom, wherein his research the attitude factor maker has a positive relationship with an entrepreneurial interest in students.

Academic support refers to factors related to support for a student to achieve and complete study assignments with a target outcome and a predetermined time [23]. Meanwhile, Government Regulation Number 60 of 1999, academic freedom is the freedom possessed by members of the academic community to carry out activities related to education and the development of science and technology responsibly and independently. Concerning academic support, academic freedom is the implementation of forms of academic support for students [12] [27]. In theory, it is believed that the provision of education and entrepreneurial experience for someone from an early age can increase a person's potential to become an entrepreneur. Some studies show results that support this statement [28] [29]. In addition to entrepreneurial education and experience, academic support is also thought to be a contextual factor that influences the interest in entrepreneurship [17]. Based on the statement, the hypothesis that will be answered in this study is formulated as follows:

H2: The better Academic Support in the Polytechnic environment, it will increase student Attitude Factor in interest in entrepreneurship (technopreneurship).

Someone always relates to certain objects both physically and non-physically. In responding to these objects a person must also have a certain attitude. Attitude is a factor that influences views and behavior. The attitude itself influences trust, and trust also influences attitudes [30].

Theory of Planned Behavior (TPB) explains that interest is positively influenced by attitudes toward behavior. the stronger an individual's assessment of the impact of becoming an entrepreneur will strengthen the desire of individuals to work independently (self-employed) or run their own business [31]. In this case, the stronger the attitude towards entrepreneurs, the stronger the interest in becoming entrepreneurs. Attitudes towards entrepreneurship are important aspects in predicting entrepreneurial potential in the future, and entrepreneurial activity can be predicted more accurately by examining interest factors rather than other factors such as personality, demographics, characteristics and situational factors [32] [33]. A person's interest in a particular object can be known through disclosure, action or action and from the answer to the question, in this case, if someone has an interest in entrepreneurship will be expressed by saying actions/actions and by answering several questions. For example, someone who has an interest in entrepreneurship will be expressed in words or disclosures.

In research conducted by Surati and Siren (2011) at Satya Wacana Christian University, Salatiga Indonesia showed that the elements of attitude in the TPB consisted of authority and autonomy variables, economic opportunities, self-realization, and perceived self-confidence. Of the four elements of attitudes proved to be significantly positive towards entrepreneurial intentions. The same thing as the research conducted in the article [22] with several elements from several attitude variables such as being interested in business opportunities, creative thinking, and innovative likes to face risks and challenges, think positively about failure, show results that influence attitudes / entrepreneurial intentions. However, the different findings in the article [34] found that attitudinal factors on self-realization elements had no significant effect on students' interest in becoming technopreneurs. Based on the statement, the hypothesis that will be answered in this study is formulated as follows:

H3: The better the student's attitude factor, it will increase the interest in entrepreneurship (technopreneurship).

Self-efficacy has the role of participating in the development of learning activities such as entrepreneurship education and entrepreneurship training programs. In 2016 an agreed Learning Outcomes in the entire Polytechnic Study Program in Indonesia, based on the Indonesian National Qualifications Framework (KKNI) or the National Qualifications Framework for Indonesia where Learning Outcomes at a minimum standard of study programs held by the Polytechnic must foster an entrepreneurial spirit through courses supporters of entrepreneurship courses.

From the above opinion, it is reinforced by the findings in the article [35] that, academic support learning activities such as entrepreneurship education and entrepreneurship training programs have a role in developing self-efficacy. In a study conducted [36] found that self-efficacy has a direct influence and mediation in the intention of entrepreneurship. Thus, this study can clarify the differences that exist by examining whether self-efficacy can act as a mediation of the
effect of academic support on the intention of student entrepreneurship in the field of technology. Based on the statement, the hypotheses to be answered in this study are formulated as follows:

**H4: The higher the Academic Support at the Polytechnic, the better the Self Efficacy of Students in their interest in entrepreneurship (technopreneurship).**

Self-efficacy can encourage a person's performance in various fields including interest in entrepreneurship [36]. Therefore, opening a business requires self-efficacy because of its ability so that its business can succeed. Because self-efficacy is a social cognitive or social reasoning that refers to the individual's belief that he is capable of carrying out the task. In the journal [37] compare entrepreneurship intentions between Indonesia, Japan, and Norway. From these studies found factors that influence the interest in entrepreneurship differ between these countries, one of the factors that influence entrepreneurial interest is self-efficacy. But in this study, it was found that self-efficacy had no significant effect in the context of Japanese students [38]. The variable self-efficacy has a significant effect on students' interest in entrepreneurship, both partially and simultaneously [15]. Besides, self-efficacy tolerate risks and desires to work independently where self-efficacy has a positive effect on the entrepreneurial interest which means that the better self-efficacy, the better its intention to entrepreneurial. Based on the statement, the hypotheses to be answered in this study are formulated as follows:

**H5: The better self-efficacy of a student will influence the interest in entrepreneurship (technopreneurship).**

### III. Research Results

The results of the model goodness test, obtained by doing F test significance \( = 0.000 \) and adjusted \( R^2 = 0.678 \). This number informs that the regression model is fit and the amount of variation in changes in Entrepreneurial Intention (Technopreneur) of 67.8% is due to variations in changes in Academic Support, Attitude Factor and Self Efficacy. The results of the regression analysis of the mediation model with the help of SPSS software through 3 (three) regression stages, namely:

![Fig. 1. Research model.](image)

**A. The effect of Academic Support on The Interest in Entrepreneurship Students in The Field of Technology or Technopreneurship**

Based on the hypothesis testing, it is known that academic support is positively and significantly significant to the entrepreneurial interest of polytechnic students in technology or technopreneurship. The results showed if, in college able to provide knowledge, facilities and adequate inspiration about business opportunities enabled students will choose to be entrepreneurial as a way of career. Besides, in the results of the research, it is known that the key role to increase interest in entrepreneurial interest among polytechnic students is with academic support, it is supported by the findings of Kenyan students who showed contributions of academic support for the entrepreneurial interest [38]. Thus the establishment of entrepreneurial interest in the Polytechnic students needs to be designed from the beginning through a clear curriculum system, as the entrepreneurship Program through an internship in the industry has a positive effect on the willpower Students to become entrepreneurial.

**B. The Influence of Academic Support in The Polytechnic Environment, on Attitude Factor of Polytechnic Students**

Hypothesis testing results in the influence of Academic Support in the Polytechnic, on the Attitude Factor of students in entrepreneurial interests (technopreneurship), which shows that the role of Academic Support in education in polytechnic has a significant impact on the increasing Attitude Factor of students to influence entrepreneurial interest. The educational environment has a strong role in the formation of attitudes, as they lay the foundation of understanding and moral concepts in individuals. Thus, it can be said that the vocational learning pattern adopted by the Polytechnic as the academic support variable has been able to form an attitude to improve the student's ability to receive a response and receive an inverse to start Business activities characterized by committing to responsibility as the highest indicator in student perception. Entrepreneurship process is formed based on the process that comes from the private then proceeds to the process of the Organization (group) and family and the process of environmental processes. If you look at the statement, Academic Support is part of the environmental process that affects a person to plunge into an entrepreneurial environment so that it is likely to be a person or whether to go to the first entrepreneurial Determined by the personal attitude process.

**C. Effect of Student Attitude Factors on Interest in Entrepreneurship (Technopreneurship)**

The discussion on the influence of attitude factor of an individual to entrepreneurial desires has been widely discussed in a number of studies, in which the studies apply the elements of attitudes contained in the Theory of Planned Behavior (TPB), elements used in an attitude factor variable such as having a high-prestige motif, having high creativity, has a high innovation nature, has a commitment to responsibility, has Independence or not reliance on others, and the latter believes and is confident of success if entrepreneurial shows the results that attitude factors influence the student's interest in the polytechnic in order to plunge or pursue a career Entrepreneurial. So that with the result it can be concluded that the strong attitude then the student will be more confident to dare to open the business.
D. Effect of Academic Support on Self Efficacy on Polytechnic Students

The findings in this study showed the high degree of academic support gained by the students, hence the self-efficacy of students for entrepreneurial greater. Academic support through entrepreneurial education and business atmospheres within the educational environment have positively influenced the efficacy of self-esteem, with academic support through entrepreneurial education in polytechnics having a significant influence on student self-efficacy. With the results, the student knowledge of entrepreneurship gained through education in a polytechnic environment can increase self-efficacy by choosing a career in the business.

E. Effect of Self-Efficacy on Interest in Entrepreneurship (Technopreneurship)

The results of the research in this hypothesis indicate a positive and significant influence of self-efficacy variables against entrepreneurial interest in Polytechnic students, the self-efficacy variable significantly affects the student's entrepreneurial interests. Both partially and simultaneous are characterized by high confidence and mental maturity. Also, the results of this research supported by research that compares comparing the intrusion of entrepreneurship between Indonesia, Japan, and Norway. Where the self-efficacy that Indonesian students have through vocational education that is supervised by the Polytechnic has become a factor that affects the interest of entrepreneurship in the field of technology [39]. Self-efficacy positively affects the entrepreneurial interest characterized by the high confidence and the mental maturity of entrepreneurial interest will increase.

IV. DISCUSSION OF MEDIATION VARIABLES

In the case of polytechnic students, the attitude factor variable has been instrumental in the dissemination of the academic support variables of the entrepreneurial interest variable (Entrepreneurial Intention) in the field of Technology (technopreneur). Indicators used in attitude factor variables such as having high prestige motives, having high creativity, have high innovation properties, commit to responsibility, have independence or not dependent against others and are confident of success if entrepreneurial shows the results that attitude factors affect the students' interest in polytechnic for entrepreneurship. So that the result can be concluded that the strong attitude then the student will be more confident to start the business. However, the academic support variables have not produced a significant impact on the entrepreneurial interest of students in technology or technopreneurship directly.

The result of the calculation in this second mediation variable indicating the self-efficacy variable consisting of a confidence indicator will be successful on the technology, confidence by choosing as a technopreneur is an option, the failure of others not to degrade the spirit as technopreneur, the belief will be able to deal with problems in the entrepreneurial and the belief capable of dealing with ever-changing business activities has played a role between Academic Support to variable entrepreneurial interests in the field of Technology (technopreneur) and self-efficacy have direct influence and mediation on the intention of entrepreneurship in the field of technology (technopreneur).

V. CONCLUSION

The results of the research in the first hypothesis show that the vocational learning pattern applied at the PEDP (Polytechnic Education Development Project) Polytechnic, as academic support shows a positive and significant result towards the interest of student entrepreneurship. In the second hypothesis shows the role of Academic Support in the Polytechnic environment has a sinful impact on increasing student Attitude Factor to influence the interest in entrepreneurship. The results of the third hypothesis show that attitude factors significantly influence the interest of Polytechnic students for entrepreneurship.

Another finding on the fourth hypothesis in this study shows that academic support variables have a positive and significant effect on self-efficacy on students. And the last hypothesis in this study shows a positive and significant influence between self-efficacy variables on the interest in entrepreneurship (technopreneurship) in PEDP (Polytechnic Education Development Project) implementing polytechnic students. Besides, in this study a mediation test was conducted which showed results in the attitude factor variable and self-efficacy role mediating between academic support variables towards the interest in entrepreneurship (Entrepreneurial Intention) in the field of technology (technopreneur).

REFERENCES


