

## **FACTORS EXPLAINING THE PRODUCT INNOVATION OF ENTREPRENEURIAL STUDENTS: A THEORETICAL APPROACH**

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### **ABSTRACT**

Entrepreneurship education emphasizes learning through business practices with student competencies capable of innovation. This research aims to develop theoretical modeling of the product innovation process for students in entrepreneurship programs in higher education. Various factors influence product innovation, analyzed and identified as the main factors in product innovation for entrepreneurial students, namely entrepreneurship education and creativity. The research method used is qualitative with literature study, theoretically analyzing previous theories and researchers and determining the main factors as predictors of the formation of educational product innovation. Grounded theory, with comparison of various correlation results as the findings of this research. Shows that creativity is a mediator of entrepreneurship education towards product innovation. Recommendations for future researchers to be able to examine the influence of entrepreneurship education on student product innovation with creativity as mediation, whether tested quantitatively, or developed on other broader aspects of variables.

**Keyword:** *entrepreneurship education; student creativity; product innovation; higher education.*

### **ABSTRAK**

Pendidikan kewirausahaan menekankan pembelajaran melalui praktek bisnis dengan kompetensi mahasiswa mampu berinovasi. Penelitian ini bertujuan untuk merancang pemodelan teoritis bagaimana proses inovasi produk bagi mahasiswa pada program kewirausahaan di Perguruan Tinggi. Berbagai faktor mempengaruhi inovasi produk, dianalisis dan diidentifikasi faktor utama dalam inovasi produk bagi mahasiswa berwirausaha adalah pendidikan kewirausahaan dan kreatifitas. Metode penelitian yang digunakan adalah kualitatif dengan study literatur, secara teoritis menganalisis teori dan peneliti terdahulu dan menentukan faktor utama sebagai prediktor terbentuknya inovasi produk pendidikan. Grounded theory, dengan perbandingan berbagai hasil korelasinya sebagai temuan penelitian ini. Menunjukkan bahwa kreatifitas sebagai mediator pendidikan kewirausahaan menuju inovasi produk. Rekomendasi kepada peneliti selanjutnya untuk dapat meneliti pengaruh pendidikan kewirausahaan terhadap inovasi produk mahasiswa dengan mediasi kreativitas baik diuji secara kuantitatif, maupun mengembangkan pada aspek variabel lainnya yang lebih luas.

**Kata kunci:** *pendidikan kewirausahaan; kreativitas mahasiswa; inovasi produk; perguruan tinggi*

## INTRODUCTION

With global competition, countries are pressured to compete in a free market environment. In this competition, there are always those who lose and also win. These problems encourage entrepreneurs to make efforts that are more focused on improving product quality, modifying products, and improving product packaging, with the aim of being able to compete globally (Yuliaty et al., 2020). In 2020, the Ministry of Trade of the Republic of Indonesia has held many free trade agreement meetings with various countries. The aim of this agreement is to increase Indonesia's trade volume on the global market. It is believed that the existence of international cooperative activities between countries will be able to provide effectiveness in accelerating economic recovery due to Covid-19. What the Indonesian government has done is to enter into a free trade agreement between Indonesia and ASEAN countries (Kemenkopukm, 2021).

Product innovation is the beginning of a company's development because modifications and changes occur based on the results of an assessment carried out by the company on the quality of its products, with the aim of maintaining continuity in meeting consumer demands (Fauzi & Mandala, 2019). However, in Indonesia there are still many products that do not innovate, this is proven by the 2022 Global Innovation Index (GII). GII is a global reference for recording innovation activities in 129 countries in the world. Compiled using 80 indicators. In the 2022 Global Innovation Index (GII), Indonesia ranks 76th. This figure is far compared to other Asian countries, such as South Korea 5th, Singapore 8th, China 12th, Japan 13th, and Malaysia 36th (Eko, 2022).

The fact that Indonesia is lagging behind in this ranking is a concern, especially because the Asian region is where the most innovation occurs, with growth taking place after the economic slowdown in developed countries and the world (Gunawan, 2019). Based on expenditure data for research and development from the United Nations Educational, Scientific and Cultural Organization (UNESCO), Indonesian company investment in research and development is 0.02% of GDP, the lowest compared to Singapore 1.26%, Malaysia 0.59%, Thailand 0.27%, Vietnam 0.21%, and the Philippines 0.04%. The lack of funds allocated by Indonesian companies for research and development activities shows that there are market factors that play a role in hindering the level of innovation in Indonesia (Abdini, 2022).

Creative economic growth has significant potential in contributing to Gross Domestic Product, employment and exports. The government continues to encourage the development of the creative industry so that it becomes a strategic sector and has an increasingly large role in terms of contribution to GDP (Kemenko Perekonomian, 2015). According to the 2019 Global Entrepreneurship Index (GEI), Indonesia is still ranked 75th out of 137 countries with a score of 26. This index measures a country's ability to create entrepreneurs, and it should be noted that Indonesia's position in the GEI is still behind when compared to several neighboring countries. in the ASEAN region (Yudhistira, 2023).

Based on data from katadata.co.id sourced from the Central Statistics Agency in 2022, the total workforce in 2022 will be 143.7 million people, the main job status of the majority is laborer/employee/employee (37.66%). Creating an entrepreneurial culture in Indonesia is a task that cannot be realized instantly. Especially because traditional culture in Indonesia has largely encouraged people to look for work after completing education, rather than trying to create job opportunities (entrepreneurship). Based on BPS data, in 2022 there will be 937,176 individuals looking for work. However, the total number of job vacancies available does not reach a quarter of the total number of job seekers. In 2022, 59,276 job vacancies were registered, which experienced a drastic decrease of 88.33% compared to 2021. This gap between the number of job seekers and the number of job vacancies also contributes to the high unemployment rate in Indonesia (Yudhistira, 2023).

Meanwhile, the lack of skills is also a factor in Indonesia's difficulty in producing entrepreneurs. According to SMERU research, only 0.5 out of 100 individuals aged 15 years in Indonesia have a high level of skills. This figure is much lower compared to Thailand which has 9.4 individuals and South Korea which has 18.2 individuals with a high level of skills. One of the reasons is the approach to the education curriculum in Indonesia which has so far focused more on technical aspects. Teaching that is not yet fully based on Science, Technology, Engineering, Arts and Mathematics (STEAM) as well as problem-solving based learning. As a result, students are not trained in critical thinking, analytical and problem solving skills (Yudhistira, 2023).

The number of productive ages must be accompanied by the number of jobs because if they fail to face the 2035 Demographic Bonus, unemployment will increase. To face this, entrepreneurship must continue to be developed in Indonesia (Karebet, 2018). The ability to develop and create products that are innovative and different from others can determine a company's competitiveness. The most important thing is when you can consider companies that operate in international markets. Therefore, efforts are needed to encourage the birth of entrepreneurial students who have high product innovation power (Pham et al., 2017). Product innovation is said to be able to work, so entrepreneurship is needed because changes in consumer preferences or tastes for a product are needed to keep up with the times, the goal is to maintain the continuity of a company along with competition (Jannah et al., 2019).

Knowledge to support an entrepreneurial career can be implemented through entrepreneurship education. Entrepreneurship education provides comprehensive learning management for entrepreneurial students. Entrepreneurship education can help students to establish the correct values and cognitive systems. Apart from that, it can gather new knowledge to shape students' innovative abilities and personalities (Wei et al., 2019). Having a unique idea, being able to see market opportunities, and being ready to face various risks are the main keys needed by entrepreneurs to be ready to face competition in the market. (Riany & Dahmiri, 2020). This study is about students who become entrepreneurs by participating in the Entrepreneurial Student Program at Jakarta State University, considering that most are looking for work after completing their education, rather than trying to create job opportunities (entrepreneurship). This study will provide recommendations for effective models for increasing student product innovation power, as material for consideration and input in student entrepreneurship programs through modeling.

## LITERATURE REVIEW

### Product Innovation

Product innovation is defined as goods, services, ideas or processes that are perceived by buyers as something new in their lives (Hassan, 2017). According to Maier et al.(2019) in an organizational context, product innovation is the creation of new products and updates that are better in terms of functional technical features, components, materials and ease of use. Dalimunthe (2017) said a similar thing, product innovation is something that involves making changes to products to adapt to consumer desires.

Duhita (2018) said that innovation is a creative update or new creation that can add value to previous products. Product innovation is one type of innovation that many people will think of when discussing innovation. According to the business dictionary, product innovation is the development and market introduction of new goods or services, then redesigned or substantially improved. For example, product innovation by a company may include the discovery of new products, improving the quality of a product, or even the inclusion of new components, materials and functions that will be incorporated into existing products (Maier et al., 2019).

Kotler stated that product innovation is all goods, services, or ideas that are considered to be something innovative (Rasyid & Indah, 2018). Apart from that, according to Maulana & Alisha (2020), product innovation is a combination of several processes that impact each other so that businesses can develop and promote new products. Consumers will see a product innovation as a truly new product innovation. In other words, breakthroughs associated with new product innovation can be attributed to innovation.

Curatman et al. (2016) explained that the presence of similar products from other companies with a similar appearance is a driving factor for product innovation. Usually competing products appear without experiencing significant changes, they even tend to be statistical in nature, so this situation can be profitable because competition with competing products can be overcome with innovative products.

According to Lukas & Ferrell (2000) there are three indicators to measure product innovation, namely: 1) New products are products that are considered new by business actors but are actually not new on the market. Examples include new technology and new cosmetics. 2) a completely new product, which is new for the company and also for the market. 3) line expansion; improved products created by well-known companies but relatively new to the market. From several definitions according to the experts above, it can be concluded that product innovation is the renewal of goods, services, ideas or processes resulting from creativity in order to provide added value.

### **Entrepreneurship Education**

Entrepreneurship education can be interpreted as a process of applying knowledge, creating an entrepreneurial attitude, and developing professional skills and competencies (Hasan, 2020). Entrepreneurship education is a conscious effort made by educational institutions to instill knowledge, values, spirit and entrepreneurial attitudes in students so that they become independent, creative and innovative human beings. In line with this opinion, this is done in order to produce new entrepreneurs who are competent and have good character so that they can improve the welfare of society (Ekawarna et al., 2022; Maisyaroh et al., 2020).

According to Budi & Fensi (2018) entrepreneurship education is a process aimed at individuals who want to pursue a career as an entrepreneur, with the aim of providing understanding and insight into aspects of the world of business and entrepreneurship. According to Nengseh & Kurniawan (2021) entrepreneurship education is an initiative taken by educational institutions to provide knowledge, enthusiasm, values and actions related to entrepreneurship, with the aim of developing students into creative, innovative and independent individuals.

According to Cendyta et al. (2019) stated that entrepreneurship education is the process of educating someone to be independent, able to read business opportunities, and have an entrepreneurial spirit which can be used as a tool to overcome poverty and improve community welfare, called entrepreneurship education. Then, according to Wibowo & Pramudana (2016) entrepreneurship education is an effort or way to foster an entrepreneurial spirit and attitude in people who are educated in educational institutions or other institutions, such as training institutions, coaching, and so on.

In line with this, entrepreneurship education according to Prihantoro & Hadi (2016) has the aim of realizing a complete human being who has character, entrepreneurial knowledge and talent. According to Yanti (2019) entrepreneurship education is an educational approach that uses methodology and principles to shape students' success in life through an integrated curriculum in the classroom. Entrepreneurship education according to Sari et al. (2021) is a learning process in order to shape students' character and thinking concepts in determining and choosing careers as creators of new jobs for others.

In line with this, according to Wahyuningsih (2020) the aim of the educational process is to influence students' attitudes and mindset regarding entrepreneurship. Wardani & Nugraha (2021) state that entrepreneurship education is a place and forum for learning and introducing students to the science of entrepreneurship. From several expert definitions above, it can be concluded that entrepreneurship education is an educational program to shape the mindset, character and attitude of becoming an entrepreneur who is creative and independent and can avoid risks in entrepreneurship.

### **Creativity**

According to Astuti & Aziz (2019) creativity is a person's capacity to face challenges in new and unexpected ways and produce original answers. Creativity according to Yohana (2021) is an individual's capacity to create new work by combining pre-existing elements in such a way that it stands out from previous work and is essentially owned by every individual.

Another opinion expressed by Ananda (2019) is that the ability to think creatively is a habit that can be developed by aligning intuition, activating imagination, revealing new possibilities, expanding amazing points of view, and generating unexpected ideas. Apart from that, Zahra, Yusooif & Hasim (2013) stated that creativity is a trait inherited from children who are born with creative potential and can be trained and improved. Creativity can be increased with education and training.

Wandi & Mayar (2020) reinforce the opinion that creativity is the ability to be able to develop, create something, reproduce and detail an idea or ideas. According to Ghifar et al. (2019) creativity is the ability to solve problems and carry out innovative activities with a special approach to utilize technology and other resources into a special process that differentiates the excellence of each individual in the organization. Resti (2015) states that creativity is a soft skill ability in the form of all skills in terms of problem solving strategies. Creativity refers to all abilities that involve the emergence of new ideas, actions or methods.

According to John W. Haeefele creativity is the capacity to create which is a sign of creativity (Munfarijah, 2015). Furthermore, according to Handayani, Gandamana & Fariyah (2017) creativity is a component that is faced with problems and obstacles overcome with creativity, which is usually associated with the ability to come up with original ideas. Apart from that, according to Sujiono dalam Andayani (2021) the ability to think creatively, be creative, organize and find a new form or idea that can be useful for oneself or others is called creativity.

According to Setyabudi, creativity is the process of combining knowledge from various types of different and conflicting experiences to produce practical ideas by applying new, better methods and having the ability to apply them (Istiqomah, 2017). Apart from that, according to Fauziddin (2016) creativity is a person's ability to produce new items, whether truly original or modifying existing items to produce something new. From several expert definitions above, it can be concluded that creativity is an individual's ability to create new ideas or thoughts that are valuable and can solve problems.

### **METHOD**

This research uses a qualitative method, which aims to provide a preposition for a research proposal on Product Innovation. This research conceptualizes Product Innovation as the result of educational work and creativity obtained through the development of innovation theory. The data collection technique in this research uses a literature survey, namely qualitative research with developments originating from the research library. The technique taken in this research is in line with Bordens & Abbott (2011) that a literature survey is a process of locating, obtaining, reading, and evaluating research literature. Product innovation tends to be studied a lot, but creativity education at universities with entrepreneurship

internship programs is still limited to literature related to product innovation internship programs. This article outlines several reference findings from previous researchers' findings and explorations with Grounded Theory regarding the development of entrepreneurship education in creating creativity which is ultimately expected to encourage innovation, and the factors that influence innovation either directly or indirectly. This research method is expected to be able to explain entrepreneurship education, creativity and product innovation for entrepreneurial students.

## RESULTS AND DISCUSSION

John Howkins in Levickaitė (2011) in the creative economy conveys a concept for realizing sustainable economic development based on creativity. The use of resources no longer focuses on renewable resources but also unlimited resources, such as ideas, talent and creativity (Purnomo, 2016). According to John Howkins in Levickaitė (2011) explains that the creative economy is an economic activity that involves contributions and outputs originating from creativity in the form of ideas or concepts. The creative economy concept prioritizes human resources who have ideas and knowledge that are used in important factors to produce goods and services. In the creative economy, knowledge and skills are needed by human resources to be able to produce creative, innovative and informative ideas as the main factor of production (Sari et al., 2020).

According to Purnomo (2016): there are three important elements that form the basis in the creative economy, namely: (a) Creativity. It can be described as the capability to create something original, unique, and widely accepted. Furthermore, it also has implications for generating new ideas or practical solutions to challenges, as well as involving innovative approaches in responding to existing situations (thinking out of the box). Someone who has creativity is able to optimize this talent so that it produces something that is beneficial, both for themselves and others; (b) Innovation. Transformation of a concept or idea powered by creativity, using existing findings, to produce a better product or process. So it can add value and provide benefits. For example, there are many videos related to "lifehack" to show a product that has been innovated to produce something that is of great value and also has high utility value; and (c) Discovery. The main focus lies on innovation that creates something that did not exist before. These findings were recognized as achievements that had previously unknown functions. For example, the creation of Android and iOS based applications is a clear example of discoveries in the technology and information domain that are significant in helping humans in their activities. Based on the explanation from several sources above, it can be concluded that the creative economy is a concept that aims to form a sustainable economy, accompanied by the principles of creativity and ideas possessed by human resources. The creative economy has three basics, namely creativity, innovation and discovery

### **The Influence of Entrepreneurship Education on Product Innovation**

Based on research conducted by Lei et al. (2021) to 400 senior undergraduate students from three universities in China with the aim of determining the influence of entrepreneurship education on innovation capabilities among undergraduate students in China. The research method used is empirical research with data analysis using SPSS 20 and Amos 21. From this research, data analysis was found which shows that cognitive adaptation of the institutional environment and the application of infrastructure resources as supporting entrepreneurship education has a significant impact on increasing students' innovation abilities.

On the other hand, research on the influence of entrepreneurship education on student innovation was also conducted by Wei et al. (2019). The respondents of this research were student entrepreneurs in China which was conducted on 269 respondents with results showing that there was a positive relationship between perceptions of entrepreneurship education and

perceptions of innovation. The research results verify that entrepreneurship education which is felt in the process of forming entrepreneurial abilities from general to professional shows the main factors that encourage the development of innovation.

Based on research conducted by Suwardi et al (2021) on 183 students majoring in economics education at Siliwangi University. From this research, it can be seen that the results directly influence entrepreneurship education significantly and positively on the innovation of economics education students. Other research was also conducted by Asih et al. (2020) to 252 students at Andalas University from 15 faculties. From the research, it was found that there is a role for entrepreneurship education in influencing student technopreneurship on student innovative behavior.

Based on research conducted by Sektiyaningsih et al. (2020) to 100 respondents from students of the Muhammadiyah Asmi Jakarta Business Institute in the 2016 and 2017 classes. The type of research is explanatory research using quantitative research methods. The research results show that entrepreneurship education has a significant influence on innovation.

*Proposition 1: There is a positive impact of entrepreneurship education on entrepreneurial product innovation*

### **The Influence of Creativity on Product Innovation**

Based on research conducted by Rabbani et al. (2020) to 408 pairs of bosses and employees of IT companies throughout Pakistan using research and development research methods. This research shows that creativity has a positive effect on product innovation. With individual creativity, employees can provide opportunities to translate employee ideas into commercial form as product innovation. Another research conducted by Jodi et al. (2019) to 111 valid respondents from various industrial sectors around Yogyakarta. The research results show that creativity has a positive and significant effect on the innovative behavior of workers in the creative industry. These results suggest that creativity is the main driver for encouraging innovative behavior of creative industry workers in the workplace. Based on research conducted by Tri et al. (2019) to 319 marketing employees at 15 banks in the Vietnamese banking industry. The results show that there is a strong relationship between marketing staff creativity and innovative work behavior. According to him, critical thinking for creativity is the most important factor that influences improving employee behavior at work.

Other research was also conducted by Nurgraha & Mulyadi (2018) on 156 respondents who owned micro creative industries such as umbrellas, woven bamboo and woven mendong located in the Tasikmalaya area, West Java, Indonesia. Based on the test results, the development of creativity and innovation has a positive effect on product innovation. Developing creativity and innovation capabilities is the ability to be creative and innovative in creating added value to a product that is expected from consumers which can influence the creation of product innovation in the creative industry in Tasikmalaya City.

Based on research conducted by Anjaningrum & Sidi on 119 creative entrepreneurs who are members of the Malang Creative Fusion (MCF) network who were selected using accidental-purposive sampling. The results show that product creativity has a positive and significant effect on product innovation. However, based on research conducted by Sutapa et al. (2017) to 130 creative industry owners in the fashion sector in Central Java, Indonesia at the research location, namely the North Coast of Central Java, taking five districts, namely Pekalongan, Semarang, Kudus, Rembang and Jepara. The results of data analysis show that creativity has no significant effect on innovation. This condition shows that the biggest ideas and concepts for the development of creative industry players have not been realized in the form of product, process, market and management innovations.

*Proposition 2: There is a positive impact of creativity on entrepreneurial product innovation*

### **The Influence of Entrepreneurship Education on Creativity**

Based on research conducted by Wang et al. (2022) to 1,873 students at 36 Chinese universities using the research method of bootstrap testing and SEM model robustness testing. This research shows that the effectiveness of entrepreneurship education has a strong positive correlation with entrepreneurial creativity. Another study conducted by Navickienė et al. (2019) to 124 teachers in Lithuanian Higher Education Institutions using quantitative research methods. This research shows that there is a direct relationship between communication and educational competence whose strong relationship inspires creativity in the learning process.

Apart from that, other research was conducted by Nikitenko (2018) with research on the concept of creative personality as a new social and cultural phenomenon. The subject of the research is the influence of society on information regarding the formation and development of creative personalities. The results of this research show that the concept of education as a factor in the formation and development of creative personalities in conditions of information shapes society.

Another study conducted by Machali et al. (2021) to 375 participants, namely all State Vocational School students in Yogyakarta, Indonesia who have taken entrepreneurship subjects and participated in entrepreneurial programs and activities. The research method is quantitative and uses Structural Equation Modeling Partial Least Square (SEM-PLS). The research results show that entrepreneurship education has a significant effect on student creativity. These results also explain the fact that entrepreneurship education in general can shape students' thinking patterns, creativity, attitudes and behavior. However, based on research conducted by Mugiono et al. (2021) to 160 students of SMK PGRI Batang, Indonesia. The research method is a quantitative approach. The data analysis methods used are descriptive analysis, confirmatory analysis and structural equation model analysis. The results of this research state that entrepreneurship education has no effect on creativity.

*Proposition 3: There is a positive impact of entrepreneurship education on creativity*

### **Entrepreneurship Education Influences Product Innovation through Creativity**

Based on research conducted by Gundury et al. (2014) to 137 students enrolled in an entrepreneurship course on creativity and innovation over a consecutive period of time. The students in the sample were part-time and full-time workers who selected entrepreneurship courses in the curriculum as part of an MBA program at a large university in the Midwestern United States. The results show that creativity can mediate between entrepreneurship education and innovation. Entrepreneurship programs and courses provide context and content to help students learn and apply creativity and behavioral skills to create value in entrepreneurial enterprises.

Creativity skills enable students to discover new ideas and opportunities that contribute to innovation. The results show that the creativity skills students acquire during entrepreneurship education influence their self-perception of creativity, that students can transfer creativity to the work team, which has a positive impact on the perception of team support for innovation. This shows that a pedagogical approach, namely entrepreneurship education, plays an important role in creative thinking and behavior so that it can effectively stimulate students' ability to innovate and produce new value for their organizations (Gundry et al., 2014).

Based on research conducted by Sarri et al. (2010) to 116 entrepreneurs or owners of small to medium and very small businesses in Northern Greece. The findings state that entrepreneurship training or education is considered very important because it can create innovation. And creativity is also considered important because it can produce new innovations, both of which are positively related to each other in developing their business.



An organization's ability to continue to grow depends on generating new ideas and exploiting them effectively for long-term gain. Innovation is considered as a means to sustain a business. There is no doubt that innovation is the result of learning about interactive entrepreneurship. The existence of entrepreneurship training or education is seen as a necessity to maintain a business through creativity to facilitate business development. So it can be concluded that creativity can mediate between entrepreneurship education and innovation (Sarri et al., 2010).

*Proposition 4: There is a positive impact of entrepreneurship education on entrepreneurial product innovation mediated by creativity*

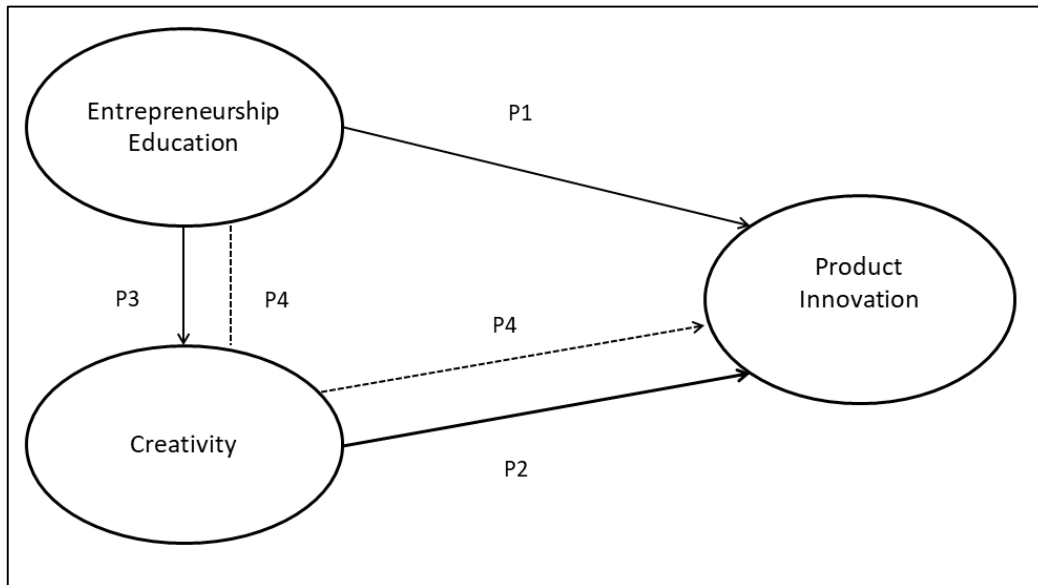


Figure 1. Proposed Product Innovation Model for Students

### CONCLUSION AND RECOMMENDATION

Based on the results of the study on the development of product innovation models for entrepreneurial students in higher education above, this research study offers the main predictor variables which have been studied theoretically as a reference and analysis. Entrepreneurship education variables have a direct or indirect influence on product innovation of entrepreneurial students. In the literature review regarding entrepreneurship education, education is a learning process in order to shape students' character and thinking concepts, as a place and forum for learning and introducing students to the science of entrepreneurship which is ultimately predicted to be the main factor in the formation of innovation. Indirectly, entrepreneurship education forms creativity which in the end is predicted to be able to increase student entrepreneurial product innovation. Based on the literature that has been analyzed, researchers found creativity as the main predictor of the entrepreneurship education process influencing product innovation. The ability to think, create, organize and discover a new form or idea that is original and can be useful for the individual or other people is important to develop in entrepreneurship education. These conditions will be able to encourage entrepreneurial students to create new products, whether completely new or modifying what already exists to make something new.

For future researchers, they can study a broader area related to the development of product innovation for entrepreneurial students, both conceptually and variably. The model above is also recommended for further research to be able to develop research in Confirmatory

Factor Analysis (CFA) and Exploratory Factor Analysis (EFA). If this theoretical modeling is continued with empirical testing on a wider scale with different populations and samples, with positive and significant findings provided that it meets the goodness of fit (GOF) test, it will become the main predictor model of product innovation for entrepreneurial students in higher education.

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