

# The Influence of Technopreneurial Learning on Technopreneurship Intention Students

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## Abstract

*Purpose:* This study aims to determine and analyze the influence of technopreneurial learning for students technopreneurship intention.

*Methodology:* The research method is used in an explanatory survey with hypothesis testing with data collection technique employed through questionnaires. The study population chosen were 344 students and the sample based on the formula Riduwan and Kuncoro was obtained as many as 185 students. The collected data were then analyzed using multiple regression techniques.

*Results:* The results showed that the overall technopreneurial learning of students were categorized as effective and technopreneurship intention of students were categorized as high. It is known that technopreneurial learning variable have influence on the students technopreneurship intention with a coefficient of 0.455.

*Applications/Originality/Value:* This finding implies that to improve student technopreneurship intentions, it is necessary to increase students technopreneurial learning with aspects contextual learning, personal and social training, and negotiated enterprise.

## INTRODUCTION

The complex problem in developing countries is the problem of unemployment (N. Saraih et al., 2018), this is caused by the limited opportunities to find work, especially in a competitive environment (Keat, Selvarajah, & Meyer, 2011). Unemployment doesn't only occur in low education communities but also occurs in highly educated circles as well. Graduates from universities and colleges also find some difficulties in securing their work in the public and private sectors due to the current turbulent economic environment (Teshome, 2014). The fact can be seen in Table 1.

**Table 1.** Open Unemployment Rate by Education Level in Indonesia 2015-2018 (in percent).

| Level of Education | Open Unemployment Rate Based on Education Level |      |      |      |
|--------------------|---|------|------|------|
|                    | 2015  | 2016 | 2017 | 2018 |
| Never School       | 1.25  | 1.46 | 1.63 | 2.02 |
| Primary School     | 3.94  | 3.88 | 3.61 | 2.79 |
| Secondary School   | 11.16   | 9.63 | 9.48 | 7.58 |
| High School        | 6.68  | 5.15 | 5.57 | 5.92 |

Source: Central Bureau of Statistics, 2019.

Based on Table 1. it shows that the level of open unemployment in Indonesia according to the highest level of education completed, namely high school in 2016-2018 continues to increase to reach 5.92% compared to other levels of education which have decreased. The problem that is clearly seen is the high level of unemployment among the educated.

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College graduates are absorbed by the world of work, the majority of them work as employees and very few are involved in entrepreneurship (Rahmadani, 2018). According to Indonesia Investments 2016-2017 edition of all tertiary education graduates absorbed in the world of work, 76.3% work as employees and only 6.8% as entrepreneurs. Based on these data show that entrepreneurship has not become the goals and aspirations of college graduates. If this problem continues to be ignored then it will impact that many college graduates remain as job seekers rather than job creators, most graduates are still job-oriented and experience long periods of work waiting (Handriani, 2011) until Indonesia's unemployment rate continues to increase. Therefore, this reflects that student entrepreneurial intentions are still low.

Thinking about entrepreneurial intentions has been successfully conceptualized by the theory of planned behavior models from Azjen (2005, 1991). The intention of entrepreneurship is one of the efforts that arises from the individual to work as oneself (Akyol & Gubruz, 2008) and the intention is a manifestation of expression in one's soul that arises from the desire to start improving one's own economy (Suffian, Rosman, Norlaila, Norizan, & Hasnan, 2018).

The era of technological globalization, an increasing number of technology businesses contribute to the economy and create job opportunities when universities take initiatives towards technopreneurial programs (David, Scott, and Karen, 2003). Technopreneurship is considered important for the point of view of social development (Hoque, Awang, & Siddiqui, 2017; Proctor, 1991) and technopreneurship can also be taken as a dynamic path for economic growth, competitiveness, and solutions of social interests (Linan, et al., 2005; European Commission, 2003). Therefore, academics are aware of technopreneur, technopreneurship, and technopreneurial intentions among students (Hoque, Awang, & Siddiqui, 2017).

The concept of entrepreneurial intention in the theory of planned behavior from Azjen (1991) explains that there are three determinants that influence one's intention to do something namely attitudes, subjective norms, and perceived behavioral control. Broadly speaking, entrepreneurial intentions are influenced by internal, external, and contextual factors (Asma, Rosdi, Amri, Adnan, & Samsudin, 2018). Internal factors derived from within can be in the form of character, traits, personality traits (Bayron, & Ed, 2013; Luis & Campo, 2010), risk taking, the need for achievement, attitudes toward entrepreneurship, behavioral control (Remeikiene, Startiene, & Dumciuviene, 2013) as well as socio-demographic factors. Whereas external factors come from outside the entrepreneur who can form elements from the surrounding environment (Sadeghi, Mohammadi, Nosrati, & Malekian, 2013), and contextual conditions (Mahajan & Arora, 2018; Kristiansen & Nurulindarti, 2014).

Several studies on technopreneurship intentions have been conducted by researchers such as (Hoque, Awang, & Siddiqui, 2017) regarding technopreneurial self-efficacy, technopreneurial learning of technopreneurial intention, (Singhry, 2015) regarding technology entrepreneurship capabilities, knowledge-sharing capabilities of technopreneurship intention, (Chou, Shen, & Hsiao, 2011) concerning self-efficacy, entrepreneurial intention towards entrepreneurial learning behavior.

Previous studies have shown the relationship between knowledge, skills or abilities and entrepreneurial intentions (Koe, et al, 2018; Koe, 2016; Ibrahim, 2014; Farashah, 2013). On this basis that entrepreneurial learning becomes one of the determinants of the emergence of technopreneurship intention. Based on Kolb's theory (1984), learning technopreneurship can be considered as a process of experience in which technopreneur develops knowledge through four different learning abilities namely experiencing, reflecting, thinking, and acting. Understanding the importance of technopreneurship for economic progress, many universities throughout the world offer technopreneurship education for students (Hoque, Awang, & Siddiqui, 2017). On this

basis, researchers aimed to determine the effect of technopreneurial learning on technopreneurship intention.

## LITERATURE REVIEWS

### Technopreneurship Intention

Technopreneur can simply be interpreted as a technology enthusiast who has an entrepreneurial spirit. Technopreneur is often called a modern entrepreneur based on technology. Innovation and creativity that are very dominating to produce superior products based on knowledge (Knowledge-Based Economy) (Arifin & Suef, 2007). Technopreneur differentiates themselves through their ability to accumulate and manage knowledge, as well as their ability to mobilize resources to achieve certain business or social goals (Kuemmerle, 2002).

Technopreneur is a bold and imaginative deviation from established business methods and practices that are constantly looking for opportunities to commercialize new products, technologies, processes, and arrangements (Baumol, 2002). Therefore, technopreneurship is often a jargon representing the merging of technology with entrepreneurial skills (Selladurai, 2016). Simply put, a technopreneur is an entrepreneur who uses technology for entrepreneurial purposes. Based on the Theory of Entrepreneurial Event (TEE) proposed by Shapero and Sokol (1982), there are two types of perceptions that affect entrepreneurial intentions, namely 1) perceived desirability, refers to the extent to which he feels attracted to certain behaviors (to become an entrepreneur), and 2) perceived feasibility, refers to the extent to which people assume that they themselves are capable of carrying out certain behaviors.

The entrepreneurial intention model is also explained by Theory of planned behavior from Icek Ajzen (2005; 1991) that the main determinants of intention and behavior can be explained by belief behavioral, normative beliefs, and belief control. Other variables that may be related or affect individual beliefs include age, gender, ethnicity, social status, economy, education, nationality, religion, personality, mood, emotions, attitudes, and values that are general, intelligence, past experience, and social support. These determinants become background factors that can be explained with logic.

Entrepreneurial Intention-based Models is a model designed to detect factors that influence entrepreneurial intentions by using an educational approach. This model was designed by Francisco Linan from the University of Sevilla, Spanyol. This model is based on two theories, namely Theory of Planned Behavior (TPB) proposed by Icek Ajzen (1991) and Theory of Entrepreneurial Event (TEE) submitted by Shapero and Sokol (1982) (Iskandar, 2012), so that the concept of Entrepreneurial Intention-based Models emerged.

Entrepreneurial Intention-based Models, a person's intention to entrepreneurship is influenced by several factors, namely personal attitudes, perceived social norms, and perceived feasibility (self-efficacy). These three factors are influenced by his knowledge of entrepreneurship. Entrepreneurial knowledge that significantly influences decisions in business creation. According to Linan (2005) more knowledge about entrepreneurship will certainly contribute to fostering entrepreneurial intentions, then contribute to the emergence of positive attitudes about entrepreneurship, to affect more realistic perceptions about entrepreneurship and will increase the confidence or confidence that the individual is worthy and able to become an entrepreneur. Other dimensions of intention are based on four dimensions including (Handaru et al., 2015) namely:

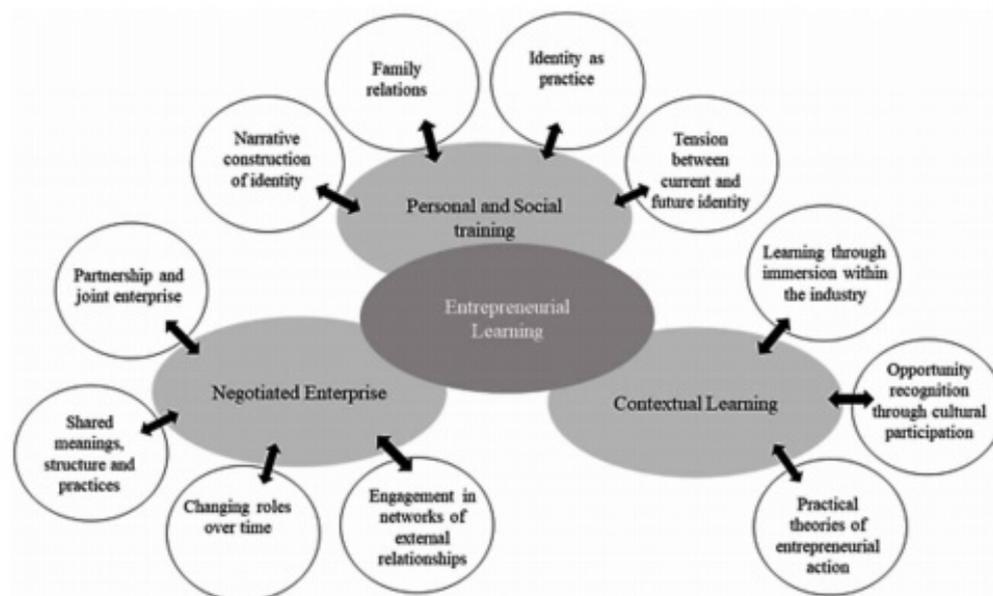
1. Desires, is something in someone in the form of a desire or a high desire to start a business.

2. Preferences, is something in someone who shows that having an independent business or business is a requirement that must be achieved.
3. Plans, refers to the hopes and plans that exist in a person to start a business in the future.
4. Behavior Expectancies, is a review of a possibility for entrepreneurship followed by the target of starting a business venture.

### Technopreneurial Learning

According to Kolb's (1984) theory, technopreneurial learning can be considered an experiential process in which technopreneur develops knowledge through four different learning abilities namely experiencing, reflecting, thinking, and acting. Entrepreneurship learning is as an organization that adjusts its strategy to get used to the entrepreneurial environment (Minniti & Bygrave, 2001) and entrepreneurial learning as a continuous process to promote the development of knowledge, as important for the creation and effective management of new businesses (Politis, 2005). As for entrepreneurship learning is a learning process in the context of entrepreneurship that has a more positive influence on the introduction of start-up opportunities through exploration, sharing, and utilizing new information and knowledge (Xuan, Wenting & Hongbin, 2011).

Based on some understanding of entrepreneurship learning, it can be concluded that technopreneurial learning as a process of acquiring knowledge, skills, and an entrepreneurial attitude that is sustainable for the process of creating and managing to become an effective technopreneur. Previous research has revealed indications of contextual factors such as educational programs can increase entrepreneurial intentions as well as technopreneurial (Nathalie et al., 2010). The entrepreneurship learning model (Rae, 2004) in which individuals are integrated into their social context and includes three dimensions, namely personal and social formation, contextual learning, and negotiated entrepreneurship. Entrepreneurial learning is influenced by his personal life and family experience, by education, professional careers and social relations. In this way, the personal component and social formation influence the learning capacity and knowledge acquired (Paiva, et al, 2019). This is summarized in the entrepreneurial learning model proposed by (Rae, 2004) in Figure 1.

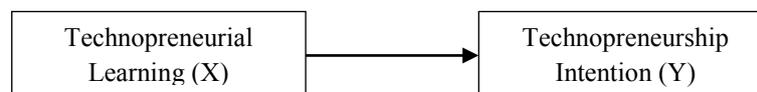


**Figure 1.** Entrepreneurial Learning Model.

Source: Rae, 2005.

Contextual learning occurs when individuals report and compare experiences, create and share, in social and cultural contexts and in their network of relationships. Through this social relationship and various situations and contexts, individuals learn and develop opportunities for recognition skills. This interactive exchange of ideas and goals with other individuals is referred to as a negotiated company, this exchange is carried out in a business context with customers, suppliers, investors, employees, or partners. This dimension is divided into four namely shared meaning, structure and practice, changing roles over time, and insertion in a network of external relations (Paiva, et al, 2019).

The hypothesis that will be proposed in this study illustrates the effect of technopreneurial learning on technopreneurship intention. The research model proposed by the researcher is shown in Figure 2.



**Figure 2.** Relationship between technopreneurial learning and technopreneurship intention.

## RESEARCH METHODS

This type of research is descriptive and verification research carried out through data collection in the field, then the research method used is the explanatory survey method. This research method was carried out through information gathering activities of a portion of the population with the aim of finding out the opinion of a portion of the population on the object being studied to Computer Science Study Program S1 UPI. This research was conducted in less than one year, the method used was cross sectional method. Cross sectional research method is a method in which data is collected only once in a certain period of time, maybe for several days, weeks or months, to answer research questions (Sekaran, 2003), so this research is often called one-shot or one-snapshot research (Hermawan, 2006).

The object of this research consisted of the dependent variable namely technopreneurship intention (Y) and the independent variable namely technopreneurial learning (X). To measure technopreneurship intention, the indicators used refer to research (Handaru et al., 2015), namely preferences, plans, desires, and behavior expectations. Technopreneurial learning measurement uses indicators that refer to the research model (Rae, 2005), namely contextual learning, personal and social training, and negotiated enterprise.

The population of this study were all S1 students of the Computer Science Study Program UPI consisting of batches of 2016, 2017, 2018, and 2019 totaling 344 students. Sampling in this study was done by calculating the Slovin formula sample (Riduwan & Kuncoro, 2012) and obtained samples in this study were 185 students. Data collection was performed using a questionnaire, then analyzed using descriptive statistics and inferential statistics. The collected data were analyzed using a 5-point Likert scale scoring system from strongly disagree (1) to strongly agree (5) to get interval data and given a score or value. The research instrument was tested through validity and reliability testing. Hypothesis testing is done by using regression analysis assisted by SPSS 25. Regression models are used to analyze the factors that influence technopreneurship intention with the equation

$$Y = a + bX_1 + e \tag{1}$$

Information:

Y : Technopreneurship intention

X : Technopreneurial learning  
e : Confounding factor

## RESULTS AND DISCUSSION

### Results

The variables in this research are technopreneurial learning and technopreneurship intention. The description of the research results is based on the calculation of the score of each respondent's answer, so that the results obtained score of the respondent's answers. A general description of the level of technopreneurial learning and the level of technopreneurship intention is obtained from the results of a research questionnaire consisting of 20 items of statement, the following results on students can be seen in Table 2.

**Table 2.** Overview of Technopreneurial Learning Level and Student Technopreneurship Level UPI 2019.

| Variable                           | Mean | Category         |
|------------------------------------|------|------------------|
| <b>Technopreneurial Learning</b>   |      |                  |
| Contextual learning                | 4.20 | Very effective   |
| Personal and social training       | 3.40 | Effective        |
| Negotiated enterprise              | 3.15 | Effective enough |
| Average                            | 3.58 | Effective        |
| <b>Technopreneurship Intention</b> |      |                  |
| Preference                         | 4.02 | High             |
| Plan                               | 3.72 | High             |
| Desire                             | 4.11 | High             |
| Behavior expectation               | 3.50 | High             |
| Average                            | 3.83 | High             |

Source: Data processed, 2019.

Based on the results of research that has been done that the general picture level of technopreneurial learning is in the effective category and the level of technopreneurship intention is in the high category. This indicates that the level of technopreneurial learning that has been done by students has been effective so that it has a high level of technopreneurship intention. Data analysis using linear regression with the help of SPSS 25. That is to find out how much influence the technopreneurial learning on technopreneurship intention of students, can see an Table 3 and Table 4.

**Table 3.** Coefficients.

| Model      | Unstandardized Coefficients |            | Standardized Coefficients |       |       |
|------------|-----------------------------|------------|---------------------------|-------|-------|
|            | B                           | Std. Error | Beta                      | t     | Sig.  |
| (Constant) | 6.512                       | 1.519      |                           | 3.696 | 0.000 |
| TL         | 0.606                       | 0.102      | 0.544                     | 5.966 | 0.000 |

Source: Data processed.

**Table 4.** Model Summary.

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1     | 0.562 | 0.455    | 0.295             | 2.492                      |

Source: Data processed.

Based on Table 3 and Table 4, a linear regression equation model can be arranged, i.e

$$Y = 6,51 + 0,544X_1 + 0,545e \tag{2}$$

The results of these equations, it can be seen that the constant of 6.51 means that if there is no change from the variable technopreneurial learning, the magnitude of technopreneurship intention is 6.51. Technopreneurial learning coefficient of 0.544 means that every additional 1 unit of technopreneurial learning will increase by 0.544. To see how much influence the variables of technopreneurial learning on technopreneurship intention can be seen in Table 4, it is known that the coefficient of determination (R<sup>2</sup>) shows 0.455, meaning that the variable technopreneurial learning influences the technopreneurship intention by 45.5% and the remaining 54.5% influenced by other variables not explained in this research model. Testing the hypothesis of this study using the ANOVA F test can be seen in Table 5.

**Table 5.** ANOVA.

| Model      | Sum of Squares | Df  | Mean Square | F      | Sig.  |
|------------|----------------|-----|-------------|--------|-------|
| Regression | 413.380        | 1   | 204.190     | 31.873 | 0.000 |
| Residual   | 921,736        | 150 | 6.212       |        |       |
| Total      | 1335,116       | 152 |             |        |       |

Source: Data processed.

Based on the results of Table 5 obtained the calculated F value of 31.873 with a significance value of 0.000, then the results obtained that the calculated F (31.873) > F table (3.056), and a significance value of 0.000 < α value of 0.05. Therefore, it can be concluded that technopreneurial learning has a positive and significant effect on technopreneurship intention.

## Discussion

The results showed that technopreneurial learning had a positive effect on students' technopreneurship intention. These results are in line with previous research as it has been revealed that an indication of contextual factors such as educational programs can increase entrepreneurial as well as technopreneurial intentions (Nathalie et al., 2010). According to (Hoque, Awang, & Siddiqui, 2017) that technopreneurial learning has a positive relationship with technopreneurship intention, where technopreneurial learning mediates the relationship between technopreneurial self-efficacy and technopreneurship intention.

Technopreneurial learning examined in this study is seen from three dimensions, namely personal and social formation, contextual learning, and negotiated entrepreneurship. It is based that entrepreneurial learning is influenced by his personal life and family experience, education, professional career, and social relations. In this way, the personal component and social formation influence the learning capacity and knowledge acquired (Paiva, et al, 2019). Contextual learning

is related to how the ability of students to learn through entrepreneurial experience that has been obtained so far, the ability to take opportunities through the creation and socio-cultural context around them, and understanding the practical theory of entrepreneurship. This dimension provides the greatest contribution to the technopreneurial learning variable, so it can be concluded that the existence of learning about entrepreneurship is very effective in improving student technopreneurship intention.

Personal and social formation is related to the level of a student's ability to be able to construct narratively his identity, the role of the family, self-identity as an entrepreneur, and concerns about the future. Entrepreneurship learning is not only obtained formally in schools and colleges but from oneself and the role of the closest people. It is appropriate that entrepreneurship is a discipline that can be learned by everyone (Peter, 1986) and learning is the basis of entrepreneurship (Minniti & Bygrave, 2001). As a result, technopreneurship is also a discipline like any other discipline that can be learned. Negotiated entrepreneurship relates to the level of students' ability to engage in external relations, changes in roles over time, the meaning and practices of negotiated entrepreneurship. This is related to the ability of one's soft skills to become a technopreneur. Soft skills and hard skills (Ministry of National Education, 2008) required by technopreneur in conducting business start-up are 1) communication skills, 2) engineering aspects, 3) making business plans, 4) technical skills, and 5) manage and motivate people.

The results of this study show that learning is not only between the relationship of teacher and student, or parent and child. Learning comes from the participation of individuals in social activities, because knowledge is produced together with the situation (time and place) where the activity is carried out (Paiva, et al, 2019; Gherardi & Nicolini, 1998). Therefore, a technopreneur can learn through direct experience, practice, success, failure, and relationships with others (Rae & Wang, 2015; Rae & Carswell, 2000). The higher the level of students' technopreneurial learning, the higher the level of students' technopreneurial intention. The results of this study show that the level of technopreneurship intention of students is already in the high category. This implies that the more students learn (cognitive, experience, and networking) entrepreneurship, the awareness to become a technopreneur will be increasingly stronger built. The ability to combine entrepreneurship knowledge and technology is a prerequisite for being a technopreneur. Technopreneurship must have advantages over technology, this can be created through creativity and innovation to support the development of business units. Basically, the key to entrepreneurship is being creative and innovative, so creativity and innovation in using technology appropriately are the main things in developing the spirit of technopreneurship.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the results of data processing and analysis, it can be concluded that the level of technopreneurial learning of students is in the effective category and the level of technopreneurship intention is in the high category. Technopreneurial learning variable has a positive and significant effect on technopreneurship intention by 45.5%. These findings indicate that the technopreneurial learning hypothesis has a positive and significant effect on technopreneurship intention proved correct. This shows that a high level of technopreneurial learning will affect better technopreneurship intention, so that the knowledge possessed will be more extensive. Based on the findings in this study, the researchers provide the following recommendations:

1. For tertiary institutions, it is expected to implement a technopreneur-oriented competency-based curriculum. Higher education is able to provide provisions for each student in the form

of soft skills and hard skills regarding entrepreneurship so that students' technopreneurship intention increases not focused on job seekers.

2. For students, they are expected to be able to develop their capacity through technopreneurial learning, such as taking entrepreneurship courses well, entrepreneurship training, internships, organizing, and others.
3. For further researchers, it is hoped that they can develop more deeply related to problems that affect students' technopreneurial learning and technopreneurship intentions.

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