

Interest of Mechanical Engineering Students to Become Entrepreneur

Sunyoto¹

¹*Department of Mechanical Engineering, Engineering Faculty, Universitas Negeri Semarang (UNNES)
E5 Building, Sekaran Campus, Gunungpati, Semarang, Indonesia, 50229
sunyoto@mail.unnes.ac.id*

Keywords: Interests, entrepreneurs, mechanical engineering students.

Abstrak Entrepreneurship is one of the compulsory subject or course for students in mechanical engineering department, technical faculty in Semarang State University. It is expected that this subject can be used as a provision for students if after graduating they want to become entrepreneurs. But how many students interest to become entrepreneurs is unknown. This study aims to determine the development of students' interest in becoming entrepreneurs in the span of four years (2014-2018). The research subjects were 250 students, who came from mechanical engineering education study program (PTM S1) and mechanical engineering study program (TM S1) who attended entrepreneurship courses in the 2014/2015 amount of 152 students and in the academic year 2018/2019 amount of 98 students. Data were collected through a questionnaire method, and analyzed by a descriptive-qualitative approach. The results showed that the interest of mechanical engineering education program students to become entrepreneurs tended to be consistently very high, namely from 91.76% in the academic year 2014/2015 to 92.18% in the academic year 2018/2019. In the same period the interest of mechanical engineering students tends to decline, from 95.52% to 82.35%. But in general the interest of students from the two study programs to become entrepreneurs remains high (above 80%) so the curriculum that contains Entrepreneurship courses is very appropriate to give to students.

1 INTRODUCTION

The facts show that there are still many college graduates who are unemployed. Open unemployment rates (TPT) of college graduates (Diploma and University) from year to year tend to be high. As an illustration in August 2013, TPT Diploma (I/II/III) 6.01%, and University TPT 5.50% (BPS, 2013). Five years later (2018) actually increased, namely TPT Diploma (I/II/III) 6.02%, and University TPT 5.89% (BPS, 2018). This condition is quite alarming because the impact of educated unemployment is more dangerous than less educated unemployment. The losses of the government and society due to educated unemployment are also higher.

This condition is actually ironic with what is the goal of higher education. As stated in the Republic of Indonesia Law Number 12 of 2012 concerning Higher Education, article 18 paragraph (2) explicitly states that higher education in conducting undergraduate programs is to prepare students to become intellectuals and/or cultured scientists, able to enter and/or creating jobs, and being able to develop themselves into professionals.

Semarang State University (UNNES) as a college has a high commitment to giving birth to entrepreneurs. This is indicated by the existence of a curriculum that provides Entrepreneurship courses for students in most study programs even though the number of credits is still small (2 credits or SKS). Including Mechanical Engineering students from the Faculty of Engineering, who are from Mechanical Engineering Education (PTM S1), Automotive Engineering Education (PTO S1) and Mechanical Engineering (TM S1) study programs are also required to take 2 credits Entrepreneurship courses given in semester 4th. Even one of the university's performance indicators also lists the number of students who are self-employed, where in 2018 UNNES targets 300 students in entrepreneurship (Performance Agreement in 2018). President Joko Widodo also encouraged the number of Indonesian entrepreneurs to continue to be increased. On average 14 percent of the population of developed countries is entrepreneurs, while Indonesia is still 3.1 percent (Kompas.com. April 5, 2018).

General impression so far, higher education emphasizes how graduates can enter the workforce or as employees. The education system that is less

concerned about how to prepare graduates in order to create jobs or as entrepreneurs. This condition must be abandoned immediately, because the state cannot guarantee college graduates to become employees. College graduates are always higher than the number of vacancies. Therefore the provision of knowledge and skills to become entrepreneurs must be prepared since college.

Various studies show that Entrepreneurship Education (EE) has a high influence on students' interest in entrepreneurship (Lestari & Wijaya, 2012; Sanchez, 2013). Likewise, the same study on students in science and engineering, entrepreneurship education is important and has a big contribution in shaping entrepreneurial character (Wang & Wong, 2012; Maresch et al, 2016; Couetil et al, 2012; Ahmad et al, 2004). This can be used as a strong foundation that the current curriculum has gone through the right path, in accordance with what is the goal of higher education.

But the extent of the interest of engineering faculty students, especially the PTM S1 and TM S1 study programs to become entrepreneurs, needs to be studied further. So far, it has never been studied how much students are interested in entrepreneurship. The two study programs have different objectives. The PTM S1 study program is organized to prepare graduates to become vocational high school (SMK) teachers. While the TM S1 study program is prepared to work in companies or industries. However, they are also free to choose their career choices, for example, to become entrepreneurs in an area of interest.

As an engineering scholar, it is appropriate for entrepreneurship to use technology in running its business so that it has a higher added value than just an entrepreneur. In other words, being a technopreneur, that is an entrepreneur who in his business involves technology, where the technology, among others, is produced through research (BPPT, 2010: 5).

2 RESEARCH METHODS

This type of research is descriptive research, namely research carried out with the main purpose of describing and interpreting objects according to what they are. The research carried out with quantitative and qualitative methods is translated into a number of steps, including: (1) drafting research, (2) compiling research instruments, (3) collecting data, (4) organizing the results of data

collection, (5) analysis and the formulation of the results of data collection, and (6) preparation of reports.

The research subjects were 250 students, who came from mechanical engineering education (PTM S1) study program and mechanical engineering (TM S1) who attended entrepreneurship courses in the 2014/2015 academic year as many as 152 students and 2018/2019 academic year as many as 98 students.

To obtain the data needed in this study, various methods are used, including questionnaires, interviews and documentation. Data obtained from one method to another complement each other so that the data obtained is more complete and valid.

In accordance with the characteristics of the research conducted, the data generated from the questionnaire were analyzed using descriptive quantitative statistical analysis techniques to see trends in the phenomena that occurred. While qualitative data obtained from interviews were analyzed by qualitative data analysis techniques, interactive models which simultaneously consist of stages: (1) data collection, (2) data reduction, (3) data presentation, and (4) conclusion/conclusion verification.

3 RESULTS AND DISCUSSION

In this study data was collected over two periods with an interval of 4 years, namely the even semester of the 2014/2015 academic year and even semester of the academic year 2018/2019. Respondents were from students of mechanical engineering education programs (PTM S1) and mechanical engineering study programs (TM S1). In the 2014/2015 academic year, there were 85 undergraduate students of S1 PTM and 67 undergraduate students. So the number of respondents in the 2014/2015 academic year was 152 students.

In the 2018/2019 academic year, there were 64 respondents from PTM S1 and 34 respondents from TM S1. So the number of respondents in 2018/2019 academic year as many as 98 students. The total student respondents were $152 + 98 = 250$ respondents.

In the 2014/2015 academic year, PTM S1 students are grouped by school, 45.88% are from general high school (SMA) and 54.12 come from vocational high schools (SMK). Whereas 77.81% of the PTM S1 students came from SMA and 22.39% were from SMK. In other words, most of the S1 PTM study programs are from vocational

high schools (SMK), whereas in the TM S1 study program most of them are from general high school (SMA). It is interesting to note that vocational students are more prepared to work, but there are also many who continue to study in college. However, SMK graduates who choose the PTM S1 study program are bigger than those who choose TM S1. This is quite reasonable because PTM S1 graduates will be prepared to become vocational school teachers, where they have experienced it. In addition, vocational students also master the aspects of vocational skills rather than aspects of theoretical knowledge. On the contrary, there are more high school graduates who choose the TM S1 study program than those who choose the PTM S1. This is also logical because high

general school graduates have more control over aspects of theoretical knowledge than aspects of vocational skills.

Lapse of four years later (Fig. 1 and 2) namely the academic year 2018/2019, the composition of students based on their origin of school has changed. In PTM S1, the portion of students coming from SMK has increased, namely to 65.63% or an increase of 11.51%. Likewise in the TM S1, students from SMK rose to 41.18% or increase of 18.79%. However, for PTM S1, students are still dominated by vocational high schools (SMK), and for TM S1 students are dominated by general high school (SMA) students.

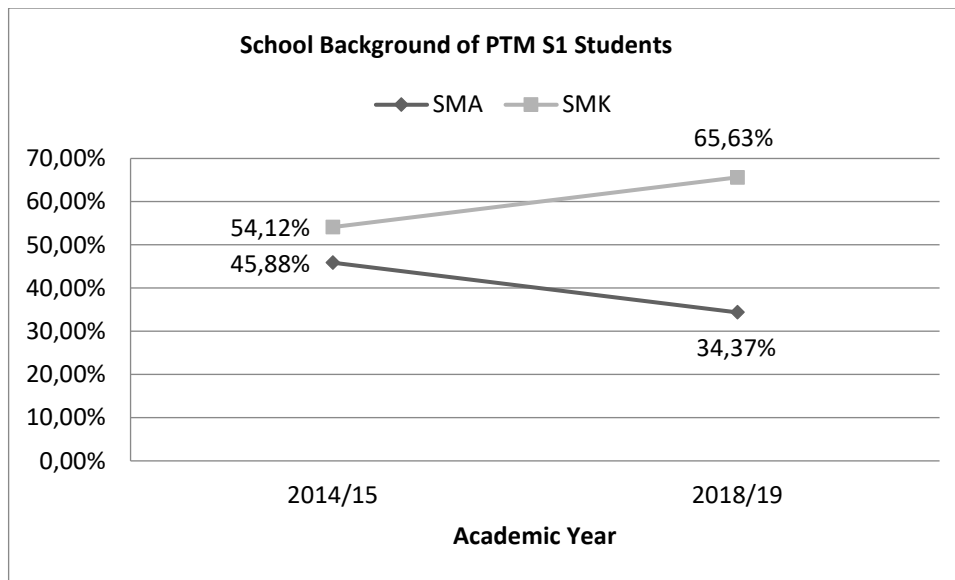


Figure 1. School Background of PTM S1 Students

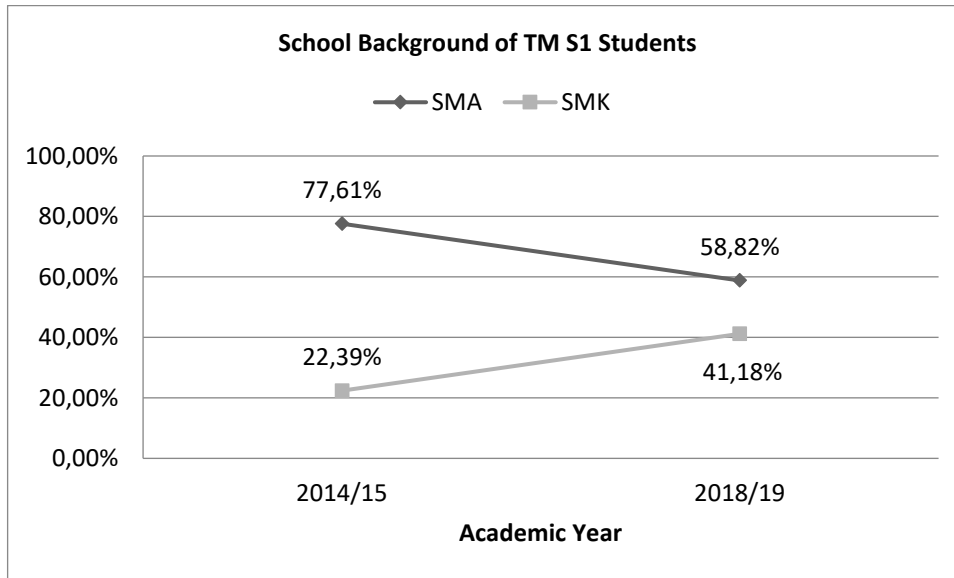


Figure 2. School Background of PTM S1 Students

To find out the interest in becoming an entrepreneur, students are given a questionnaire with five choices, namely a) very interested, b) interested, c) hesitant, d) less interested, and e) not interested. The results showed that the interest of PTM S1 students to become entrepreneurs tended to be consistently very high, namely from 91.76%

in the academic year 2014/2015 to 92.18% in the academic year 2018/2019. In the same period the interest of TM S1 students tends to decline, from 95.52% to 82.35% (Fig. 3). But in general the interest of students from the two study programs to become entrepreneurs remains high (above 80%).

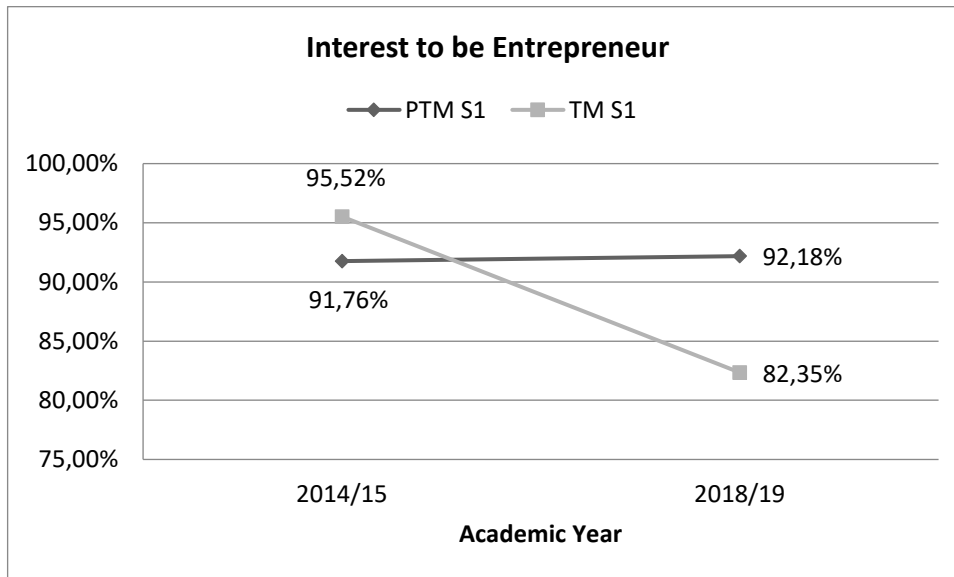


Figure 3. Interest to be Entrepreneur of PTM S1 and TM S1 Students

To respondents if given three alternative job choices, namely a) employees, b) entrepreneurs, and c) employees with entrepreneurial side jobs, consistently the majority (above 75% always answer choice c). But if forced to choose only two

choices, namely a) employees and b) entrepreneurs, the result is, in PTM S1 48.19% interest in being employees and 51.81% are more interested in becoming entrepreneurs.

The TM S1 students who are interested in becoming employees are 42.19% while those who are interested in becoming entrepreneurs are 57.81%. In other words, TM S1 students have a higher interest in entrepreneurship than S1 PTM students.

Lapse of four years later, namely the 2018/2019 academic year, his condition changed little. The interest of S1 PTM students to become entrepreneurs is consistently high at 92.18%. But for S1 TM students to be 82.35% or down by 13.17% (Fig. 4 and 5).

If forced to choose two types of work, it turns out that the conditions are different, namely the strength of interest in becoming an entrepreneur in the TM S1 student is higher than the PTM S1 student. This can be seen from the choice of the interest of PTM S1 students, to become employees actually increased from 48.19% up to 59.37% (up

11.18%) and of course the percentage of entrepreneurial profession voters dropped, from 51.81% to 40,62%.

But for TM S1 students the opposite occurs, namely the interest to choose the profession of employees actually fell from 42.19% to 38.24% (down 3.95%), and the choice of profession as an entrepreneur continued to increase from 57.81% to 61,76%.

From the description above, it can be seen that the interest of PTM S1 and TM S1 students in general is relatively high (above 80%). This condition may be influenced by gender factors, where more than 90% of S1 and TM S1 PTM students are male. Based on previous research, male students have an interest in entrepreneurship higher than female students (Lestari & Wijaya, 2012; Rasli, 2013).

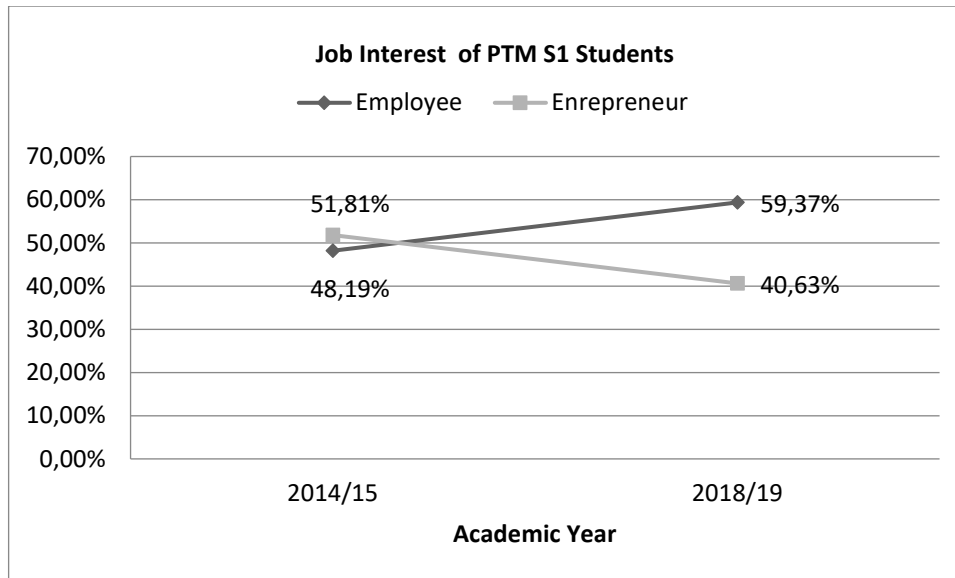


Figure 4. Job Interest of PTM S1 Students

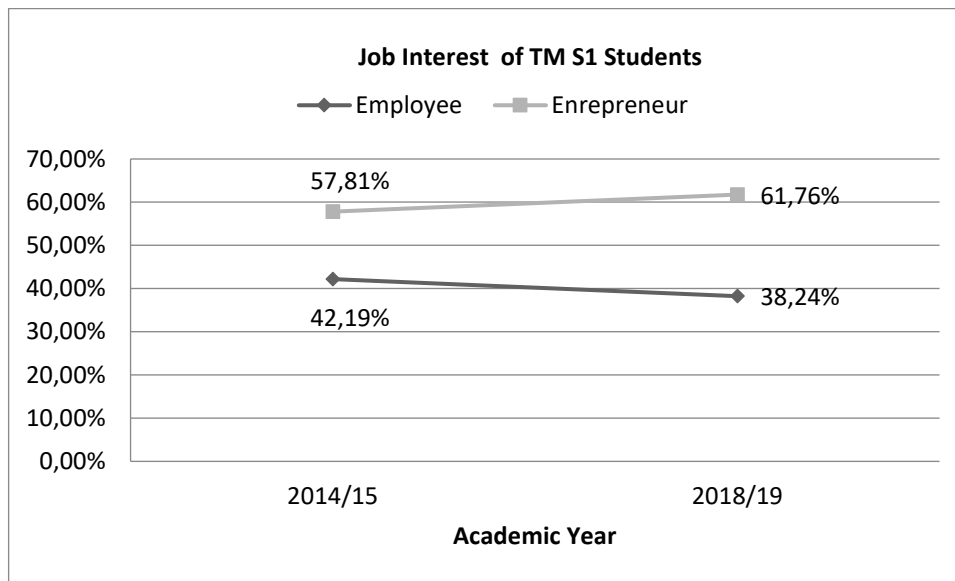


Figure 5. Job Interest of TM S1 Students

Interest in undergoing the entrepreneurial profession TM S1 students consistently high and has increased over the past four years, from 57.81% to 61.76%. On the other hand, the interest in entrepreneurship for PTM S1 students tends to decline, from 51.81% to 40.62%. There are several factors that influence it, both internal and external, such as family background or parent work, and this requires more in-depth study. Some studies also show that family backgrounds influence the interest in entrepreneurship (Lestari & Wijaya, 2012, Wang & Wong, 2012)

4 CONCLUSIONS AND SUGGESTION

4.1 Conclusion

Based on the results of the research and discussion it can be concluded as follows:

- 1) Based on the composition of the students' origin, the number of vocational students in the PTM S1 and TM S1 study programs has increased over the past four years (2014-2018), however for S1 PTM students are still dominated by students from SMK, and for TM S1 dominated by students come from general high school (SMA).
- 2) The interest of undergraduate PTM S1 students to become entrepreneurs tends to be consistently high over the past four years

(2014-2018), namely from 91.76% to 92.18%, but for TM S1 students, it tends to decrease, from 95.52% to 82,35%.

- 3) If forced to choose two types of job, the interest to become an entrepreneur of TM S1 students is higher than that of PTM S1 students. This can be seen from the choice of the interest of PTM S1 students, to become employees actually increased from 48.19% up to 59.37% (up 11.18%) and of course the percentage of entrepreneurial profession voters dropped, from 51.81% to 40,62%.
- 4) However for TM S1 students the opposite occurs, namely the interest to choose the profession of employees actually falls from the original 42.19% to 38.24% (down 3.95%), and the choice of profession as an entrepreneur continues to increase from the original 57.81% to 61.76%.
- 5) In general, the interest of students from two study programs (PTM S1 and TM S1) to become entrepreneurs remains high.

4.2 Suggestion

Based on conclusions, suggestions can be given as follows:

- 1) The curriculum that contains Entrepreneurship Education (EE) is very important to give to engineering faculty students, especially Mechanical Engineering Department, this is to provide provisions for students who already have a high interest in entrepreneurship.

- 2) More in-depth study is needed to find out the dominant factors about students' interest in entrepreneurship, between PTM S1 and TM S1 students.

REFERENCES

- Ahmad, F.S., et al. (2004). *Interest In Entrepreneurship: An Exploratory Study On Engineering And Technical Students In Entrepreneurship Education And Choosing Entrepreneurship As A Career*. Malaysia: Faculty of Management and Human Resource Development Universiti Teknologi Malaysia
- BPS. (2013). *Berita Resmi Statistik*, No. 78/11/Th. XVI, 6 November 2013.
- BPS. (2018). *Keadaan Ketenagakerjaan Indonesia Agustus 2018*, No. 92/11/Th.XXI. 05 November 2018.
- BPPT. (2010). *Pengembangan Kurikulum Teknopreneurship di Perguruan Tinggi*. Jakarta: BPPT.
- Couetil, Nathalie Duval, et all. (2012). Engineering Students and Entrepreneurship Education: Involvement, Attitudes and Outcomes. *International Journal of Engineering Education*, 28(2), 425–435.
- Lestari, Retno Budi dan Wijaya, Trisnadi. (2012). Pengaruh Pendidikan Kewirausahaan Terhadap Minat Berwirausaha Mahasiswa di STIE MDP, STMIK MDP, dan STIE MUSI. *Jurnal Ilmiah STIE MDP*, 1(2).
- Maresch, D., et al. (2016). The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs. *Technological Forecasting & Social Change*, 104, 172–179.
- Rasli, A.M., et al. (2013). Factors Affecting Entrepreneurial Intention Among Graduate Students of Universiti Teknologi Malaysia. *International Journal of Business and Social Science*, 4 (2), 182-188
- Sánchez, J.C. (2013). The Impact of an Entrepreneurship Education Program on Entrepreneurial Competencies and Intention. *Journal of Small Business Management*, 51 (3), 447–465.
- Undang-Undang Republik Indonesia Nomor 12 Tahun 2012 Tentang Pendidikan Tinggi*.
- Wang, Clement K., Wong, Poh-Kam. (2004). Entrepreneurial interest of university students in Singapore. *Technovation*, 24, 163–172.