The differences of mathematics students’ entrepreneurship motivation in facing the digital era between students who have and have not taken entrepreneurship course

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Abstract. This study aims to knowing of mathematics education students’ entrepreneurship in facing the digital era between students who have and have not taken Entrepreneurship courses. The subjects of this study are Mathematics education students of UniversitasMuhammadiyah Cirebon, they are 25 students who have not taken the entrepreneurship courses and 25 students who have taken the entrepreneurship courses in the academic year of 2018/2019. This study uses descriptive method under quantitative approach that researchers try to describe the events and they become the focus center without giving special treatment. Based on the results, there is no significant difference of mathematics education students’ entrepreneurship motivation in facing the digital era between students who have and have not taken entrepreneurial courses.

1. Introduction
Mathematics education students will be Mathematics teacher in the future. They are prepared to be professional mathematics teacher. Nowadays, there are many the same study programs in the city, and it becomes their concern because there will be a competition to get teaching places or job when they graduate. There are many graduates from another city that will be back their hometown to find job here. This case should be accepted positively, because the role of student is to be ready in facing the life in digital era and it must be accompanied by advanced mind-set. Through this case, it should increase students’ creativity to be active as agent of change[1].

Digital era makes the life easier to get faster information. The appearance of social media that change people’s life make their activities easier, such as to send message, pictures, videos, or document files by the internet connection. The access of internet is easy to do anytime and anywhere. Indonesian government in the Era of President Joko Widodo have a big vision in the sector of digital economic. Jokowi targets that Indonesia to become the largest digital economic powerin ASEAN by 2020. The government also have a strong basis in launching this target, it is seeing the fact that Indonesian people are very digitally oriented. It can be seen from the Indonesian Internet Service Providers Association(APJII) and We Are Social data, they mentioned that the internet user in Indonesia was 52%, and most of them accessed mobile internet for four hours per a day” [2]. The data above proves that most of Indonesian people are aware of technology. According to communication and information division, by the rapid growth of online business, Indonesian people will get positive impact in the economy such as welfare growth, new job opportunities, and so on [3]. By the spread of
online business in Indonesia, it means that Indonesia will not be the focus of international business market.

The number of PTN (State Higher Education) and PTS (Private Higher Education) that graduated thousands of Bachelor degrees (S1) students with their own expertise each year, rather than reducing the number of unemployed people, on the contrary it actually increases the number of unemployed. Many of them get the job but they work not based on their expertise. To solve this problem, students should now have entrepreneurial motivation, as an alternative choice to contribute to the Indonesian economics growth, if they do not have the opportunities to get the job, or the job opportunities are not proportional to the number of graduates’ students.

There is still a minimum number of entrepreneurs in Indonesia, which is less than 2% of the population[4], it means that there is still wide open for students who have entrepreneurial motivation to develop business. Through the presence of students who are accompanied by enthusiasm, creativity, and innovation, they can certainly produce something to sell through the use of the internet. So this study tries to examine the students’ motivation to become entrepreneurs by utilizing the digital era, which is all electronically, especially mathematics education students who have a motivation to become entrepreneur.

According to Schunk, etal[5], “motivation is process whereby goal-directed activity is instigated and sustained” it means that motivation is where the activity directed to the goal and sustainable. Motivation is a process not a product. As a process, we do not focus to a motivation directly but we can conclude from the action and verbal activity. Motivation involves goals that provide encouragement and direction. Moreover, Schunk et al [5] explained that motivation needs physically and mentally activities. Physic activity needs effort, and perseverance. Meanwhile, mental activity involves cognitive actions such as planning, exercising, organizing, observing, making decision, problem solving, and assessing the progress.

Drucker [6], said that entrepreneurship is the activity that produce a new thing. According to Harris et al [6] entrepreneurship is a dynamic process to create additional wealth of individuals who dare to take risks with several conditions including time, commitment and provision of various goods and services. Entrepreneurial motivation is attention, pleasure and willingness to carry out independent business activities based on the ability, strength and skills possessed, Herawati[7]. Based on the understanding of motivation and entrepreneurship, it can be concluded that motivation for entrepreneurship is people’s driving force/impulse that raise enthusiasm to create activity/work in the supply of goods/services by looking at opportunities around, brave to take the risks, doing innovative activities, as well as having an orientation towards profitability.

According to Zimmerer[8], motivation to become an entrepreneur is defined as something that lies behind or encourages someone to do activities and energy members that lead to achieve the needs, satisfying members or reducing imbalances by opening a business. Motivation for someone to become an entrepreneur is divided into three, namely independence ambitions, self-realization and driving factors, with each indicator as follows: (1) Self-ambition of fee activity (the willingness to own a business, the willingness to be more respected, the willingness to implement new ideas, the willingness to develop business as a hobby); (2) Self-Realization (I want to improve a better position in the environment, I want to motivate and lead other people, I want to continue the family tradition, I want to implement ideas or innovate); and (3) Driving Factors (I want to get a better income, I want to become an entrepreneur if I am terminated).

In determining the tendency of variables, the categorization is carried out based on the Ideal Mean and Standard Deviation Ideal according to Mardapi[9] obtained by the formula:

\[
\text{Ideal Mean (} M_i \text{)} = \frac{1}{2} \times (\text{highest score} + \text{lowest score}) \tag{1}
\]

\[
\text{Standard Deviation Ideal (} SD_i \text{)} = \frac{1}{6} \times (\text{highest score} - \text{lowest score}) \tag{2}
\]

The level of tendency of variables is categorized into three types with the following criteria: \[ x \geq (M_i + SD_i) \text{ishigh}, \ (M_i - SD_i) \leq x < (M_i + SD_i) \text{ismoderate} \text{ and } x < (M_i - SD_i) \text{islow}. \]
Based on the explanation of entrepreneurship and motivation above, it can be concluded that the motivation for entrepreneurship is people’s driving force/impulse that rise to enthusiasm for the creation of an activity/work in the supply of goods/services by looking at the opportunities around, taking risks bravely, carrying out innovative activities, and have orientation towards profitability. Through the presence of students who are accompanied by enthusiasm, creativity, and innovation, they can certainly produce something to sell through the use of the internet. This is in line with the statement of N.N Islami[10], that in this era strong entrepreneurs are needed who can read opportunities and answer future economic challenges, especially for students as the younger generation. Competition and challenges are not only competition at the local, regional and national levels, but also as a global competition from various countries. So this study tries to examine the students’ motivation to become entrepreneurs by utilizing the digital era, which is all electronically, especially mathematics education students who have a motivation to become entrepreneur, for those who have taken entrepreneurship courses or those who have not. The purpose of this current study is to identify whether there are differences in entrepreneurial motivation in mathematics education students in facing the digital era between those who have and have not taken entrepreneurship courses. Based on the explanation above, the researchers feel it is important to study entrepreneurial motivation in mathematics education students in facing the digital era in terms of students who have and who have not taken entrepreneurship courses, so the researchers are interested in conducting this study with the title “The Comparison Analysis of Mathematics Students’ Entrepreneurship Motivation in Facing the Digital Era between Students who have and have not taken Entrepreneurship Course”.

2. Method
This study is descriptive method under quantitative approach that researchers try to describe the events and they become the focus center without giving special treatment. The data obtained based on what is happening at this time on the sample of research. The sample of this study was 25 students who had taken entrepreneurship courses and 25 students who had not taken entrepreneurship courses. The sample was taken from the mathematics education students at the Universitas Muhammadiyah Cirebon West Java, Indonesia. In processing the data, researchers scoring the questionnaire answers that have been filled by the subject, then calculating and tabulating the data obtained, and then creating a data table. Data analysis was performed with SPSS software version 20.

3. Result and Discussion
3.1 Scoring Categorization Recapitulation of Students’ Entrepreneurship Motivation in facing the Digital Era between those who have and have not taken Entrepreneurship Courses.
Based on the categorization in table 1, the group of students who have not taken the Entrepreneurship Course are 8 students (16%) have low motivation, 12 students (24%) have moderate motivation, and 5 students (10%) have high motivation. Then in the group of students who have taken Entrepreneurship Courses there are 8 students (16%) have low motivation, 13 students (26%) have medium motivation, and 4 students (8%) have high motivation. Based on these data, students who have high motivation are more in the group of students who have not taken the entrepreneurship courses (only less 1) than those who have taken entrepreneurship courses, students who have moderate motivation are more in the group of students who have taken entrepreneurship courses (only less 1) compared to those who have not taken entrepreneurship courses, and students who have low motivation between the two groups are the same.
In simple terms, it can be seen that there is no significant difference in the categorization of entrepreneurial motivation scores in groups of students who have not and who have taken entrepreneurship courses as shown Figure 1. And the descriptive statistic will be presented as a final result of entrepreneurship motivation of mathematics education students in facing the digital era (Table 2).
Table 1. The Recapitulation of Students’ Entrepreneurship motivation

| Group                                      | Score               | Categorize | Frequency | %  |
|--------------------------------------------|---------------------|------------|-----------|----|
| The students who have taken the entrepreneurship courses | x < 106,333        | Low        | 8         | 16 |
|                                            | 106,333 ≤ x < 117,667 | Moderate   | 12        | 24 |
|                                            | x ≥ 117,667        | High       | 5         | 10 |
| The students who have not taken the entrepreneurship courses | x < 106,333        | Low        | 8         | 16 |
|                                            | 106,333 ≤ x < 117,667 | Moderate   | 13        | 26 |
|                                            | x ≥ 117,667        | High       | 4         | 8  |

Figure 1. Diagram score categorization of students’ entrepreneurship motivation

Table 2. Students’ entrepreneurship motivation Score

| Group                                      | Total Number of Students | Students’ entrepreneurship motivation Score | SD | %  |
|--------------------------------------------|--------------------------|-------------------------------------------|----|----|
| The students who have not taken the entrepreneurship courses | 25                       | 110.8                                     | 7.7| 79.14 |
| The students who have taken the entrepreneurship courses | 25                       | 110.0                                     | 7.2| 79.00 |

Based on Table 2, the average score of entrepreneurship motivation for groups of students who have not taken entrepreneurship courses is 110.8 or 79.14% of the ideal maximum score, while the average score of entrepreneurial motivation for groups of students who have taken entrepreneurship courses is 110 or 79% of the ideal maximum score. The following is a diagram of the overall student entrepreneurship motivation score.

Based on Figure 2, it is assumed that there is no significant difference in student entrepreneurial motivation between groups of students who have not and who have taken entrepreneurship courses. To prove whether the assumption is correct or not, it needs to be tested statistically, first is by fulfilling the prerequisite test.

3.2. Data Normality Test of Mathematics Education Students’ Entrepreneurship Motivation

The normality test is intended to see whether the data obtained is normally distributed or not. The Normality test uses Shapiro-Wilk statistical test of SPSS v.20.

The hypothesis used is:

H₀: data on students’ entrepreneurship motivation are normally distributed
H$_1$: data on students’ entrepreneurship motivation are not normally distributed. Hypothesis testing criteria is based on Sig. If the value of Sig. < $\alpha = 0.05$, then $H_0$ is rejected and in other cases $H_0$ is accepted. The results of normality calculation test of students’ entrepreneurship data are presented in Table 3.

![Figure 2. The Whole Diagram score of students’ entrepreneurship motivation](image)

**Table 3.** Data Normality Test Results Students’ Entrepreneurship Motivation

| Motivation Score                                    | Shapiro-Wilk Statistic | df | Sig. |
|-----------------------------------------------------|------------------------|----|------|
| The students who have not taken the entrepreneurship courses | 0.968                  | 25 | 0.586|
| The students who have taken the entrepreneurship courses | 0.976                  | 25 | 0.873|

Table 3 shows that students’ entrepreneurship motivation scores who have not taken entrepreneurship courses have Sig. = 0.586 > $\alpha = 0.05$, so $H_0$ is accepted. In addition, student motivation scores that have taken entrepreneurship courses have a Sig. = 0.873 > $\alpha = 0.05$ value, so $H_0$ is accepted. Thus, because both data are normally distributed, the next step of the homogeneity test uses the Homogeneity of Variances (Levene Variances) test of SPSS v.20.

3.3. Data Homogeneity Test on Students’ Entrepreneurship Motivation of Mathematics Education Students

The hypothesis used is: $H_0$: data on students’ entrepreneurship motivation who have not and who have taken entrepreneurship courses are homogeneous, and $H_1$: data on students’ entrepreneurship motivation who have not and who have taken entrepreneurship courses are not homogeneous. Table 4 shows that students’ entrepreneurship motivation scores have a Sig. = 0.686 > $\alpha = 0.05$, so $H_0$ is accepted. This means that students’ entrepreneurship motivation scores, both those that have and have not taken entrepreneurial courses are homogeneous.

**Table 4.** The Result of Students’ Entrepreneurship Motivation

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 0.166            | 1   | 48  | 0.686|

3.4. Average Differences Test of Students’ Entrepreneurship Motivation

Based on the prerequisite test that has been carried out, and then the researchers conducted the test of difference scores of students’ entrepreneurship motivation. Because of the data are normally distributed and homogeneous, then the t-test is then carried out. The hypothesis test used is as follows: $H_0$: There is no difference of students’ entrepreneurship motivation in facing the digital era between those who have and have not taken entrepreneurship courses ($\mu_1 = \mu_2$) and $H_1$: There is a difference of students’
entrepreneurship motivation in facing the digital era between those who have and have not taken entrepreneurship courses. \( \mu_1 \neq \mu_2 \)

Hypothesis testing criteria based on Sig. (2-tailed) > \( \alpha = 0.05 \), then \( H_0 \) is accepted and \( H_1 \) is rejected. The results of average difference calculation test of students’ entrepreneurship motivation shows that in the “equal variances assumed” section the value of Sig. (2-tailed) = 0.624 > \( \alpha = 0.05 \), so that \( H_0 \) is accepted and \( H_1 \) is rejected. Thus it can be concluded that there is no significant difference between the average score of entrepreneurship motivation in facing the digital era between those who have and have not taken entrepreneurial courses. This can happen because the groups of students who have not taken entrepreneurship courses are already familiar with the world of commerce through online media, because almost all students already have smart phones that can access the internet easily. Through the growth of online businesses that have been spread in Indonesia, they can see business opportunities through online businesses, so many of them have already tried to sell things through social media even though they have not taken entrepreneurship courses.

4. Conclusion
Based on the analysis results, findings and discussion described above, it can be concluded that there is no significant difference of mathematics education students’ entrepreneurship motivation in facing the digital era between students who have and have not taken entrepreneurial courses.

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