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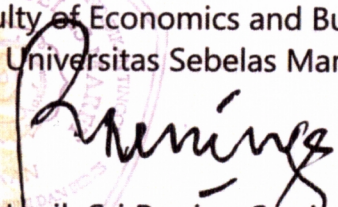
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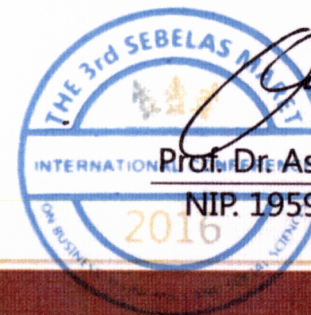
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# **DETERMINANTS OF TECHNO-ENTREPRENEURSHIP IN VOCATIONAL HIGH SCHOOL**

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## **Abstract**

*This research aims to reveal: (1) the condition of student's technopreneurship competence, and (2) the influence of all and each factors in Technopreneurship competence on student's product quality at SMK. This research is ex post facto with quantitative method. The population of this research was class X and XI at vocational high school which consisted of SMKN 1 Depok, SMKN 1 Sewon, SMKN 4 Yogyakarta, and SMKN 1 Pengasih. The number of samples was determined based on the table of Isaac & Michael by taking a error rate of 5%. The samples was taken by proportional sampling, consisting of 286 students. The hypothesis of this research was tested by simple linear and multiple regression analysis. This research results show that: (1) the condition of the student's Technopreneurship competence, for creativity variable is in the very high category as much as 67,83%, the innovation variable is in the very high category as much as 55.94%, the leadership variable is in the high category as much as 51.75%, the managerial ability variable is in the very high category as much as 74.83%, and the quality of the product is in the high category as much as 50.70%; and (2) there are positive and significant influences in creativity, innovation, leadership, and managerial ability on the quality of student's product at SMK (sig <0.05).*

**Keywords:** entrepreneurship, technology, vocational high school.

## **Introduction**

In recent times, Indonesians are facing many challenges, one of them is global competition. Globalization that affects various sectors and leads to free trade cannot be avoided by many countries, including Indonesia. In this era, national borders disappear while technology and information develop so fast, especially when the Asean Free Trade Area (AFTA) started to be implemented in the year of 2015.

The quality of human resources is the key for every country to get involved in the the global competition. Each country in AFTA should have prepared for the free trade zone when the flow of goods and services move freely among countries. Therefore, each country should be highly competitive to attract foreign investment in order to increase the national revenue and economy. Based on the World Economic Forum (2014) data in The Global Competitiveness Report 2013-2014, Indonesia was ranked 34<sup>th</sup> out of 144 countries on the quality of human resources. The rank of

Indonesia is above countries like Spain which was ranked 35<sup>th</sup>, Portugal ranked 36<sup>th</sup>, Kuwait ranked 40<sup>th</sup>, Turkey ranked 45<sup>th</sup>, Italy ranked 49<sup>th</sup>, South Africa ranked 56<sup>th</sup>, Brazil ranked 57<sup>th</sup>, Mexico ranked 61<sup>st</sup>, and India ranked 71<sup>st</sup>. However, in ASEAN level, the rank is defeated by three neighbor countries. They are Singapore that is ranked 2<sup>nd</sup>, Malaysia ranked 20<sup>th</sup>, and Thailand ranked 31<sup>st</sup>. Nevertheless, Indonesia still stands above the Phillipines in the 52<sup>nd</sup> rank, Vietnam in the 68<sup>th</sup>, Laos in the 93<sup>rd</sup>, Cambodia in the 95<sup>th</sup>, and Myanmar in the 134<sup>th</sup>.

Currently, the competitiveness of a nation is not determined by the abundance of natural resources and cheap labor force, but by the excellence of innovation and science or the combination of both (Directorate General of Higher Education, 2008, p.17). One of the factors that affects a nation's competitiveness is human resources who are productive, critical, creative, innovative, affective, and having high insights of science and technology. However, the quality of Indonesian human resources is not optimal yet. The situation is caused by the

lack of national product use generated from the utilization of high technology.

Education in developed countries is based on the ability of their people to be independent and innovative to create technology and it becomes the quality of their human resources. The ability is called as entrepreneurship or technopreneurship-based education (Directorate General of Higher Education, 2008). Technopreneurship emphasizes on the commercialization of technology products that are less valuable. These products are made into highly valuable products so that consumers are attracted to buy or own them (Tanan, 2008, p.97). Some experts suggest that technopreneurship is a process and formation of new business involving technology as its base with a hope that the creation of right strategy and innovation can put technology as one of the factors to develop national economy.

The technopreneurship ability of students, especially those in vocational schools, to produce technology-based products that have productivity, creativity, innovation, and high competitiveness will make them able to compete globally. In the production of a high-quality product, a person must have the characters of an entrepreneur, such as innovative, creative, having leadership and managerial skills, responsible, visioner, hard worker, brave to take risks, and confident to build the technopreneurship competence. Among those characters, there are four dominant aspects which become the factors of the technopreneurship competence. They are creativity, innovation, leadership, and managerial skills factors (Technopreneurship Book in Directorate General of Higher Education, 2008).

Based on several interviews with some vocational school teachers in Yogyakarta, the teaching and learning process of vocational skills and Entrepreneurship subjects are not optimal yet. It is shown by the lack of students' interest in producing technology-based products and being an entrepreneur. Students have lack of creativity and innovation to produce highly competitive products. They have not developed the entrepreneur characters, such as innovative, creative, having leadership and managerial skills, responsible, visioner, hard worker, brave to take risks, and confident. Beside the problems on the vocational skills and entrepreneurship subjects, vocational schools

emphasize more on theory rather than practice. It makes students less understand the output of each subject. They also make little efforts to use their skills and technology-based school facilities to support the teaching and learning activities of the vocational skills, entrepreneurship, and their own products. On the other hand, those subjects are taught by non-productive teachers who do not master the competence of the subjects. Hence, students have a perception that being an entrepreneur means merely selling goods that have selling value or simply trading goods. Teachers also do not encourage students to have technopreneurship characters so that they are less motivated during the teaching and learning process. Those facts show that there are differences between the aim and implementation of vocational skills and entrepreneurship subjects in vocational schools.

Based on the condition, before making further actions, such as changing the vocational skills and entrepreneurship curriculums or deciding which one is the right teaching and learning method, it is important to know factors that influence the technopreneurship competence of the vocational school students in producing technology-based and highly-competitive products through entrepreneurial spirit. After the results are obtained, an action that has more focus to encourage students to start business can be carried on. Therefore, a study to know in detail the determinants of technopreneurship competence of vocational school students must be conducted.

Entrepreneur refers to an individual who performs pervariables, entrepreneurship refers to a process or individual ability to transform ideas into performances through creativity and innovation, while entrepreneurial refers to attitudes, skills, and behaviors to perform pervariables (Barnawi & Arifin, 2012, p.25). The definition of entrepreneur according to Schumpeter (Alma, 2013, p.24) is "*Entrepreneur is the person who destroys the existing economic order by introducing new products and services, by creating new forms of organization, or by exploiting new materials*". The statement is in accordance with Hisrich (Eroglu & Picak, 2011, p.146) who states "*An entrepreneur is characterized as someone who demonstrates initiative and creative thinking, is able to organize social and economic mechanisms to turn resources and situations to*



*practical account, and accepts risk and failure”.*

Based on some opinions and explanation above, it can be concluded that entrepreneurship is a process when a person uses a chance or global challenges to make betterment of life. He will perform creative efforts and create innovative products by developing ideas and maximizing the resource management. It starts from a new organization with an aim to create prosperity to individuals and then to increase value to the society and a country's economic growth.

Based on some opinions above, it can be concluded that a successful entrepreneur should have entrepreneurship characteristics such as independent and optimistic, task and result oriented, brave to take risks, having strong leadership, original, innovative, creative, flexible in every problem and situation, and having future orientation, vision, and perspective. The difference between an entrepreneur and a technopreneur is an entrepreneur has ability that is based on education and trainings obtained previously while a technopreneur tends to use technology as the main element in the development of his business and products. The technopreneurs are also called as “modern entrepreneurs” (Nasution, Arifin, Suef, 2007, p.28). According to Dolata Badi & Meigounpoory (2013, p.140), *“Technopreneurship is innovative application of technical science and knowledge individually or by a group of persons, who create and manage a business and take it financial risk in order to achieve their goals and perspectives”*. According to Chua Eung Hwa (2009, p.2), *“A technopreneur is an extension of an entrepreneur, and makes use of technology to make a new invention an innovation and thereby exploits his achievement in the market to make money”*.

Based on several opinions above, it can be concluded that technopreneurship is a process done by an expert entrepreneur who is utilizing and combining technology creatively and innovatively to produce a product or service of which they can take responsibility of. An entrepreneur will be careful in seeing an opportunity and chances around him. Putting technology as the limitation of the business as the base of entrepreneurship in technopreneurship is a direct application of knowledge owned by a person based in his expertise and the utilization of modern tools

that support a business process that is about to do. Human beings with their reasoning can manipulate technology as tools to help the process of fulfilling their needs. Technology in general or telematic technology in particular grows rapidly. The mastery of newest and right technology will provide fast and more efficient results from time to time. Hence, the aim of technopreneurship can be achieved completely.

One of education experts, Piirto (2011, p.4) states that creativity as a form of a person's thought, *“The concept of two sides of the brain, the right side for creativity and the leftside for plodding intellect, is part of overly simplistic contemporary understanding of creativity. (Indeed, we need the whole brain for creative production)”*. To put it simply, creativity is part of the two-sided concept of the brain, the left and right sides. The right side is for creativity and the other is for intelligence. Guilford's opinion is in line with Standler (Suratno, 2009) who tries to distinguish creativity and intelligence. According to Standler, smart people have ability to study and think, while creative people tend to do something that has not been done previously. However, it is necessary to emphasize that basically both abilities are supporting and developing each other. Stortelder (2011, p.13) also states that *“Creative thinking is made up of different attitudes, thinking skills and techniques, and thought processes that increase the probability of pattern breaking and the creation of new connections in our brain”*.

Based on opinions and explanation above, it can be concluded that creativity is a person's ability to act and create various types of unique or different skills and also ability to think that indicates fluency, originality, ability to develop a particular idea different from others, and flexibility of thinking. Effects of creativity in the technopreneurship competence on the quality of a product are based on: (1) process: (a) fluency of thinking, (b) flexibility, (c) elaboration, (e) imagination, (f) curiosity, (2) product: (a) originality and (b) complexity.

Innovation is creativity that is defined as something that can be implemented and provide additional value on the resources owned (Suryana, 2013, p.213). Seen from the entrepreneurship perspective, an entrepreneur is actually an innovator or individual who owns instincts to find new creations. It is similar with what has been stated by Theodore (Alma, 2013, p.71) that *“Creativity is thinking new things,*

*and innovation is doing new things*". In this case, innovation is the implementation of creative thinking to create something new. According to Drucker (Suryana & Bayu, 2013, p.221), innovation involves more physical work rather than thought. Drucker has an opinion that innovation has a particular function for entrepreneurs. With innovation, an entrepreneur creates both new production resources and resource management by increasing their potential value to create something that does not exist into being. Innovation is a process to transform chances into marketable ideas.

Based on those opinions, it can be concluded that innovation is the results of thought or ideas that are implemented by involving all available resources to produce better products, processes, services, concepts, new ways, and policies. The effects of innovation in the technopreneurship competence on the quality of a product are based on: (1) dimensions of style and product design: (a) relative quality, (b) compatibility, (2) dimensions of product variants: (a) product differentiation and (b) complexity, and (3) dimensions of product functions: (a) testing ability, and (b) ability to be observed.

Jones (Sutarto, 2012, p.1) states that *"In simple term, organization is a united group of people working for a common goal, under common leadership, and with the proper tools"*. According to Stuart (Kahar, 2008, p.352), a leader is a person who is expected to have ability to influence, direct, and choose right individuals to reach the goals of an organization. Along with that, Suryana & Bayu (2013, p.144) argues that the word "leader" contains a definition that means to direct, to develop or manage, and to show or to influence. Therefore, the word "leader" contains two main aspects, a subject when it means a leader and an object when it means people being led. The same thing is argued by Bush (Usman, 2010, p.281) who states *"I mean influencing others actions in achieving desirable ends."* According to Bush, a leader will influence others' actions to achieve the expected goals.

Therefore, it is clear that leadership is a person's activity to influence other individuals, groups, and organizations as a unity so that leadership is defined as the ability to influence, motivate, and communicate all members of the groups and organizations to work for the sake of those groups or organizations' goals. The definitions of leadership can be grouped into

three dimensions. They are the dimensions of characteristic, behavior, and situation. The characters of a leader will influence his leadership in the organization. With those characters, an organization will run effectively and be in accordance with the expected goals. The effects of leadership in the technopreneurship competence towards the quality of students' products are based on: (1) dimensions of characters: (a) integrity, (b) optimism, and (c) catalysis, (2) dimensions of behaviors: (a) fond of pervariables, (b) persevering and (c) visioner, (3) dimensions of situation: (a) brave to take risks, (b) strong-willed, and (c) legality.

According to Terry (Soebandono, 2009), management is a specific process consisting of planning, organizing, performing, and controlling actions done to decide and achieve the determined targets by utilizing human resources and other resources. A management process also means a series of working activities involving coordination and monitoring of others' works to make things done efficiently and effectively (Robbin & Coulter in Aryanto, 2013, p.3). Parker (Usman, 2010, p.5) defines management as the art of getting things done through people. To achieve the effectiveness and efficiency in the management, all new actions and activities must be performed based on rational consideration and calculation. Hence, there are necessary steps of actions that must be clearly and firmly formulated to achieve the goals of the program.

Based on those definitions, management is knowledge as well as an art to control, plan, organize, direct, coordinate, and monitor the utilizing process of human resources and other resources effectively and efficiently to achieve the determined goals of an organization: that is high productivity. Effects of managerial ability in the technopreneurship competence on the quality of students' products are based on: (1) dimensions of planning skills: a) establishing goals and b) allocating resources, (2) dimensions of organizing skills: (a) designing structure and (b) co-ordinating parts, (3) dimensions of leading skills: (a) implementing decisions and (b) developing personnel, (4) dimensions of controlling skills: (a) establishing standards and (b) measuring performance.

Products are everything that can be offered to the market to satisfy the need of

goods, services, events, people, places, properties, organizations, information, and ideas (Kotler & Keller, 2009, p.4). On the other hand, products are also the most basic marketing tool involving places, organizations, and ideas. According to Kotler & Armstrong (2008, p.266), each product should have sale value and can be offered to market to be seen, owned, used, or consumed by consumers to satisfy a certain need. Products consist of goods, services, people, places, organizations, and ideas. Classification of products according to Kotler & Keller (2009, p.6) are divided into three groups, goods and services. The classification of the kinds of products is divided into two: nondurable and durable goods. Dimensions of the product quality is also stated by David, cited by Tjiptono in Sari, Suryoko & Dewi (2013, p.4), consisting of: (1) quality of goods: performance, feature, reliability, conformance to specifications, durability, and aesthetic aspect, (2) quality of production: production management.

Based on the explanation above, the quality of a product made by students in the forms of goods and production process is valued based on the dimensions of the quality determinants consisting of: 1) dimensions of product quality: (a) performance, (b) feature, (c) reliability, (d) conformance to specifications, (e) durability, and (f) aesthetic aspect, (2) dimensions of product quality: (a) production management.

### Research Methods

The research is an ex post facto research with a quantitative approach. An ex post facto research has a purpose to find out the effects of dependent and independent variables on the observation of a case that has occurred. The technique of data collection used in the research is questionnaires.

The research was conducted in vocational schools belonging to the vocational school cluster. Several schools that meet the criteria are: SMK Negeri 1 Depok, SMK Negeri 1 Sewon, SMK Negeri 4 Yogyakarta, and SMK 1 Pengasih. The research went on from November 2014 until December 2015. The determination of samples used in the research was based on the Isaac and Michael table by taking  $\alpha$  error rate of 5%.

The research used the proportional sampling of the population because by using the method, even results for each sampling number

will be achieved. The reason of using the proportional sampling is because the number of students in the X and XI grade in each school is different from each other. By using the technique, the proportional number is possible to achieve.

The subjects in this research are vocational school students whose data would be taken to know the effects of creativity, innovation, leadership, and managerial skill on the quality of the students' products by using questionnaires. Characters of an entrepreneur that become factors in this research are creativity, innovation, leadership, and managerial skills. The dependent variable (Y) is the quality of the vocational school students' products and the independent variables (X) are creativity (X1), innovation (X2), leadership (X3), and managerial skills (X4). The data collection technique was observation sheets in the form of questionnaires. The instruments have been tested using the validity and reliability test before being used. Alternatives of answers provided in the questionnaire sheet used the Likert scale. The data were then analyzed using the simple and multiple regression tests.

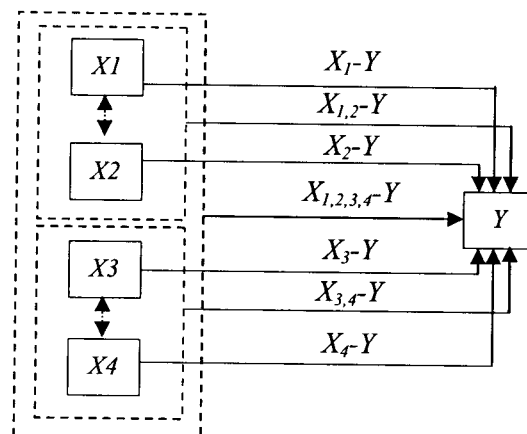


Figure 1. Hypothetical model of the variables

### Result and Discussion

The data of the students' creativity variable in the technopreneurship competence was obtained through a closed questionnaire with 16 questions. Based on the data obtained from the respondents, the lowest score is 36 and the highest is 59. By using the assisting program of SPSS v.16, by the total score of 14.131, the mean is 49,40; median is 49,00; modus is 49,00, and deviation standard is 4,10.

To know the figures of the students' creativity variable in the technopreneurship competence, the Ideal Mean (Mi) and Ideal Standard Deviation (SDi) scores must be calculated first. It was calculated using 16 questions with the scale of 1 to 4. The tendency of the students' creativity variable in the technopreneurship competence based on the ideal score was conducted under the following conditions.

Table 1. Category of creativity

No	Score	Frek.	Percent. (%)	Category
1	≥ 48	194	67,83	Very high
2	40 – 47	88	30,77	
3	32 – 39	4	1,40	
4	< 32	0	0	

Based on the data taken from the table and diagram graphs of the students' creativity category distribution, from 286 students following the teaching and learning activity of the vocational skills and entrepreneurship subjects, 0 students (0%) is categorized as low, 4 students (1,4%) categorized as moderate, 88 students (30,77%) categorized high and 194 students (67,83%) categorized very high. In other words, it shows that the effect of creativity in the technopreneurship competence towards the quality of vocational school students' products is very high.

Data on the students' innovation variable in the technopreneurship competence was obtained through closed questionnaires consisting of 13 questions. Based on the data obtained from the respondents, the lowest score is 31 and the highest is 48. By using the assisting program of SPSS v.16, from the total score of 11.445, the mean is 40,01, median is 40,00, modus is 41,00, and deviation standard is 3.11.

Table 2. Category of Innovation

No	Score	Frek.	Percent. (%)	Category
1	≥ 40	160	55,94	Very High
2	33 – 39	124	43,36	
3	26 – 32	2	0,70	
4	< 26	0	0	

Based on the data taken from table and diagram graphs of the students' innovation innovation category distribution, from 286 students, 0 students (0%) is categorized as low,

2 students (0,70%) categorized as moderate, 124 students (43,36%) categorized as high and 160 students (55,94%) categorized as very high. It can be said that the effect of innovation in the technopreneurship competence on the quality of vocational school students' products is very high.

Data on the students' leadership variable in the technopreneurship competence was obtained through closed questionnaires consisting of 26 questions. Based on the data obtained from the respondents, the lowest score is 62 and the highest is 100. By using the assisting program of SPSS v.16, from the total score of 22.112, the mean is 77,31, median is 77,00, modus is 76,00, and deviation standard is 4,96. Based on the data taken from table and diagram graphs of the students' leadership innovation category distribution, from 286 students, 0 students (0%) is categorized as low, 2 students (0,70%) categorized as moderate, 148 students (51,75%) categorized as high and 136 students (47,55%) categorized as very high. It can be said that the effect of leadership in the technopreneurship competence on the quality of vocational school students' products is very high.

Table 3. Category of students' leadership

No	Score	Frek	Percent (%)	Category
1	≥ 78	136	47,55	High
2	65 – 77	148	51,75	
3	52 – 64	2	0,70	
4	< 26	0	0	

Data on the students' managerial skills variable in the technopreneurship competence was obtained through closed questionnaires consisting of 14 questions. Based on the data obtained from the respondents, the lowest score is 37 and the highest is 52. By using the assisting program of SPSS v.16, from the total score of 12.519, the mean is 43,77, median is 44,00, modus is 42,00, and deviation standard is 3.21.

Based on the data taken from table and diagram graphs of the students' managerial skills category distribution, from 286 students, 0 students (0%) is categorized as low, 0 student (0%) categorized as moderate, 68 students (23,78%) categorized as high and 218 students (76,22%) categorized as very high. It can be said that the effect of managerial skills in the

technopreneurship competence on the quality of vocational school students' products is very high.

Table 4. Category of students' managerial skills

No	Score	Frek.	Persent. (%)	Categori
1	≥ 42	218	76,22	Very High
2	35 – 41	68	23,78	
3	28 – 34	0	0	
4	< 26	0	0	

Data on the quality of vocational school students' products in the technopreneurship competence was obtained through closed questionnaires consisting of 13 questions. Based on the data obtained from the respondents, the lowest score is 30 and the highest is 47. By using the assisting program of SPSS v.16, from the total score of 11.292, the mean is 39,48, median is 40,00, modus is 40,00, and deviation standard is 3.12. Based on the data taken from table the students' innovation category distribution, from 286 students, 0 students (0%) is categorized as low, 5 students (01,75%) categorized as moderate, 136 students (47,55%) categorized as high and 145 students (50,7%) categorized as very high. It can be said that the effect of managerial skills in the technopreneurship competence on the quality of vocational school students' products is very high.

Table 5. Category of vocational school students' products

No	Score	Frek	Percent (%)	Category
1	≥ 40	145	50,70	Very High
2	33 – 39	136	47,55	
3	26 – 32	5	1,75	
4	< 26	0	0	

Based on the results of a hypothetical test with a simple linier regression analysis, the creativity variable has a positive and significant effect towards the quality of students' products. It can be seen from the significance results of creativity towards the quality of students' products in vocational schools. The significance results show that the correlation coefficient of  $R_{x1-y}$  is 0,168;  $R^2_{x1-y}$  is 0,028,  $t_{calculate}$  is 2,867 with significance score < probability (0,004 < 0,05). The score of  $t_{calculate}$  is then

consulted with  $t_{table}$  on the significance level of 5% with  $N=286$  resulted at 0,113. Hence, the  $t_{calculate}$  is bigger than  $t_{table}$  ( $t_{calculate} 2,867 > t_{table} 1,968$ ). The model of regression equation formed is  $Y = 33,166 + 0,128X_1$ . From the calculation, the determinant coefficient of the creativity variable on the quality of students' product is 2,8% and the remaining 97,2% is related to other variables.

The innovation variable has a positive and significant effect towards the quality of students' products. It can be seen from the significance results of innovation towards the quality of students' products in vocational schools. The significance results show that the correlation coefficient of  $R_{x2-y}$  is 0,157;  $R^2_{x2-y}$  is 0,025,  $t_{calculate}$  is 2,672 with significance score < probability (0,008 < 0,05). The score of  $t_{calculate}$  is then consulted with  $t_{table}$  on the significance level of 5% with  $N=286$  resulted at 1,968. Hence, the  $t_{calculate}$  is bigger than  $t_{table}$  ( $t_{calculate} 2,672 > t_{table} 1,968$ ). The model of regression equation formed is  $Y = 33,196 + 0,157X_2$ . From the calculation, the determinant coefficient of the innovation variable towards the quality of students' product is 2,5% and the remaining 97,5% is related to other variables.

The leadership variable has a positive and significant effect on the quality of students' products. It can be seen from the significance results of leadership on the quality of students' products in vocational schools. The significance results show that the correlation coefficient of  $R_{x3-y}$  is 0,050;  $R^2_{x3-y}$  is 0,003,  $t_{calculate}$  is 0,848 with significance score > probability (0,387 < 0,05). The score of  $t_{calculate}$  is then consulted with  $t_{table}$  on the significance level of 5% with  $N=286$  resulted at 1,968. Hence, the  $t_{calculate}$  is bigger than  $t_{table}$  ( $t_{calculate} 0,848 < t_{table} 1,968$ ). The model of regression equation formed is  $Y = 37,033 + 0,032X_3$ . From the calculation, the determinant coefficient of the leadership variable towards the quality of students' product is 0,3% and the remaining 99,7% is related to other variables.

The managerial skills variable has a positive and significant effect towards the quality of students' products. It can be seen from the significance results of leadership towards the quality of students' products in vocational schools. The significance results show that the correlation coefficient of  $R_{x4-y}$  is 0,154;  $R^2_{x4-y}$  is 0,024,  $t_{calculate}$  is 2,624 with significance score < probability (0,009 < 0,05). The score of  $t_{calculate}$  is then consulted with  $t_{table}$



on the significance level of 5% with N=286 resulted at 1,968. Hence, the  $t_{\text{calculate}}$  is bigger than  $t_{\text{table}}$  ( $t_{\text{calculate}} 2,624 < t_{\text{table}} 1,968$ ). The model of regression equation formed is  $Y = 32,918 + 0,150X_4$ . From the calculation, the determinant coefficient of the managerial skills variable towards the quality of students' product is 2,4% and the remaining 97,6% is related to other variables.

Both the creativity and innovation variables have a positive and significant effect towards the quality of students' products. It can be seen from the significance results of creativity and innovation on the quality of students' products in vocational schools. From the correlation analysis,  $R_{(x_1,x_2)-y} = 0,214$ ;  $R^2_{(x_1,x_2)-y} = 0,046$  is obtained,  $F_{\text{calculate}} 6,767$  and the score of  $F_{\text{table}} = 3,027$  ( $F_{\text{calculate}} > F_{\text{table}}$ ); with significance score  $<$  probability ( $0,001 < 0,05$ ). The model of regression equation formed is  $Y = 28,566 + 0,112X_1 + 0,134X_2$ . From the calculation, the determinant coefficient of creativity and innovation on the quality of students' products is 2,4% and the remaining 97,4% is affected by other variables.

Both the leadership and managerial skills variables have a positive and significant effect towards the quality of students' products. It can be seen from the significance results of correlation coefficient between the leadership and managerial skills variables on the quality of students' products. From the correlation analysis,  $R_{(x_3,x_4)-y} = 0,156$ ;  $R^2_{(x_3,x_4)-y} = 0,024$  is obtained,  $F_{\text{calculate}} 3,541$  and the score of  $F_{\text{table}} = 3,027$  ( $F_{\text{calculate}} > F_{\text{table}}$ ); with significance score  $<$  probability ( $0,030 < 0,05$ ). The model of regression equation formed is  $Y = 31,579 + 0,017 X_3 + 0,146X_4$ . From the calculation, the determinant coefficient of leadership and managerial skills on the quality of students' products is 2,4% and the remaining 97,6% is affected by other variables.

The creativity, innovation, leadership, and managerial skills have a positive and significant effect towards the quality of students' products. It can be seen from the significance results score of creativity, innovation, leadership, and managerial skills on the quality of students' products in vocational schools. From the coefficient analysis results of  $R_{(x_1,x_2,x_3,x_4)-y} = 0,244$ ;  $R^2_{(x_1,x_2,x_3,x_4)-y} = 0,060$  is obtained,  $t_{\text{calculate}}$  is 4,453 and  $F_{\text{table}} = 3,027$  ( $F_{\text{calculate}} > F_{\text{table}}$ ); with significance score  $<$  probability ( $0,002 < 0,05$ ). The model of regression equation formed is  $Y = 24,241 +$

$0,097 X_1 + 0,125X_2 + 0,005X_3 + 0,116X_4$ . From the calculation, the determinant coefficient of creativity, innovation, leadership, and managerial skills variables on the quality of students' products is 6% and the remaining 94% is affected by other variables.

## Conclusion

The results of calculation indicate that the technopreneurship competence condition of vocational school students can be presented in the followings: the creativity variable is categorized as very high (67,83%), so do innovation variable (55,94%), and managerial skills variable (76,22%), while the quality of products variable (50,70%) and leadership variable (51,75%) are categorized high. There is positive and significant influence from each variable (creativity, innovation, and managerial skills) on the quality of students' products in vocational schools determined by a hypothetical test of  $\text{sig} < 0,05$  or  $t_{\text{calculate}} > t_{\text{table}}$ , while for the managerial skills, there is no positive and significant influence on the quality of students' products determined by a hypothetical test of  $\text{sig} > 0,05$  or  $t_{\text{calculate}} < t_{\text{table}}$ . The creativity and innovation variables together have positive and significant influence on the quality of students' products in vocational schools determined by a hypothetical test result of  $\text{sig} < 0,05$  or  $F_{\text{calculate}} > F_{\text{table}}$ . The leadership and managerial skills variables together have positive influence and become significant factors on the quality of students' products in vocational schools determined by a hypothetical test result of  $\text{sig} < 0,05$  or  $F_{\text{calculate}} > F_{\text{table}}$ . The variables of creativity, innovation, leadership, and managerial skills together have positive and significant effects on the quality of students' products determined by a hypothetical test result of  $\text{sig} < 0,05$  or  $F_{\text{calculate}} > F_{\text{table}}$ . From the four factors, creativity, innovation, leadership, and managerial skills, the creativity becomes the most dominant factor among the technopreneurship competence of students that influences the quality of products with the determinant or contributive score of 2,8%. The combination of the four factors which have determinant score or contributive variables together give 6% contribution on the quality of products.

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**Session: Entrepreneurship and Management Information System (EMIS)**

Date: Thursday, August 4, 2016

Time: 8.30 am to 10.30 am

Room: Violan 3

Chair: Dr. Ahmad Ikhwan (Universitas Sebelas Maret)

1	<b><i>Determinant Of Intention Of E-Commerce Adoption Andstrategic Orientationas Moderating Variable In Family Business</i></b>
	<b>Muhammad Kholid Arif Rozaq</b> , Universitas Sebelas Maret
	Mugi Harsono, Universitas Sebelas Maret
2	<b><i>Education And Environmental Effect Of Competitive Advantagesand Performance Of Women Entrepreneurs In Malang</i></b>
	Aniek Wahyuati, STIESIA Surabaya
	<b>Anindhya Budiarti</b> , STIESIA Surabaya
3	<b><i>Determinants Of Techno-Entrepreneurship In Vocational High School</i></b>
	<b>Moch. Bruri Triyono</b> , Yogyakarta State University
	<b>Galeh Nur Indriatno Putra Pratama</b> , Yogyakarta State University
4	<b><i>Success Factors Of Information System Implementation Case In Indonesia</i></b>
	<b>Alwan Sri Kustono</b> , University of Jember
	<b>Moch. Shulthoni</b> , University of Jember
	<b>Zefanya Gabriela V</b> , University of Jember