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Disruption Era, Do Students Have Its Competencies? The Case of Indonesia

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Abstract

Disruption era offers opportunities and challenges for educational institutions. On one side, educational institutions are required to produce graduates who meet the qualifications of the work world. On the other side, the existence of disruption phenomenon causes uncertainty over the permanence of a profession. Preparing graduates to be able to live anytime, anywhere, and in any situation becomes a necessity. Graduates' competencies no longer contain only knowledge-knowing attributes but also knowledge production and innovation applications of knowledge. This study was designed to determine the extent to which student competencies face disruption era. Entrepreneurial is an important competency that is measured (including technological competencies). Project assessment is used to answer research questions. The results of the study indicate that there is a combination in achievement of competency and collaboration is competency that need to be improved.

Keywords: disruption era, student competencies, project assessment

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1. Introduction

> *"...if we teach today as we taught yesterday, we rob our children of tomorrow."*
> *John Dewey (1915:18)*

Disruption era, which is currently marked by industrial revolution 4.0 offers many opportunities and challenges (Fauzan, 2018). These opportunities and challenges then bring changes to products and business (Kinzel, 2016). Related to educational institutions, the disruption era demands provision of graduates with technology, development of new employment opportunities, and possibility of missing or changing profession (Murniarti, 2017). Likewise, Kasali (2017) calls it difficult to ensure that professions remain in the future. Sung (2017) describes the loss of many jobs due to automation. This is reinforced by the study of McKinsey international consultancy institute in 2017, which estimates the impact of disruption in the form of the loss of around 45 million to 50 million jobs in Indonesia in the foreseeable future (Kompas, 6 Februari 2018). The same

thing was explained by the US Department of Labor, that 65% of future professions have not been found (Nasir, 2018). Thus, competencies should not only be formulated based on certain professions. Students must be equipped with competencies that provide the ability to live anytime, anywhere, and in any situation (Kamdi and Saryono, 2017). Learning no longer contains knowledge knowing attributes, but knowledge production and innovation applications of knowledge. In this case, entrepreneurial competence plays a vital role in addition to technological competencies and field competencies.

Entrepreneurship is important for connecting education and the real world (Clouse, 2005) and preparing students to be responsive for changes that occur (Clouse et al., 2008). The general concept of entrepreneurship that can be internalized in learning includes recognizing business opportunities, optimizing the resources they have in dealing with risks, and finding solutions in everyday life (Clouse et al., 2008), daring to think creatively, have an entrepreneurial mindset, create employment, learning is not too heavy and does not only pursue the completion of material (Clouse et al., 2005). Entrepreneurship is also one of the ways initiated by Kemenristekdikti to deal with disruption era (Nasir, 2018).

Bygrave (1996) explains that the character of an entrepreneur is slice of variety positive mental attitudes, namely creativity, motivation and innovation, aggressiveness, risk seeker, personality integrity, confidence, competence, and problem solvers. David (1996) mentions characteristics that must be possessed by entrepreneurs include high achievers, risk takers, problem solvers, status seekers, high energy levels, self-confidence, emotional bonds, and personal satisfaction. As for Meredith (2000) describes entrepreneurial competency divided into personal (self-confidence, autonomous individualistic, desire to achieve, reward seeking); mind/thought (realistic, independence, organizing, optimism, intuitive, innovative, constructive, orientation to: goal, reward, excellence, future); and behavior (doers, risk takers, hard workers, organizers, decision-makers, leaders, change agents, acceptance of responsibility, nurturing quality), with innovative and creative primary capital. Meanwhile, Sudarmiatin (2009) mentions the characteristics of entrepreneurship, among others, a) proactive (initiative), b) achievement oriented (acting on opportunities, efficiency orientation, high attention to work, systematic planning, monitoring), c) commitment to others (commitment toward work, realizing the importance of business relationships). Furthermore, Brinckmann (2007) divides entrepreneurship into 3 main domains, namely general, social, and functional entrepreneurship. These domains then developed by Nicklaus (2011).

This study assessed the competence of students in disruption era using project assessments. The strength of this research lies in the identification of entrepreneurial

competencies as required competencies (in addition to field competencies) for disruption era and the use of project assessments. Competence refers to Nicklaus (2011) by adding an attitude or ethical indicator that refers to Kakkonen (2010) and Li et al. (2016). The indicator are the general entrepreneurship domain which is divided into a) conceptual and analytical, b) innovation, c) willingness/dexterity, d) flexibility to the environment, e) self-knowledge and confidence, f) learning ability (responsible, like challenges and experience new, learning from mistakes), g) communication, and h) attitude or ethics. The social domain consists of a) cooperation, b) leadership, and c) network. The functional domain consists of a) commercial management capabilities, b) financial management, c) strategic management, and d) technology management. Project assessments allow decisions to be made regarding student competencies in disruption era after the use of non-test (project) and measurement tools (Anderson et al., 1973: 27). Previous research assessed student entrepreneurship competencies using questionnaires (Chasbiansari, 2007; Hamidi et al., 2008; Sanchez et al., 2011; Mulyatiningsih, 2011; Suroto et al., 2016).

2. Methods

The project assessment consists of three main processes, namely data collection through the use of tests and non-tests, measurement, and decision-making (Anderson et al., 1981: 27). In this study, non-test devices were developed through partnership accounting project. Project validity ensure by expert judgement. The entire time needed is 6 weeks, with details: 2 weeks designing a business proposal and making a partnership deed, 2 weeks of doing business, 1 week of change in ownership interest and liquidation of the partnership, and 1 week of making business reporting. The project involved 40 students. Adopting Hunaiti et al. (2010), project appraisal consists of planning evidence in the form of proposals, project design, making progress reports (interim reports), carrying out what has been planned, making reports, and presenting the overall project results. In this study, Hunaiti's assessment (2010) was adapted as follows a) planning (proposal), defining the problem, reviewing the literature, prototype design adapted into design of a business proposal and making a deed of establishment; b) planning implementation and interim progress reports are adapted into business operations, change in ownership interest and liquidation of the partnership; c) final written report and presentation of the final project results are adapted into business reporting. After determining the stages of the project to be assessed, an assessment rubric then made using entrepreneurial indicators from Nicklaus (2011), Kakkonen (2010),

and Li et al. (2016). The combination of entrepreneurship indicators in non-test (project) devices and their measurements are as follows:

Table 1: Entrepreneurship indicators and assessment.

No	Entrepreneurship Indicators	Assessment Indicators	Details
STAGE 1: BUSINESS ESTABLISHMENT			
1.	General Entrepreneurship: a. Conceptual and Analytical b. Innovation c. Self-knowledge and confidence d. Communication	1. Communication, knowledge, and confidence in discussions and presentations	1.1 Confidence, clarity, and accuracy in communicating ideas in discussions.
			1.2 Confidence, clarity and accuracy in presentation.
			1.3 Intensity and tolerance in interpersonal interaction.
2.	Social: a. Collaboration	2. Contributions and ability to collaborate in groups	2.1 Active members in group discussions.
			2.2 Contribution of members' ideas to group work.
3.	Functional: a. Technology Management	3. Business feasibility (concept, creativity, innovation)	3.1 Creativity, innovation, and market potential for business ideas are made.
			3.2 The consistency of the business that will be carried out.
			3.3 Feasibility of financial targets to be achieved for the business.
			3.4 Feasibility of sharing group workload.
4.		4. Technical skills resulting from group work	4.1 Ability to apply the procedure for establishing partnerships.
			4.2 Truth of the fellowship agreement.
			4.3 Ability to study and analyze fellowship agreements.
5.		5. Technology utilization	5.1 Use of technology in making partnership
STAGE 2: BUSINESS OPERATIONS			
1.	General Entrepreneurship: a. Willingness/Dexterity b. Flexibility to the Environment c. Learning Ability d. Attitude/Ethics	1. Willingness and learning ability, ability to collaborate, and leadership in business implementation	1.1 Frequency of involvement of each member in the business implementation process.

No	Entrepreneurship Indicators	Assessment Indicators	Details
			1.2 The ability of individuals to work together in groups.
			1.3 Leadership of each group member.
2.	Social: a. Collaboration b. Leadership c. Network	2. Ethics in running a business	2.1 Feasibility of materials and quality of products sold.
3.	Functional: a. Commercial Management b. Financial Management c. Strategic Management d. Technology Management	3. Creativity in facing business fluctuations and building networks	3.1 Creativity in building supplier networks.
			3.2 Creativity in building networks with customers to market products.
			3.3 Creativity in problem solving strategies in the face of business fluctuations.
4.		4. Technical skills such as marketing, finance, and analyzing profit sharing	4.1 Ability to do product marketing.
			4.2 Ability to manage finances in business.
			4.3 Ability to calculate and analyze the sharing of the partnership profits.
5.		5. Technology utilization	5.1 Use of technology in partnership operations
STAGE 2: CHANGE IN OWNERSHIP INTEREST AND LIQUIDATION			
1.	General Entrepreneurship: a. Willingness/Dexterity b. Flexibility to the Environment c. Learning Ability Social: a. Collaboration	1. Willingness and learning ability; and the ability to cooperate in simulating the change in ownership interest and liquidation of the partnership	1.1 Active members in group discussions.
			1.2 Contribution of members' ideas to group work.
2.	Functional: a. Financial Management b. Technology Management	2. Analyze the financial impact of change in ownership interest and liquidation of the partnership	2.1 Ability to simulate the process of change in ownership interest.
			2.2 Ability to review and analyze the impact of changes in the partnership agreement.

No	Entrepreneurship Indicators	Assessment Indicators	Details
			2.3 Ability to simulate several classifications/kinds of partnership liquidation processes.
			2.4 Ability to review and analyze the impact of partnership liquidation.
3.		3. Technology utilization	3.1 Technological use in change of ownership interest and liquidation of the partnership
STAGE 3: BUSINESS REPORTING			
1.	General Entrepreneurship: a. Conceptual and Analytical b. Communication c. Behavior/Ethics Functional: a. Financial Management b. Technology Management	1. Communication skills reporting results.	1.1 Active members in group discussions.
			1.2 Contribution of group members in the financial reporting process.
2.		2. Concept and analysis skills of journals and financial reports from the activities of establishing partnerships, conducting business, change in ownership interest, until the liquidation of the partnership.	2.1 The ability to make journals from the establishment of partnership, business conduct, change in ownership interest, to the liquidation of the partnership.
			2.2 Ability to compile financial statements.
			2.3 Ability to analyze financial performance.
3.		3. The achievement of sales turnover compared to the target.	3.1 The achievement of sales turnover compared to the target.
4.		4. Technology utilization	4.1 Use of technology in reporting the partnership business

3. Findings and Discussion

Stage 1: Business Establishment	1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1
Score	86	84	85	90	80	95	95	97	93	60	70	65	95

The partnership formation is the most important phase because it determines successful project implementation. This stage is carried out in two steps. The first step, students search for business idea, make a financial budget, and divide group members into division. There are 10 groups consisting of four people. In accordance with the expected indicators, at this stage students are able to conceptualize and analyze business ideas contained in a business proposal, the innovation obtained by students is the ability to choose products, market, and share workload between members.

The idea of the 10 groups is soybean milk production and sales, 'seblak' production and sales, coffee sales, and snacks sales with various product variants. The reason for product selection was communicated with confidence at the second step. Social indicators through sub indicators of cooperation and collaboration are obtained through the division of workload of members. Each group member has a role in his or her own field. These fields include Chie Executive Producer (CEO), marketing, finance, and production.

The highest score is obtained in the third indicator; business feasibility (concept, creativity, innovation) and technology utilization. The lowest assessment is obtained in technical skills. The average achieving indicator result in this stage is 85 for all criteria. In this first indicator, the highest achievement is the points of confidence, clarity, and accuracy in the presentation. At this stage, students also use technology as complementary in presentation. 60% of groups use a combination of Microsoft Power Point and Movie Maker application. The second indicator has an average score. This is based on soybean group member contribution who is not optimal.

The third business establishment indicator is business feasibility. In this indicator, students get an optimal value because they not only rely on creativity and innovation, but the chosen business idea is also realistic. In the fourth indicator, students get lowest value. 70% of groups make other formal legalities to support the founding deed, that is, the company register, the trading business license, and the taxpayer's principal number, so that it matches the expected criteria. 20% of the group made a partnership agreement, while the remaining 10% did not apply partnership accounting at this stage. Technology is also used at this stage in the creation of standard operating procedures (SOP) using Microsoft Visio and financial design using Microsoft Excel with the formulation of financial statements that have connected one part to another.

Activities carried out at this stage are taking products to suppliers, packaging and selling products. The entrepreneurial indicator obtained in this stage is the willingness and dexterity to prepare business implementation process. Flexibility requires students to find other solutions when facing problems in the implementation process (business operations). Problems faced by students are limited funds, selection of selling places, building

Table 2

Stage 2: Business Operations	1.1	1.2	1.3	2.1	3.1	3.2	3.3	4.1	4.2	4.3	5.1
Score	80	80	70	90	90	95	90	90	70	90	95
Stage 2: Change in Ownership Interest and Liquidation	1.1	1.2	2.1	2.2	2.3	2.4	3.1				
Score	90	80	50	50	50	60	90				

relationships to sell products, poor market response, and prices of non-competitive products. The ethics emphasized to students are students' behavior in interacting with fellow group and other group members, consumers, and suppliers. Conflicts affect cooperation between group members. Problems between members are resolved independently by students.

Five indicators used in the operation stage are group contributions, ethics, creativity, skills, and technology utilization. The group members divided into division, but they work together while selling and taking products to suppliers. The highest score is obtained in technology used in partnership operations. The lowest assessment is obtained by willingness and learning ability, ability to collaborate, and leadership in business implementation. CV. Bara is one of the groups achieved the highest scored in this collaboration part because this group divides its workload proportionally, sales targets are also resolved without disrupting the tasks of each division. As a result, this group has the highest sales realization. But mostly student, cannot deal with another. Researcher found some conflict in the project implementation.

Technology is utilized optimally at this stage, students make an implementation video, upload it on YouTube, and share the link to the Edmodo. Each video is discussed in the Edmodo group. Each group utilizes video maker software that varies depending on the skills of students in using software.

The next stage is making a scenario of change in ownership interest due to the entry of a new partners. Students carry out fundamental or technical analysis to rationalize the inclusion of new partner in the partnership. The highest score is obtained in willingness and learning ability; and the ability to cooperate in simulating change in ownership interest and liquidation of the partnership, and technology utilization. All of the member group actively participate in the discussion. The lowest assessment is obtained by analyze the financial impact of change in ownership interest and liquidation of the partnership, it has the lowest score because the student financial basis knowledge is not optimal.

Stage 3: Business Reporting	1.1	1.2	2.1	2.2	2.3	3.1	4.1
Score	90	75	85	87	90	100	90

At this stage, students complete the entire project implementation by making project realization reports. Project realization reports are carried out individually in project implementation modules that have been provided. At this stage students narrate the implementation of the project, understanding the partnership accounting, and reflecting the experience. Reflection made by students is able to measure the depth of student experience. Indicators of achievement of competencies are measured through the contribution of group achievements, technical skills, and achievements. The achievement of group contributions is derived from the activeness of members in group discussions and the contribution of group members in the financial reporting process. The average points obtained by students at this stage because most of the students contribute actively in this stage. Technical skill is measured by the ability to create journals for partnership life cycle, as well as the ability to compile and analyze financial statements. The score obtained by students at this stage is the lowest.

The achievement indicators are written in the report of project realization as measured by the comparison between sales turnover and target. At this stage all groups get 200% sales above their product sales targets. There is only one group that achieved 110% realization. There is even one group that does not add additional funding in the first week, only utilizing the capital provided by researcher, but is able to provide sales of 1000% of the initial capital. Net allocations range from Rp 100,000 - Rp 200,000 for each class member, so student points are optimal at this stage. The xero platform is used to make financial reports, then we can conclude that there is technology utilization with good score.

4. Conclusion

At the stage of business establishment, average students recorded with good competencies in innovation, communication, and technology management. At the stage of operations, average students achieved good competencies in technology management. What is noted by researchers is the existence of conflict that originates from a lack of leadership and a desire to cooperate well. Some students have tendency to stand out from others when they feel they have better abilities/self-knowledge. At the stage of business reporting, student achieved good competencies in financial management. Overall, there is combination in achievement of competency and collaboration is competency that need to be improved.

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