

Internship and Entrepreneurship in computer science

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ABSTRACT

Graduated students of State University of Malang majoring in Computer Science have required to do an internship in industry. Generally, the chosen private industry is in the form of a startup, such as learning media applications and games. In this case, the authors would like to conduct research related to the impact of an internship program and another Computer Science subject related to entrepreneurial skills. It is expected that this research can improve the quality of student graduates in order to have an entrepreneurial spirit.

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1. Introduction

At present, throughout the world, especially in Indonesia, various kinds of industrial fields are developing rapidly. This can be seen with the emergence of a variety of new business spaces established by several groups. According to the website startupranking.com [1], Indonesia had 2153 startup companies in 2019, and won 5th place as the country with the most startups after Canada. This of course, is an attraction for the community, especially students who have new things to develop in the business field. They compete with each other to do various innovations to make something different from the others and can benefit many people. However, setting up a new industry or startup is not easy. Not necessarily a student with high hard skills can make a startup that can survive and succeed. This is because it takes more than just hard skills in the development of startups. They are expected to have an initiative soul, can plan a system well, have creativity and innovation, the ability to solve problems, and can manage risk and information [2].

Based on one paper discussing entrepreneurship-based education in China [3], it is evident that the development of education in universities in China is caused by the application of entrepreneurship education in nine renowned universities in China [4]. According to Jun Li [5], higher education in China was influenced by political conditions prevailing during the 1960s. Socio-economic and political reforms have massively changed China through rural areas with the introduction of a system of family responsibilities and triggered the rapid development of urban and rural enterprises.

Other studies look at the perspective of determining entrepreneurial career choices and entrepreneurial interests [6]. But in this case, we approach through the viewpoint of the relationship between the subject of the lecture and the internship program with an entrepreneurial interest to see the pattern of both relationships.

2. Entrepreneurship

Entrepreneurial is a process of creating new things, with time and effort, to achieve financial resources, job satisfaction, and independence [7]. Entrepreneurship needs to be taught in one course

that teaches students to brainstorm to run a business. However, the course has not been effective in producing sustainable projects such as startup incubation. Then students are given another opportunity to take part in an internship program which is also a compulsory subject. This program is quite effective because students are required to go directly into employment.

Information technology-based companies have contributed massively to economic growth and job creation. But according to Chen [8], regardless of his contribution, entrepreneurship in the field of information technology remains lacking in business research. The study's results stated that entrepreneurship interests in computer science students are determined directly by social influence and self-efficacy.

3. Hipster, Hustler, Hacker

According to research by Tatjana [9], from the results of a joint interview with Rei Inamoto, CEO of AKQA, believes that the startup field requires a high level of creativity and the need for 3 types of people: Hipster, Hacker, and Hustler.

Hipster is one that makes cool and fashionable products. Designers have a high chance of skills in the form of hipster, thus showing that designers are generally innovative[10]. UX designers are known to have the expertise needed to make a startup, but they still need to learn about business literacy. Thus, designers who aspire to be hipsters need to learn the UX Designer skills while building business literacy and developing their creativity. The term hipster is meant here to indicate someone who thinks and behaves independently, develops imagination and intuition, with a sense of art, and transcends the dominant mainstream in society.

Hackers are people who know how to build products in the field of information technology. This person is a person who understands the environment, procedures and technology better than others and is able to realize creative ideas. Hustler is a person who found a way to sell products to the world. Selling here does not always mean realization in the market, but the creation of something valuable, necessary, and can be adopted. Hustler is a person who has strong corporate values, vision and mission.

4. Method

This research method is qualitative by taking data through interviews with graduate of Computer Science students who have established businesses and work in companies. This research explores how effective the courses taught on campus and the internship program is in implementing entrepreneurship. Many methodologies can be used when researching entrepreneurial intentions, but almost all researchers use a quantitative methodology where interviewees are the principal data. We conduct research using interviews. Lisa Ruch has conducted research using phenomenological interviews about internships as entrepreneurship education[11]. Uduak[12] also conducted interviews about entrepreneurship education and the career interests of students. We interviewed Computer science students who had opened businesses to support this research. From the interviews we conducted, there were several findings that entrepreneurial interest could be found in several things, among others. Industry Practice, Lecture, Business Incubation, organization or community, competition

5. Results and Discussion

Marlino[13] said that education in entrepreneurship might increase interest as a career for students. The resource person said that the lecture material in the classroom was indirectly useful when in the company. Coco[14] said internships foster awareness and innovation in the changing world of the workplace. Internships give insight into the relationships and differences between the classroom and the world of work. According to Coco[14], Taylor[15], there are benefits from Industrial Practices facilitating the transition of students from college to work more easily. Students can find career interests. The speakers also said that the entrepreneurship courses held by the campus also had an impact on the interests of entrepreneurs. Uduak [12] in a study conducted in Nigeria said that education in entrepreneurship positively affected student career interests and added students' insights into the entrepreneurial process. Uduak suggested that entrepreneurship education should be based on

practice to maintain student interest. In a study conducted by Mustofa [16] it was mentioned that students were active while attending entrepreneurship lectures and practiced opening a business, but at the end of the lecture, it was rarely found who continued the business. Moh Solehatul suggested that industrial practice activities should also follow entrepreneurship lectures to increase entrepreneurship knowledge.

Based on interviews that have been conducted, the results are in the form of a mismatch of courses taught on campus with work processes in the industry when internships. This statement is supported by research conducted by Kevin [17], which states that the future curriculum of Computer Science and Software Engineering needs to be revitalized. This revitalization is based on promoting and practicing computational thinking. Computational thinking can foster entrepreneurship if we can connect entrepreneurial skills and computer science curriculum to students. Entrepreneurship develops new computing markets, introduces new software and hardware technologies, and creates jobs. Therefore, it is very important to improve computer science and software engineering programs with entrepreneurship.

One of the subjects taught in Computer Science Engineering at UM is multimedia. This field is quite familiar to students who are interested in developing their skills in graphic fields such as design, animation and games. However, the scope of knowledge gained in multimedia is too biased because one of the subjects being taught is like animation using ActionScript (code-based animation). In fact, the reality of making animation using ActionScript is irrelevant and not even used. One article on ActionScript [18] learning proposes that the use of ActionScript is only a programming introduction language. So the framework that places ActionScript in the curriculum for computer science in particular needs to be discussed again.

Furthermore, the internship program teaches operational standards in doing things so that they can be organized and existing results can be documented and ongoing for the next project. One application of optimization in the IT field [19] is the management of electricity in large-scale IT systems such as commercial data centers is a rapidly growing application area from an economic and ecological perspective, with billions of dollars in funds and millions of metric tons of CO₂ emissions at stake every year. Business people generally want to save power without sacrificing performance. From this program, students can have new insights for their future careers, whether they are comfortable with following the company's operational standards or creating their own Intellectual Property. In working on coding projects, for example, students who take part in an internship program are not only required to be able to understand the intended programming language. But it must also apply optimization in working on coding, and project management so that it can be neatly organized and can be sustained if the process of switching hands.

The experience of competition and certification is also able to improve skills to support entrepreneurship [20], but that is not enough if you do not study marketing knowledge. Any good product must be presented attractively. Therefore, a good product without adjusting to automatic market interest will not attract the attention of consumers.

6. Conclusion

After conducting research, it can be concluded that there is a need for curriculum reconstruction in computer science lectures at UM. The following points need to be changed in the curriculum. Among them the first is the application of hipster hustler hackers in grouping entrepreneurship courses. Second, updating outdated theories, for example, the module uses the updated one. Third, task management by emphasizing optimization in work tasks. Finally, familiarize project documentation for the CV and introduce the culture of the company's operational standards.

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