

Sorghum-Based Alternative Food Industry: Entrepreneurship High Education

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Abstract

The purpose of the research was for university entrepreneurship education by examining the development of sorghum-based food industry to support food security. **The method used** quantitative and qualitative research (natural setting) with data collection techniques in the form of observation, interviews and documentation, after the data collected is then analyzed by stages of reduction, display and verification. Observations cover various aspects of developing the sorghum-based food industry, the stages of university entrepreneurship education. and advanced statistical analysis. **The results showed:** 1) university entrepreneurship education which is a sustainable teaching and learning activity includes educational programs in entrepreneurship classes, learning processes, student responses, and results from entrepreneurial student profiles; 2) Selection of sorghum-based entrepreneurship materials including grain 100%, rice 70%, flour 70%, soft brand 10%, and brand 20%; 3) entrepreneurial products are food products (various cakes with sorghum flour 20-50% , bakery with sorghum flour 20-30%, and cookies with sorghum flour 75-100%), functional drinks with sorghum rice 100%, and various fermentation products (“tempe” with sorghum rice 100% and “tape” with sorghum rice 100%); 4) Industrial of sorghum based includes product, business analysis, market opening, and infrastructure development; 5) industrial of food sorghum based as alternative food can support food security.

Keywords

Sorghum¹, Sorghum_Processing², Entrepreneurship_High_Education³, Alternative_Food_Industry⁴ and Food_Security⁵

1. Introduction

Universities in Indonesia currently have entrepreneurship education, and entrepreneurship courses are one of the compulsory subjects in all study programs. Entrepreneurship education is expected to be able to change the mindset of college graduates from finding jobs (job seekers) to creating jobs (job creators), to grow the spirit and spirit of entrepreneurship especially to produce graduates who are able to create jobs must be carried out continuously through continuous education and development activities.

Entrepreneurship education is education so students become creative, innovative, and productive. Entrepreneurship education is also an education that equips students so they can provide responses that can make changes, and understand the needs of the community. "Entrepreneurship as a creative, innovative ability that can become the foundation for an effort to achieve success. It can also be interpreted as an effort to produce new products that have advantages, by being creative and innovative so that they get opportunities.

The process of creating new products starts from getting new ideas and thoughts creatively and innovatively, so that they will provide economic value from new products that are produced as opportunities to achieve excellence. "The ability of an entrepreneur can be achieved with tenacity, daring to face challenges and risks supported by creativity, innovation, eventually will get opportunities" (Suryana, 2003).

Entrepreneurship has become an important vehicle as a means of opening employment and increasing overall economic strength. Especially with the advent of industry 4.0, various competencies such as creativity, innovation and expertise are needed to build a start-up business. Therefore, most institutions currently provide entrepreneurship training programs in the belief that the importance of entrepreneurship requires knowledge and skills to become entrepreneurs. At the same time Government policy support for entrepreneurship education has increased in many countries around the world. It can be noted that investment in entrepreneurship education increases in all degree programs from elementary schools to universities to enhance entrepreneurial thinking. This entrepreneurial education has become important as the demand for students seeking business education can provide the skills needed to succeed in a management environment.

The selection of raw materials for entrepreneurial activities is very important, the underlying material is that has industry prospects, innovative, healthy, consumer goals, continuity of materials, and has a selling value. Many potential alternative food sources can be developed to support the Indonesian nation's food diversification and resilience program, one of which is sorghum (*Sorghum Sp*). Nutrient content of sorghum is 11.0g protein, 3.3g fat, 73.3g carbohydrate, calcium 28.0mg, iron 4.4mg, phosphorus 287mg, Vit. B1 0.28mg, and sorghum advantages in terms of health, ie "gluten free", more fiber, antioxidants and tannins (Kangama, 2005; Ministry of Health, 1996; Noerhartati, 2010 and 2014). The purpose of the research was for university entrepreneurship education by examining the development of sorghum-based food industry to support food security.

2. Research Methods

The method used qualitative action research with data collection techniques in the form of observation, interviews and documentation, after the data collected is then analyzed by stages of reduction, display and verification. Observations cover various aspects of developing the sorghum-based food industry, the stages of university entrepreneurship education. and advanced statistical analysis (Kemmis, 1997; Grundy, 1995; McTaggart, et al., 1997).

3. Result and Discussion

University entrepreneurship education is presented in the figure 1, that showed university entrepreneurship education which is a sustainable teaching and learning activity includes educational programs in entrepreneurship classes, learning processes, student responses, and results from entrepreneurial student profiles. The entrepreneurship classes are influenced by curriculum and infrastructure facilities, curriculum preparation must be presented as entrepreneurship learning as a continuous learning activity, on learning processes influenced by lecturer competency and material, student responses namely motivation and interest, and results from entrepreneurial student profiles are achievements, awards, values, and sustainability (Noerhartati, et al 2016; 2017a; 2018a).

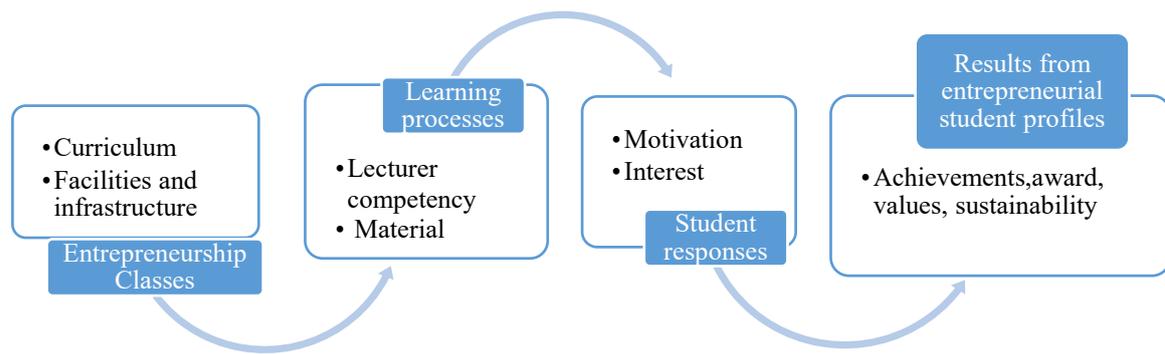


Figure 1. University Entrepreneurship Education

Entrepreneurship education plays an important role in an uncertain environment because it can develop the insights needed to find and create opportunities for entrepreneurs and gain the ability to successfully start and manage their own business. Therefore, universities have the opportunity to emphasize the importance of systematic entrepreneurship education and play a role in conducting professional entrepreneurship education. Many universities are also actively pursuing various types of educational developments as part of their broader strategy to improve the quality of programs and to encourage the education and learning of their students. Many also offer entrepreneurship-related courses and programs with the aim of providing motivation and trust to students and to play a role and provide social contributions through entrepreneurship. However, the opinion of which approach is effective and which teaching method is appropriate is still controversial (Fayolle, 2007).

The intensity of lecturers in guiding also determines the success and failure of entrepreneurship education, students are given debriefing and planting entrepreneurial spirit, they will eventually be able to motivate students to become tough, resilient and independent entrepreneurs. An entrepreneur will be strong in facing challenges, must have creative and innovative ideas that will be used as a basis, and must also have the ability to be able to produce new products based on motivation, vision, optimism, and willingness to create opportunities. The quality of students is also inseparable from learning facilities found on campus.

Educational entrepreneur is a business so that someone will get innovative new ideas, as well as the existence of resources in the form of labor such as services and assets combined to add greater value. Entrepreneurship education is expected to be able to produce graduates who can create jobs, by providing students with the spirit of entrepreneurship which is continuously carried out through continuous entrepreneurship education activities.

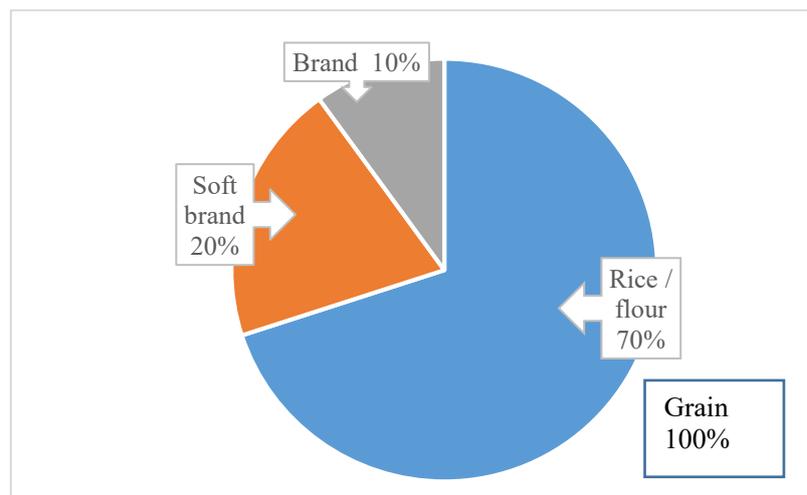


Figure 2. Sorghum-based Entrepreneurship Materials

Figure 2, it is presented that 100% of the grains will produce sorghum-based entrepreneurship materials including rice 70%, flour 70%, soft brand 10%, and brand 20% (Noerhartati, et al. 2010 & 2013). Table 1, showed that entrepreneurial products are food products (various cakes with sorghum flour 20-50% , bakery with sorghum

flour 20-30%, and cookies with sorghum flour 75-100%), functional drinks with sorghum rice 100%, and various fermentation products ("tempe" with sorghum rice 100% and "tape" with sorghum rice 100%) (Marda, 2017; Noerhartati and Puspitasari, 2016; Noerhartati and Rahayuningsih, 2016; Noerhartati, et al. 2017; Noerhartati, et al. 2018; Putri, et al. 2017; Retnowati, 2015; Safitri, 2016).

Table 1. Entrepreneurial Food Products

Raw material	Product	Amount of sorghum ingredients
Sorghum Rice	"Tempe"	100%
	"Tape"	100%
	Functional drinks	100%
Sorghum Flour	Cake	20-50%
	Cookies	70-100%
	Bakery	20-30%

Entrepreneurship education is able to encourage students to become educated entrepreneurs and that the selection of sorghum-based products in entrepreneurship classes must be supported by a series of sustainable research activities, so that they can create new entrepreneurs with sorghum-based products, which can eventually be upgraded to sorghum-based industries including products, analysis business, market opening, and infrastructure development, so sorghum as an alternative food can support food security (Menrad, 2003; Noerhartati, 2017; Tjatusari and Noerhartati, 2017).

4. Conclusions

Entrepreneurship education at the university which is a sustainable teaching and learning activity with sorghum-based entrepreneurship materials including grains, rice, flour, bran, and bran, which produce food products are various cakes, breads, cookies, functional drinks, "tempeh", and "tape", which ultimately the sorghum-based food industry as an alternative food can support food security.

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