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Business prospects of pasteurized milk diversification in the new normal era post Covid-19 through PPUPIK

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Abstract. The development of dairy products such as pasteurized milk and its diversification is very much needed to fulfil the consumption of animal protein as an intake in increasing the fulfilment of community nutrition. A collaboration of livestock products, especially dairy products and the edu-tourism method, is a method of education through tourism, which is an interactive teaching method of utilizing the environment, location, objects, and animal food products that can be directly enjoyed by learners. Faculty of Animal Science Hasanuddin University has locations and objects that allow students or communities to learn about the world of animal science and its products. A survey of the business prospects for dairy product diversification in the face of the new normal post-Covid-19 and associated with educational edu-agrotourism was studied to provide an overview of the Campus Intellectual Product Unit Development Program (PPUPIK) as a form of campus empowerment for community education. The survey results indicate that dairy products and their diversification to be developed as a source of animal protein, which can be used as food to prepare during visits to animal farm edu-tourism objects, especially in the new normal post-Covid-19.

1. Introduction

To fulfill the need for animal protein consumption to meet people's nutrition, it is necessary to process animal products, one of which is the development of dairy products such as pasteurized milk and its diversification [1,2]. The application of educational methods through collaboration of livestock products, especially dairy products and tourism, is an interactive teaching method by utilizing the environment, location, objects, animal food products that students can directly enjoy [3]. The location and object of edu-tourism which allows students and the public to learn about the world of animal husbandry science and livestock products are facilitated by the Faculty of Animal Husbandry, Hasanuddin University. Diversification of dairy products in facing the new post-Covid-19 normal has been conducted a survey to see this prospect [4] and one form of community empowerment, namely through educational agro-tourism studies to provide an overview of the Campus Intellectual Product Unit Development Program (PPUPIK).

Milk is a very important food ingredient in human life. Demand of milk and its diversification is still very high [5-7]. Due to the limited durability of fresh milk, it is necessary to process the fresh milk e.g.



diversification of pasteurized milk by addition of Binahong extract [8] so it can reach consumers freshly. Diversification of dairy products through appropriate technology is very feasible to be developed [9] as a superior business with the following considerations: (1) The fulfillment of the consumption of milk and milk products in the world will continue to increase in line with the growth of the world population, which is increasing every year [2]. Market segments require milk quality are increasing recently [3]. The Milk Production Unit of the Faculty of Animal Science is a model for the ideal medium-sized dairy industry and appropriate technology transfer can be carried out in realizing independent business for the community.

Dairy products are easy to serve and ready to consume. Therefore, the products are very suitable to be offered during an educational program and used as a learning process for visitors and directly consumed. Edu-tourism is a teaching and learning method by utilizing an environment, location, place, or object that has a source of knowledge for learners. This method is generally carried out with an assist by a teacher or tour companion. Mentoring is carried out to show sources of knowledge that learners need to understand. The Edu-tourism method with dairy products with a beautiful environment is a modern method [11]. The ingredients for making dairy products are presented in real terms, thus stimulating learners to be more active and creative. This edu-tourism method is very fun and reduces boredom. Therefore, dairy products and the manufacturing process can be used as sources of objects of knowledge [10].

The superior product in this product diversification is pasteurized milk [5,12]. There are several types of flavors e.g. passion fruit (*Passiflora edulis* Sims), ginger, floral rosella, and fruits. The advantages of this product, that it has a natural fruit taste and fresh taste, longer durability, and based on demand of consumers [13-15].

The value-added of the products produced from the science and technology, utilizing native regional products, longer durability, local characteristics, higher nutritional content, higher selling value, healthy product, and can be combined with other dairy products. Diversification milk products have been produced and can be served during tourist visits at the Hasanuddin University Faculty of Animal Science, e.g. various flavours of pasteurized milk, dangke (local cheese [16,17], crackers milk, ice cream, yoghurt, instant *sarabba* milk, and milk stick products. PPUPIK is expected to be able to develop products based on research results and beneficial to community/ accompanied This program is expected to be a good solution of the problem of low consumption of milk in South Sulawesi. If the domestic demand for milk is not anticipated, Indonesia will depend on milk impor. As a result, the fulfilment of the need for animal protein to educate the nation will not be fulfilled. It is proven by the presence of milk products produced by farmer groups that have caused people to choose to consume milk products from local production, which shows that people have started to realize the importance of domestic milk consumption.

The Indonesian government has been trying to foster a culture of drinking milk among the community. because the product easy to make, and not need more time with tools simple. One way is to diversify products that allow products to last longer and reach all levels of society. Pasteurized milk is the first alternative because the method is very simple and efficient, because the product easy to make, and not need more time with tools simple. The pasteurized milk with fruit flavours such as passion fruit, melon, dragon fruit, and other local Indonesian fruits.

Therefore, the PPUPIK have an impact on reducing imports of dairy products, as well as having a social impact by reducing the number malnourished children, increasing farmer income and stimulating dairy farming in South Sulawesi in particular and Indonesia in the future in the new normal era post Covid-19. Therefore, PPUPIK can assist the government in campaigning for drinking milk, which in turn will bring benefits such as reducing stunting and increasing the income of dairy farmers. Maybe someday it will we be participated in reducing milk imports.

One side of dealing with the new normal is through increasing nutrition to increase body immunity. Some nutritionists recommend giving a balanced diet high in protein.

2. Methods

2.1. *Online survey responses to the edu-agrotourism profile video*

The perception of consumers or partners of the Hasanuddin University Edu-Agro-Animal Science Campus Intellectual Product Unit Development Program is carried out through a questionnaire filled in online on the Google form application.

Making videos and socializing edu-agro-tourism videos of Animal Science are uploaded on YouTube. This video displays profiles of campus facilities in the form of stables and livestock for goats, cows, chickens and deer as well as livestock products in the form of dairy products. Questions in the form of a survey with questionnaires to consumers are covering age, gender, occupation. The survey was conducted with 128 respondents.

2.2. *A survey of consumer acceptance of pasteurized milk products and diversification*

In the development program of the campus intellectual product unit by combining edu-agro-tourism and the prospect of pasteurized milk products, it is carried out by direct surveys of consumers and free distribution of products to consumers with various ages and education and income variations. The survey was conducted in Makassar, and Pare-Pare as well-known as a transit and a trading city. A survey was carried out in Enrekang Regency where the centre of milk production in South Sulawesi.

2.3. *Data analysis*

The data obtained were tabulated and displayed descriptively. The data is then explained by referring to the available literature and interpreted according to the explanation in the publications and available scientific references with SWOT Analysis.

3. Results and discussion

3.1 *Perceptions of PPUPIK Agro-education*

The results of the survey showed that PPUPIK in the Faculty of Animal Science with facilities, most of the respondents (62.5%) are already known to have potential as educational tourism sites, but these results should be assumed that the respondents are indeed people around Hasanuddin University, or even from the Faculty of Animal Science Hasanuddin University. It can be seen that most of the respondents have visited the Faculty of Animal Science (70.3%). However, only 1.6% of respondents said that the prospect of educational tourism at the Hasanuddin University Faculty of Animal Science was not good, but this opinion would be of concern to the program team to further improve the quality of facilities, services and culinary programs to increase visits post COVID-19.

3.2. *Survey of prospects and consumer acceptance of pasteurized milk*

Pasteurized milk is offered in the PUPIK program as a high protein product with a digestibility approaching 100%. This product is a product made from organic materials taken from local products in South Sulawesi. The superior product offered is the Sarabba milk product, which is a ginger flavored product extracted from the ginger root. Ginger has very high properties for health, such as overcoming coughs, accelerating metabolism, accelerating digestion, being a good antioxidant, maintaining cholesterol levels and helping reduce pain. At the time of the Covid-19 pandemic, besides the need to carry out health regulations such as washing hands with soap, wearing masks and keeping a distance from other people, and consuming nutritious foods, including milk, and other natural ingredients that function to increase endurance. Ginger is traditionally used as a traditional medicine to soothe the throat with its distinctive spicy taste. Therefore, in PPUPIK activities, the most produced product is ginger-flavored pasteurized milk. Some of these products are sold and some are distributed free of charge to the people of Makassar in limited quantities. Milk is also distributed in Pare-pare Regency as a favorite transit area in South Sulawesi.

Table 1. Respondents' answers and responses about PPUPIK activities

Questions	Answers	Total (%)
Have heard of edu-agrotourism	Yes	62.5
	Never	37.5
Have been to the Faculty of Animal Science	Yes	70.3
	Never	29.7
Have ever known tourist facilities at the Faculty of Animal Science Unhas	Yes	67.4
	Never	32.6
Videos can describe edu-tourism at the Faculty of Animal Science Unhas	Yes	90.7
	No	9.3
Opinion on the prospect of edu-agrotourism in the new normal era post Covid-19 as a means of entrepreneurship, education and tourism	Prospects are very good	59.2
	Prospects are good	30.4
	Prospects are quite good	8.8
	Prospects are not very good	1.6

Table 2. Consumer perceptions of pasteurized milk as a milk product offered at PPUPIK

Questions	Answers	Total (%)
Responses to the liking of milk or dairy products	Yes	96
	No	4
	Very like	42.4
Responses to PPUPIK's milk products	Like	48.5
	Just like it	8.1
	Do not like	1.0
Responses to packaging of pasteurized milk products	Very good	27
	Good	58
	Quite good	14
	Not good	1
	Very good	58.4
Responses to the prospects for PPUPIK's milk products in the new normal post-Covid-19 period?	Good	36.6
	prospect	
	Enough	5
	prospect	
	No prospect	0

The survey was conducted on consumers in person and online. Respondents were approximately 101 people with various levels of age, education, occupation, and income. Most respondents were in the range of 16-25 years old as much as 67.8%; followed by age 11-15 years (16.9%), and over 40 years 8.5%; at the age of 26-40 years, and age 5-10 years the respondents are very limited, respectively. Respondents in general are also undergraduates as much as 54.5% and high school students (40.4%), while those who are elementary school and junior high school graduate are very limited. On average, 66% of respondents works as civil servants or private employees, 14% of students and the rest are other professions. Respondents consisted of 55% male and 45% female. The tabulation of responses was presented in Table 2.

Table 2 shows that almost all respondents (96%) like milk and milk products. For the milk products from the PPUPIK program, only 1% expressed their dislike which was probably because the respondent did not like milk and milk products. Product packaging still needs quality improvement in terms of packaging design or packaging form, although only 1% of respondents who stated that it was not good

and 14% were quite good. This product has enough prospects to be developed after Covid-19 and is worthy of being a culinary offer in the PPUPIK.

4. Conclusion

From all respondents' responses, in terms of facilities owned by the Faculty of Animal Science and the milk products offered, pasteurized milk products are eligible to become superior products in the PPUPIK edu-agrotourism visit of the Faculty of Animal Science Unhas in the new normal post-Covid 19 period.

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