ICOMBEST 2021
International Conference on Management, Business, and Technology
"Post-Pandemic Economic Recovery: Business, Management and Technology"
Management Study Program, Faculty of Economics and Business, University of Jember, Indonesia

Exponential Development in Dairy Milk to Increase the Superior Potential of Agroindustry of Jember Regency

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ABSTRACT
Dairy farming business opportunities in Jember Regency. An active role in supplying fresh cow's milk to large companies that process fresh cow's milk. This research aims to find alternatives to the superior potential of agroindustrial dairy development in the Jember Regency. Research design is quantitative research with an expert systems approach. Instruments were used in the form of observations, in-depth interviews with questions that have been compiled in a research questionnaire format. Analytical techniques used are exponential development methods, analytical hierarchy process, and financial feasibility. The following General Geographical Conditions are following the Potential for Livestock Development in Jember Regency. Increasing the superior potential of agroindustry with the support of special cow seedlings, the availability of processing technology, and the needs of business institutional development steps. The contribution of this research is to provide an alternative strategy for the development of the dairy milk business.

Keywords: *Exponential development methods, Superior potential, Agroindustry, Dairy cow's milk, Analytical hierarchy process, Financial feasibility*

1. INTRODUCTION

Indonesia is a country rich in resources, especially in the livestock subsector. The livestock subsector plays an essential role in the development of agribusiness in Southeast Sulawesi Province. Livestock commodities cultivated by the people in Southeast Sulawesi Province consist of 7 types: beef cattle, buffalo, horse, goat, pig, chicken, and duck [1]. Cattle subsectors are increasing market demand: increasing the domestic market for livestock and increasing demand from neighboring countries (primarily livestock); rich sources of manure and other agricultural inputs such as transportation, plowing, etc. [2]. The poultry subsector in Bangladesh plays an essential role in its economy, given the rise of small businesses, protein supply sources, and livelihoods for millions of people [3].

The critical role of the livestock subsector is to provide various types of products ranging from meat, eggs, and milk that are used to meet the public demand for animal proteins of high nutritional value. Beef has a critical role in meeting the needs of animal protein. Cows are one of the many commodities in the livestock subsector [4].

The Indonesian state still often imports products derived from livestock production. COVID-19 has affected the import of animals and livestock products to Ghana with the potential to reduce animal protein consumption [5].

Lack of innovation in processing livestock products that can have a long shelf life. The fact that farmers embrace innovation and have improved their production performance [6]. These dairy products can only last for two days at room temperature.

Therefore, an effort is needed to overcome the gap of phenomena that have occurred. As it is experienced, Governments and shareholders in the West African region, including Ghana, take measures to counteract the devastating effects of the pandemic on livestock subsectors and the agricultural sector. This paper examines the impacts of COVID-19 on animal production in Ghana [5]. The effect of high costs and breeders should be encouraged to invest in poultry subsectors for profitability [7].

The development of the dairy cattle business is one of the alternatives to increase the superior potential of dairy milk in the Jember Regency.

It is necessary to conduct an analysis of alternative strategies and financial feasibility in planning the development of the business. The result of systems will encourage much participation in their insurance interventions and create more awareness among agricultural households [6].

2. RESEARCH METHOD

The design of this research is quantitative research with an expert system approach. The research data collection technique was conducted *purposive sampling*, namely at Bestcow Company, Kaliwates Healthy Milk, and Rembangan Milk. The determination of the research sample has been determined in four respondents (experts), which include: Head of Animal Husbandry in the Department of Food Security and Livestock Jember Regency; Owner of Bestcow Farm Jember Regency; Owners of Healthy Milk Kaliwates Jember Regency; and Academics as well as Lecturers of Animal Husbandry at Jember State Polytechnic. Instruments were used in the form of observations, in-depth interviews with questions that have been compiled in a research questionnaire format. Analytical techniques used are exponential development methods, analytical hierarchy process, and financial feasibility.

3. RESULTS AND DISCUSSION

3.1. Conformity of Geographical General Conditions with The Potential of Livestock Business Development in Jember Regency

Jember Regency is one of the districts in East Java that has good prospects for developing cow's milk business. The dairy farming business can grow well, inseparable from good and regular feeding. Dairy entrepreneurs in Jember Regency have their land to develop feed, such as elephant grass forage feed. In below company and healthy milk Kaliwates, this business owner has foraged land used for cow feed. Because one of the successes of dairy farmers' business is very dependent on feeding.

Although the Bestcow company and healthy milk Kaliwates are located in the lowlands, the dairy business can thrive. It is also influenced by genetic engineering. Because the type of dairy cow developed is a type of PFH cow (Peranakan *Friesian Holstein).* One of the famous PFH cows is the Grati cow from Pasuruan, East Java.

Rembangan milk business is located in the highlands and has a cool climate that is very suitable for developing the dairy business.

3.2. Calculation of Exponential Comparison Method

In the analysis of exponential development methods, three alternative options can be used to develop dairy milk in Jember Regency, namely packaged fresh milk alternatives, pasteurized milk alternatives, and yogurt alternatives. The results of calculations of exponential development methods can be seen in table 1.

The most potential products are packaged fresh milk products at Bestcow Companies, Kaliwates Healthy Milk, and Rembangan Milk. This product is because fresh packaged milk has many benefits for the health of the human body. The experts interviewed have agreed that fresh packaged milk needs to be developed because it has excellent benefits for developing the body and maintaining health. Fresh milk also has high nutrients to prevent stunting and maternal death. Therefore, government support is also needed with the local milk-drinking movement to develop correctly. The increase in milk consumption is expected to continue to increase along with the rise in population, improvements in welfare, and nutritional awareness of the community.

Based on discussions with experts obtained several critical elements at each level of the hierarchy of the selection of cow's milk business development in Jember Regency, namely the scale of level 1 objectives, hierarchy level 2 (criteria) 4 sub-elements, hierarchy level 3 (target) 4 sub-elements and hierarchy level 4 (alternative) 5 sub-elements. To describe the hierarchical arrangement can be seen in table 2.

Table 1. Results of Exponential Development Model Comparison Calculation

Product	Packaged fresh milk	Pasteurized Milk	Yogurt
Bestcow	209.781.572	6.309.948	5.433.148
Susu Sehat Kaliwates	6.309.948	4.505.828	3.122.910
Susu Rembangan	5.433.148	6.299.604	5.344.431

Source: Primary Processed Data, 2020

Table 2. Hierarchical Structure of Cow's Milk Business Development

Hierarchy	Sub-elements	Description
Level 1	Purpose	Goals to be achieved.
Level 2	Availability of Superior Cow Seedlings	The availability of superior and good cow seedlings in order to obtain good milk quality.
	Availability of labor	People who support the implementation of the goal of developing cow's milk business.
	Geographical Suitability	The location of the business in accordance with the development of the business.
	Availability of Production Technology	The availability of production technology for business development.
Level 3	Availability of Processing Technology	The availability of processing technology for business development.
	Employee Skills	The ability of employees in carrying out the tasks given.
	Capital Support	The existence of capital loans provided for business continuity.
	Government support	The role of the government in supporting business development.
Level 4	Institutional Development of Business	The role of the institution involved for business development.
	Derivative Product Development	There is product development done for sustainable business.
	Sustainable Business Partnerships	Cooperation to achieve business goals.
	Government policy	Government support on the development of cow's milk business.
	Applied Technology Development	Efforts are being made to develop appropriate technology.

Source: Primary Processed Data, 2020

The hierarchy of AHP consists of four levels: goals or objectives, criteria, goals, and alternatives. The results of processing the respondent's assessment data can be seen in the following image.

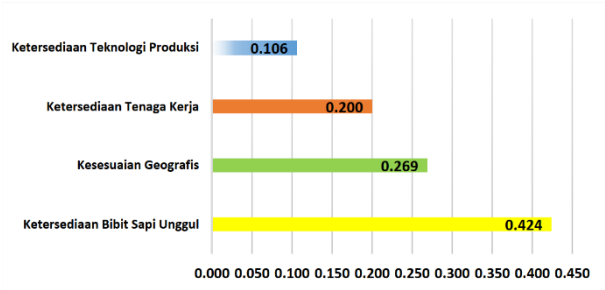

Figure 1 Priority Criteria for The Development of Cow's Milk Processing

The availability of labor occupies the third priority. This position is because developing a dairy business requires a trained and experienced workforce. The fourth priority is the availability of production technology.

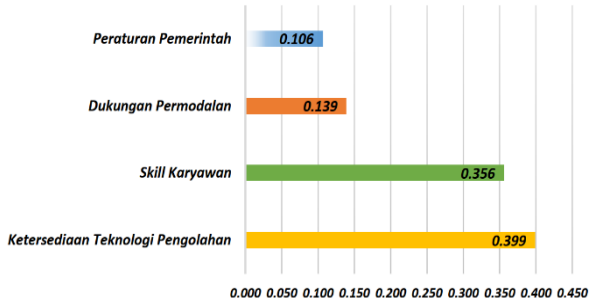

Figure 2 Priority Targets for Cow's Milk Processing Development

The availability of processing technology is needed in the development of dairy businesses. With good and comprehensive processing technology, business activities will run smoothly and follow the goals to be achieved. Good milk processing technology begins with good milk handling technology, from the milking process until milk is ready to be processed into products of high nutritional value and prepared for consumption, such as pasteurized milk processing and yogurt. It must also be balanced with the skills of employees who have been trained so that the operation of processing

technology runs appropriately and will later produce quality products.

Cow's milk business actors must realize the availability of processing technology. Because cow's milk can be developed into various dairy products, including pasteurized milk, *yogurt*, milk candy, milk crackers, and can even be processed into beauty ingredients.

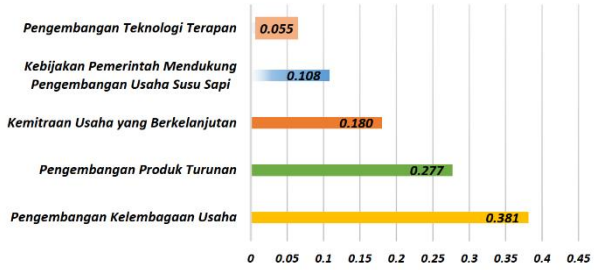

Figure 3 Alternative Priorities of Cow's Milk Processing Development

The business of developing cow's milk in Jember Regency every year is constantly experiencing development. Therefore, the proper strategic steps are needed in setting this business. Institutional development of industry needs to be done so that later the company can increase. It needs to be intervened by local governments—government to facilitate more to stimulate institutional growth. The determination of the right business institution will set the wheels of business for the better. There is a division of work done by the right resources to do more professionally with high productivity.

Institutional development of the business that can be done is to have a milk outlet, joint venture, joint outlet in which is a member of dairy milk entrepreneurs in Jember Regency and will later produce Jember superior products made from milk. In addition, to increase the added value of cow's milk products, the development of derivative products such as pasteurized dairy products, yogurt, cheese, and even various dairy-based foods such as milk crutches, milk tofu, and milk candy. There also needs to be support from local governments, such as the local milk-drinking movement. The movement is so that milk development efforts continue to run and the community feels the benefits.

3.3. Feasibility of Dairy Farming Business

The business feasibility analysis conducted in this study is at the Bestcow Company because the three places with the most significant number of cows are in the Bestcow Company. In addition, this company has made various innovations in derivative products such as pasteurized milk and yogurt. Business feasibility analysis is a feasibility analysis that looks from the company's point of view as the owner, taking into account all income and expenditures based on domestic base prices and domestic interest rates. Business feasibility analysis provides various information about the level of profits obtained, the length of return on capital, and the interest rate on credit that this type of business activity can tolerate. Business feasibility analysis can also predict the level of profit obtained in the future with various assumptions used.

Table 3. Calculation of Investment Cash Flow Projections for Addition of Bestcow Cow's Milk Production

Information	Year						
	2021	2022	2023	2024	2025	2026	2027
Dairy Cow Purchase	3.750.000.000						
Feed Addition	603.000.000						
Total Investment	4.353.000.000						
Operating Cash Flow	1.300.503.595	1.346.483.915	1.372.469.435	1.247.714.235	1.314.059.915	1.777.858.800	1.792.888.560
Net Cash Flow	-3.052.496.405	1.346.483.915	1.372.469.435	1.247.714.235	1.314.059.915	1.777.858.800	1.792.888.560
Accumulated Cash Flow	-3.052.496.405	-1.706.012.489	-333.543.054	914.171.181	2.228.231.097	4.006.089.897	5.798.978.457
Factor Discount	1,00	0,92	0,84	0,77	0,70	0,65	0,59
Present Value	-3.052.496.405						-1.059.906.658
NPV	3.425.027.089						
IRR	40%						
PP	6.2						

Source: Primary Processed Data, 2020

In financial analysis, cash flow is the cash flow that exists in the company in a certain period. Cash flow describes how much money comes in from the sale of cow's milk and how much money comes out in the form of types of costs incurred, including investment costs, equipment purchase costs, feed costs, drug costs, fuel costs, and labor costs. In *cash flow, the expenditure per year* is not proportional to the total receipts per year.

Business development alternatives that follow the bestcow company based on analysis of exponential development methods (MPE) and *analytical hierarchy process* (AHP) are the addition of cow's milk production. In addition to the assessment of the experts, to analyze more deeply. Whether the addition of cow's milk production is beneficial for the bestcow company or not. Analysis of investment feasibility will be conducted using the Methods of Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). NPV, IRR, and PP.. methods will analyze whether the investment in adding cow's milk production is feasible or not by the bestcow company. The following is a calculation of projections or forecasting cash flow investments in addition to bestcow cow's milk production:

In the business feasibility test as presented in Table 3, it is known that the value of NPV>1 "go," which means feasible. The value of the IRR above the bank interest "Go," which mmeans it is worth it. The value of PP is "Go," which means it is worth the return time.

4. CONCLUSION

Based on the results and discussions above, this study contributes alternative strategies to developing the dairy milk business. The most potential cow's milk product development at Bestcow Companies in Jember Regency is packaged fresh milk, followed by pasteurized milk and yogurt. We are increasing the superior potential of agroindustry with the support of special cow seedlings, the availability of processing technology, and the needs of business institutional development steps. The feasibility test of the business is in the position of "Go" or can be said to be worth continuing.

AUTHORS' CONTRIBUTIONS

WMIU and RAD. Contributed to the design and implementation of the research, the analysis of the results, and the manuscript's writing.

ACKNOWLEDGMENTS

The researcher would like to thank Mr. Nyoman Aribowo as the owner of the Bestcow Company, for the permission given to carry out the research and the workers who have helped during the research process.

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