Analysis of Value Added on Entrepreneurship of Beef Shredded and Jerky in Kupang Town East Nusa Tenggara Province

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Abstract— *A high value added gained by the beef agroindustries increases the competitiveness, either in getting raw materials or in marketing their processing products. The research objectives is to analyze the value added of beef supply chain in Kupang Town. The research was conducted in November 2018 up to February 2019 in Kupang Town. The research method applied was a survay method. Method of sample collection is purposive sampling. The respondents were 5 entrepreneurs of small, micro, and medium entrepreunerships called UMKM. Data were analyzed based on analysis of the value added applying Hayami Method. The result shows that the value added gained by the processed beef for one kilogram of output produced reaches IDR 32.807,27/kg for the beef shredded and IDR 29.757,67/kg for the beef jerky.*

Keywords— *Beef, jerky, shredded, value added.*

I. INTRODUCTION

Development of animal subsector is integrated to the development of agriculture and economy in Indonesia. The important of the agricultural sector based on the some factors i.e. the agricultural sector has a big role in formulating the nation devisa and Domestic Product of Regional Bruto (PDRB) include employ many employments. Further, the agricultural sector also provides the main need materials for people consumption and provides raw materials for industries needs. The Centra Data and Agriculture Information System shows that the meat consumption equals to fresh beef of Indonesian people in the year of 2017 about 2,40 kg/capita/year; or it increases to 3,85% compares with the year of 2016. In 2017, cattle population also increases to 16,60 million heads; or it increases to 3,72% compares to the year of 2016 [1].

Kupang Town is a town located in Timor Island and the town is the capital of the East Nusa Tenggara Province (NTT). In 2017, the number of cattle slaughtered in the Abbatoir of Kupang Town reaches 12.739 heads, while at the same year Kupang Town contributes only 6.202 heads [2]. The existing condition indicates that most of the cattle slaughetered in the Abbatoir of Kupang Town are supplied from other areas. The cattle supplied to Kupang Town come from the three regencies in Timor Island namely the Regency of Kupang, Timor Tengah Selatan, and Timor Tengah Utara.

The increasing of Bruto Domestic Product on the animal sub-sector through the utilizing of natural resources to fulfill nutrition needs of the Indonesian community influenced by some factors. The factors are the increasing of animal protein demand, the increasing number of Indonesian people, and the change of community life style in consuming a high nutrition foods. The community nutrition needs in Indonesia can be fullfiled by consuming animal proteins such as from cattle.

The beef agroindustries have important roles in supplying protein source foods. The contribution of the beef agroindustries tends to increase toward the consumption of animal protein for the community. The Centra Data and Agriculture Information System figures that the meat consumption equals to the fresh beef was 2,40 kg/capita/year in 2017; or it increases to 3,85% compares with the year of 2016 which only 2,31 kg/capita/year [1]. Proportion of beef consumption increases since the beef is available and accessible, the people awareness to consume beef increases, and a high growth of culinary entrepreneurships include the Small, Micro, and Medium (SMM) Entrepreneurships called UMKM provides the processed beef, the increasing of community income, and the beef is accepted by all communities segment.

A high growth of the beef agroindustry can be seen from the increasing of the beef cattle population number in Indonesia. The statistic data shows that the beef cattle population in 2017 reaches 16,60 million heads; or it increases to 3,72% compares with the year of 2016. In the last five years, the beef development also tends to increase at 1,74% per annum with national beef production is 531,76 thousand tons; or it increases to 4,95% from 2016 at 518,48 thousand tons.

Kupang Towns is the biggest town in Timor Island and the towns is the capital of East Nusa Tenggara (NTT) Province. Kupang Town has various processing industries that supports NTT's economy, particularly the beef processing industries. In fact, the beef agroindustries are mainly developed in this town. There are two specific processed foods from Kupang Town namely beef shredded and jerky. The beef processing entrepreunership is supported by the potential of NTT's area known as one the beef cattle producer in Indonesia. In 2016, the cattle population was 984.551 heads in NTT. Therefore, NTT is the fifth producer center of the beef cattle in Indonesia with total contribution is 6,04%. Recently, the beef cattle population in NTT concentrates in the big three regencies in Timor Island, namely the Regencies of Kupang (221.380 heads), Timor Tengah Selatan (190.683 heads), and Timor Tengah Utara (122.771 heads). There are 343 food entrepreneurships found in Kupang Town include the beef agroindustries. It shows that the beef agroindustries have a

competitive chance to fulfill the processed food demand in Kupang Town market [2].

Animal agribusiness is an integrated and comprehensive system of livestock processing products covers all activities from manufacture and distribution of animal production facilities, activities of production (on-farm), storaging and processing include distribution and marketing of the animal products supported by supporting institutions such as Bank and government policies. The animal agribusiness consist of four subsystems, they are the subsystem of production facilities (up-stream agribusiness); subsystem of production (on-farm agribusiness); subsystems of processing, manufacture, storaging and distribution or marketing (down-stream agribusiness); as well as subsystem of supporting and service institutions. In the agribusiness itself, there are four integrated economy activities such as up-stream agribusiness (pre-production); on-farm agribusiness; subsystem of down-stream agribusiness (post production); and subsystem of animal supporting and services.

Agroindustry can be defined as an open form of agriculture which tends to change to the commercial industry character and participated by investor and / or work capital and the agriculture itself also covers even the small scale [3]. Moreover, the agroindustry is a business that processing raw materials both from plants and animals in various process [4]. The process are processing and precervating through physical and chemical treatments, storaging, controlling and marketing that has direct impacts on the increasing of value added, result quality, employment jobs, and the increasing of production. Therefore, agroindustry has a big opportunity to develop more since it has a relatively big potency and the market has not been fixed for this sector products.

Fresh beef contains better nutrients comparing with the other meats. The processing of the beef shredded and beef jerky can increase those two products calories up to two times of the fresh beef [5]. The consumption of food products, particularly animal products, are from beef, chicken meat, fish, and pork. The pork has a unique advantage since it has no fiber and more tender compares with beef. Besides, the pork has a high protein content. The price of those kind of meats is vary, so the price will influence the products demand.

Beef shredded is a dry product and one of its processing stage is deep-frying. The processing of the shredded – either meat or fish – is done by frying the meat or fish include spices with a deep-frying technique. The deep-frying is a process of frying any food material in a deep cooking oil. In the deep-frying system, the range of temperature using is 170^0C-200^0C in five minutes, and the ratio between the material fried and the cooking oil is 1:2 [6]

Jerky is a traditionally meat product. Jerky has a specific taste, because the meat is cured and dried, folowed by fried treatment before consuming [7]. There are two methods of jerky processing namely cutting and grinding. Actually, jerky processing has not been standardisation yet. Regarding cutting method, the procedure are as follow. Firstly, the meat is cut and sliced thinly in paper likes about 2 mm thick. Secondly, mix the slice meat with sugar, salt, and spices; then dry it. Further, concerning the grinding method, the meat is grind and

formulated using glass [8]. The dried jerky produced by drying using drier tent and kept without transparent plastic has a longer keeping period compares with sun-dried jerky [9].

Entrepreunership of beef shredded and jerky is a form of business in animal products processing. This entrepreneurship is categorized as down-stream agroindustry in beef cattle agribusiness system. There are two objectives of processing beef shredded and jerky. The objectives are: 1) to produce various beef processed products in order to increase their keeping period since meat is a perishable and easy contaminating food material; 2) to fulfill the nutrient needs of the community because those products are animal products.

Actually, the main objectives of the beef shredded and jerky entrepreunerships is to gain an optimum profit by spending specific inputs, include to develop and to sustain the entrepreneurships. This profit may gain from the total income minus cost. Therefore the measurement or production cost analysis is important for an entrepreneurship or a business, particularly the value added of the entrepereneurship/business. The research is conducted to analyze the value added of the beef shredded and jerky in Kupang Town East Nusa Tenggara Province.

II. MATERIALS AND METHOD

A. Location and Time

The research was conducted in Kupang Town Province of East Nusa Tenggara (NTT) in November 2018 - February 2019. The research location is started from supermarkets and minimarkets in Kupang Town in order to find the Small, Micro, and Medium (SMM) Entrepreurnerships as the suppliers of the beef shredded and jerky. Further, the second location is the entrereneurships, therefore the researcher will continue the survey to the entrepreuners of those two products.

B. Research Methods

The research is conducted by applying a survey method. There are some criterias in selecting the agroindustries or entrepreneurships of the beef shredded and jerky. The criterias are as follow: 1) the entrepreneurships have the beef shredded and jerky products, the entrepreneurships have ever sell the products in the last one year, those two products are distributed in the market, the entrepreneurships are produce those two products continually. Based on the criterias, the selected agroindustries are: UKM Yudhistira, UKM Angkasa Timor, UKM Putri, UKM Tambers, and UKM Citra Binoni. Method applied in collecting data is a survey method include directly observation and interview the respondents based on the prepared questionnairies. The information from the survey gained from the respondents using questionnairies is a tool of primary data collection. The research aim is to get the description focused on the production of the beef shredded and jerky products in Kupang Town [10].

C. Data Analysis

Analysis of value added is done using Hayami Method. The analysis is needed to evaluate the value added as a cause of beef processing to produce the shredded and jerky. The value added is an added value occurs on a commodity because

the commodity is processed in a production process [11]. The additional value of a product produced will increase a competitive advantage of a company [12]. The value added gained from the output value minus the price of the raw materials and the price of the other inputs. Therefore it can be formulated as follows:

Value Added (VA) = Value of Output – Value of Input. The procedure of the value added analysis based on the Hayami Method is shown on Table 1.

TABLE 1. Procedure of Value Added Analysis Based on Hayami Method

No.	Variabe	Value
Output, Input, and Price		
1	Output (kg)	(a)
2	Input of Raw Materials (kg)	(b)
3	Input of Labor (Daily Human Work)	(c)
4	Factor of Conversion	(d) = (a) / (b)
5	Coefficient of Field Labors (Daily Human Work/kg)	(e) = (c) / (b)
6	Price of Output (IDR/kg)	(f)
7	Average of Wage (IDR/Daily Human Work)	(g)
Revenue and Profit (IDR/kg of Raw Materials)		
8	Price of Input (IDR/kg)	(h)
9	Contribution of Other Input (Transaction Cost)	(i)
10	Value of Output (IDR/kg)	(j) = (d) x (f)
11	Value Added (IDR/kg)	(k) = (j)-(i)-(h)
	Ratio of Value Added	(l) = (k) / (j)
12	Income of Employment	(m) = (e) x (g)
	Wage of Labor	(n) = (m) / (k)
13	Profit	(o) = (k) – (m)
	Level of Profit	(p) = (o) / (j)
Cost of Production Factors (IDR/kg of Raw Materials)		
14	Margin (IDR/kg)	(q) = (j) – (h)
	Income of Field Labors (%)	(r) = (m) / (q)
	Contribution of the others Input (%)	(s) = (i) / (q)
	Profit of Company (%)	(t) = (o) / (q)

Source: Hayami in Emhar *et al*., 2014 [13]
Note: DMW = Daily Man Works
        IDR = Indonesian Rupiah

III. RESULT AND DISCUSSION

A. Cost Structure of the Beef Shredded and Jerky Entrepreunerships

There are a difference of cost stucture between the processing of the beef shredded and jerky in Kupang Town due to the difference of processing and raw materials needed. The cost of the beef shredded product reaches 84,01% for providing the main material, 10,34% is the cost of providing supporting materials, and the other costs reaches 5,65%. Concerning the beef jerky, 87,78% is a percentage of cost spent for providing the main material, 10,61% is supporting materials, and the other costs is 1,61%.

Beef Shredded

Shredded is a specific form of dry meat made of meat as the main material. There are some steps of processing the shredded. The steps are boil the meat, then torn or cut the boiled meat into shreds, mixed it with spices, then fry and press it. There are two kinds of materials to produce the shredded, namely the main material and the supporting materials. In addition, the variable costs of the beef shredded

processing consists of the cost to buy fresh meat as the main material and the supporting materials such as spices and flavoring (Table 2).

Regarding the beef shredded, Table 2 shows that the highest average of the variable cost is spent for buying the beef which reaches to IDR 5.940.000,00 for each production. Further, the revenue gained by the beef shredded entrepreneurship is IDR 8.439.000,00, and the income gained is IDR 1.368.607,00. Moreover, the daily average of the selling quantity of the shredded beef reaches 37,50 kg at the price of IDR 225.040,00/kg.

TABLE 2. Average of Production Cost, Revenue, and Income of the Beef Shredded Gained by the Small, Micro, and Medium (SMM) Entrepreneurs in Kupang Town, in the Year of 2019

Explanation	Unit	Quantity	Value (IDR/ production/en trepreneur)	Percentage (%)
Cost of the Main Material				
Price of Beef	Kilogram	66,00 kg	5.940.000,00	84,01
Cost of Supporting Materials				
1. White Sugar	Kilogram	12,60 kg	189.000,00	2,67
2. Salt	Kilogram	1,14 kg	7.980,00	0,11
3. Cumin	Kilogram	0,26 kg	73.365,00	1,04
4. Shallot	Kilogram	2,00 kg	60.000,00	0,85
5. Garlic	Kilogram	1,20 kg	48.000,00	0,68
6. Flavoring	Kilogram	0,003 kg	18.375,00	0,26
7. Galanga	Kilogram	1,50 kg	22.500,00	0,32
8. Corriander	Kilogram	0,91 kg	128.394,00	1,82
9. Pepper	Kilogram	0,20 kg	141.080,00	2,00
10. Coconut	Unit	8,00 units	42.000,00	0,59
The Other Costs				
1. Packaging and Label	Kilogram	2,21 kg	110.500,00	1,56
2. Cooking Oil	Litre	18,00 l	270.000,00	3,82
3. Firewood (*Schleichera oleosa* or called *Kesambi*)	Bundle	5,00 bundle	11.500,00	0,16
4. Kerosene	Litre	1,54 l	7.700,00	0,11
Total Cost			7.070.393,00	100,00
Revenue			8.439.000,00	
Income			1.368.607,00	

Source: Primary Data Analysis, 2019

The Beef Jerky

Jerky is a form of traditionally preservation meat that commonly processed by Indonesian community since a long time ago. Its raw material is fresh meat, red color, it has no bad odor, and it is springy. Commonly, a good quality of meat is needed for processing the jerky which is taken from rump, round, and flank. Then, the supporting materials are needed to support the product processing based on the specific objective, for instance, for preservation, flavoring, and to improve the jerky texture. Production cost, revenue, and income of the beef jerky is shown on Table 3.

The highest cost average in the jerky production process is the cost for buying meat which reaches at IDR 4.320.000,00. The jerky product contributes a revenue at IDR 5.981.000,00 and income average at IDR 1.059.141,20 to the Small, Micro, and Medium Entrepreneurs (SMME). The SMME sells 26.50 kg of the jerky product every day with the selling price at IDR 225.698,11/kg.

TABLE 3. Average of Production Cost, Revenue, and Income of the Beef Jerky Product Gained by the Small, Micro, and Medium (SMM) Entrepreuners in Kupang Town, in 2019

Explanation	Unit	Quantity	Value (IDR/ production/ entrepreneur)	Percentage (%)
Cost of Main Raw Material				
Price of Meat	Kilogram	48,00 kg	4.320.000,00	87,78
Cost of Supporting Materials				
1. White Sugar	Kilogram	12,20 kg	183.000,00	3,72
2. Brown Sugar	Kilogram	1,00 kg	24.000,00	0,49
3. Flavoring	Kilogram	0,0005 kg	3.500,00	0,07
4. Salt	Kilogram	0,79 kg	5.530,00	0,11
5. Cumin	Kilogram	0,16 kg	45.147,20	0,92
6. Shallot	Kilogram	1,24 kg	37.200,00	0,75
7. Garlic	Kilogram	1,00 kg	40.000,00	0,81
8. Pepper	Kilogram	0,16 kg	112.868,00	2,29
9. Corriander	Kilogram	0,47 kg	66.313,60	1,35
10. Galanga	Kilogram	0,34 kg	5.100,00	0,10
Other Costs				
1. Packaging and Label	Kilogram	1,47 kg	73.500,00	1,49
2. Kerosene	Litre	1,14 l	5.700,00	0,12
Total Cost			4.921.858,80	100,00
Revenue			5.981.000,00	
Income			1.059.141,20	

Source: Primary Data Analysis, 2019.

B. Value Added Analysis of the Beef Shredded and Jerky

The value added is gained by processing the fresh beef into the shredded and jerky. The value added of every business is different, depends on the inputs and treatments of every entrepereneurship [14]. Analysis of value added is done by applying Hayami Methode comprises some components namely production cost and profit gained by the SMM entreprenuers from each product. The analysis of the beef shredded and jerky is figured on Table 4.

TABLE 4. Average Value Added Analysis of the Beef Shredded and Jerky Applying Hayami Method, in the Year of 2019

Explanation	Unit	Quantity	Value (IDR/ production/ entrepreneur)	Percentage (%)
Cost of Main Raw Material				
Price of Meat	Kilogram	48,00 kg	4.320.000,00	87,78
Cost of Supporting Materials				
1. White Sugar	Kilogram	12,20 kg	183.000,00	3,72
2. Brown Sugar	Kilogram	1,00 kg	24.000,00	0,49
3. Flavoring	Kilogram	0,0005 kg	3.500,00	0,07
4. Salt	Kilogram	0,79 kg	5.530,00	0,11
5. Cumin	Kilogram	0,16 kg	45.147,20	0,92
6. Shallot	Kilogram	1,24 kg	37.200,00	0,75
7. Garlic	Kilogram	1,00 kg	40.000,00	0,81
8. Pepper	Kilogram	0,16 kg	112.868,00	2,29
9. Corriander	Kilogram	0,47 kg	66.313,60	1,35
10. Galanga	Kilogram	0,34 kg	5.100,00	0,10
Other Costs				
1. Packaging and Label	Kilogram	1,47 kg	73.500,00	1,49
2. Kerosene	Litre	1,14 l	5.700,00	0,12
Total Cost			4.921.858,80	100,00
Revenue			5.981.000,00	
Income			1.059.141,20	

Source: Primary Data Analysis, 2019

The result of analysis shows that the value added gained by the SMM entrepreneurs from the bef shredded is IDR 32.807,27/kg (25,47%) and from the beef jerky is IDR 29.757,67/kg (23,94%). It is found that the value added of the beef shredded is higher than that of the beef jerky as well as the profit gained. The value of the value added and profit percentage of the beef shredded is higher than that of the beef jerky. It is influenced by the value of the other inputs contribution which needed more by the beef shredded. Therefore, the enterpreuners are able to controll and to substitute inputs except the main raw material namely meat. This condition also influences the production quantity of the beef shredded although the main raw material is reduced.

IV. CONCLUSION

In conclusion, daily production of the beef shredded and jerky in Kupang Town is 37,50 kg of the shredded beef processed from 66 kg of the fresh meat, while the beef jerky is 26,50 kg processed from 48 kg of the fresh meat. The value added gained from the beef shredded for one kilogram output is IDR 32.807,27/kg with the profit gained is IDR 32.442,31/kg. Then, the value added gained from the beef jerky for one kilogram output is IDR 29.757,67/kg with the profit gained is IDR 29.378,57/kg.

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