

Analysis of Packaging Rendang Production Costs In the city of Padang

Ariusni¹, Sri Ulfa Sentosa², Alpon Satrianto³

Universitas Negeri Padang¹²³

ariusni.fe.unp@gmail.com¹

sriulfasentosa66@gmail.com²

alpon.unp@gmail.com^{3*}

ABSTRACT

This study aims to analyze what form the production cost function of packaged rendang in Padang City. The sample in this study were all members of the population as many as 37 packaged rendang entrepreneurs. The data analysis method was performed using the Constant Elasticity Cost Function (CES) Model and translog. The data analysis method was carried out by using the CES Model and the Translog Model. The results of the study found that the appropriate cost function model for this packaged rendang is to use the Constant Elasticity Cost Function (CES) cost function. The results of the study found that production results, wages and capital costs had a positive and significant effect on production costs. The results of this study are expected to provide input for policy makers, especially the West Sumatra Regional Government, especially the Padang City Government in preparing the gift industry development program in Padang City.

Keywords: Production, Production Costs, CES, wages, capital costs, Translog

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

1. Introduction

Small and medium enterprises are one of the engines of economic growth that contribute to regional income, as well as absorb a lot of labor. Small and medium enterprises (SMEs) are the cornerstone of many people's economies. As a group, SMEs account for 95% of global companies and absorb 60% of jobs according to the latest data from the International Finance Corporation (International Finance Corporation, 2011). In general, during difficult economic times, small and medium enterprises still exist compared to large companies that have collapsed or closed their businesses such as during a pandemic like this. Indonesia in general and the city of Padang in particular have experienced an economic slowdown that could even lead to a recession. However, most of the small and medium enterprises still survive, especially those engaged in production that produces food and beverages. Rendang is one of the businesses that is still surviving during this pandemic. The fact is that in many countries, SMEs are recognized as a significant growth factor, compared to the contribution of SMEs in developed countries

(Madanchian, Mitra. 2019). SMEs in the informal sector of developing countries have a significant influence on their country's economy. India's Micro, Small & Medium Enterprises face competition caused by increasing technological advances in the market (Akshay G. Khanzode, Pappu R.S. Sarma, Sachin K. M, Hongjun Yuan: 2020).

SMEs are the backbone of India's economic growth¹. In addition, 120 million people find employment in these SMEs, and 80% of these entities are based in rural areas (Confederation of Indian Industry Report, 2019). The rural population² and the location of SMEs underline the importance of the MSE sector in the Indian economy. Indian manufacturing SMEs are classified on the basis of investment in plant & machinery. The expense bracket classification for plant & machinery is not comparable to the global standard of SME classification. Indian SMEs, therefore, are not only small in size but also small in terms of pockets. It is natural, therefore, that such entrepreneurs focus only on the financial 'bottom line'. This places the responsibility for achieving sustainability goals down to consumers. In other

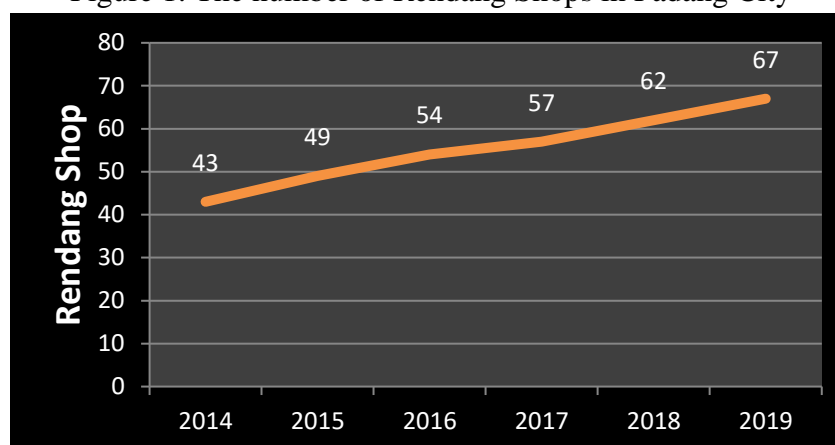
words, 'sustainable consumption'. Raising awareness of and the need for sustainable practices at all levels throughout the value chain encourages budding entrepreneurs to adopt sustainable practices in their manufacturing processes (Akshay G. Khanzode, Pappu R.S. Sarma, S.K. Mangla, Hongjun Yuan: 2020). According to a survey conducted by the Korean Small Business Federation, only 40% of SMEs know what a smart factory is. Of these, only 6.3% of SMEs prepare a systematic response (Kim H.-s., Kim, J.-j., Shin, J.-y., 2017).

Rendang, a typical food of West Sumatra, has now been the most delicious food in the world for 6 consecutive years from 2014 - 2019. Rendang is a spicy-flavored meat dish that uses a mixture of various herbs and spices. Currently, everyone in the

world can taste this food, including the people of West Sumatra. Rendang can be found in many outlets, shops, supermarkets and even in cyberspace in the form of packaged rendang.

Many packaged rendang is used as souvenirs for tourists so that the packaged rendang business has become a new business trend by the people of West Sumatra, especially the City of Padang. According to data from the Padang City Trade Office in 2019 there were 67 shops or entrepreneurs of this packaged rendang in Padang City. In 2014 there were only 43 stores [2]. This means that this business continues to increase from year to year. So, it's no wonder that tourists who come to Padang City are very easy to find these souvenirs.

Figure 1: The number of Rendang Shops in Padang City



Source: Padang City Trade Office, 2020

To face increasingly fierce business competition in the future, business actors, especially MSMEs, need to know a good business strategy. One of the business strategies can be analyzed from the cost of production. When production costs are lower, the products to be produced will be more efficient so that they are more competitive in the market. However, studies related to the analysis of culinary production costs, especially packaged rendang, are still very minimal. Even though this study is very useful as information in order to improve the quality of business competition for a product.

From the study of several previous studies, there are several factors that affect the production costs of a business. These factors include production, wages and capital costs (Dewan, Ambuj & Nathanael Neligh. 2020; Miettinen. Jenni, M. Ollikainen, M. Nieminen, Lauri Valsta. 2019; C.C. Chang, J.F Huang, C. Schafferer, J.M Lee and L.M. Ho. 2019; Macea, Luis F, V. Cantillo & J. Arellana. 2018; Eakin , Kelly & Thomas J. Kniesner 2018; Gudmundsson, S. Vidar, Rico Mercet & R. Redondi. 2017; Robert G, C. J. Quiggin. 2017; Rulon, D, Chavas. 2016; Binswanger, Hans P. 2014; William J. Meland. 2014; Ray, Subhash C 2012). Increasing

production, wages and capital costs will increase production costs and vice versa. However, from these studies, no one has examined what form the production cost function for a culinary product is appropriate. Therefore, this study tries to develop and analyze the production costs of culinary products, namely packaged rendang in Padang City in the form of a production cost function. This study aims to determine the form of the production cost function of packaged rendang in the city of Padang.

2. Literature Review

2.1. Small Industry

According to the Regulation of the Minister of Industry on the Development of Consulting Services for Small and Medium-sized Industries (IKM) in 2009, Article 2 states that small industries are companies that carry out business activities in the industrial sector with an investment value of not more than IDR 200,000,000 (two hundred million rupiah) excluding land and business premises (Ministry of Industry of Indonesia, 2009). Small and medium-sized companies are trying to find strategies that can help them acquire dynamic, unique, rare and difficult to replicate capacities in order to be able to compete in the global market and achieve high performance (Barney, 1991). The dynamic concept is generally resource-based so that organizational learning with the appropriate leadership style is a determining strategy for small and medium enterprises to build their dynamic capacity, as Barney argues, namely how to achieve high performance innovation and competitiveness in an unstable and unstable environment. strong competition (Vargas, MIR, 2015).

The difference between SMEs worldwide and Indian SMEs lies in their classification criteria (Akshay G. Khanzode, Pappu R.S. Sarma, S.K. Mangla, Hongjun Yuan: 2020). The US International Trade Commission (USITC) classifies small and medium enterprises based on the number of employees as well as the income of the company, where India classifies MSMEs using the investment value of plant & machinery or equipment. The European Union also classifies it

based on the number of employees and the company's income (Akshay G. Khanzode, Pappu R.S. Sarma, S.K. Mangla, Hongjun Yuan: 2020). The gap lies in the large monetary classification between the world's SMEs and Indian MSMEs causing certain problems faced by MSMEs in India. The USITC report states that the number of employees must be less than 500, whereas by classification the income is in the range of \$ 7 million to \$ 25 million (United States International Trade Commission, 2010). The European Union says that the number of employees should be less than 250 for medium-sized enterprises, less than 50 for small enterprises, while less than 10 for micro-enterprises. Income classifications ranged from <€ 2 million (approx. \$ 2.2 million) to <€ 43 million (approx. \$ 47 million). Meanwhile, Indian MSMEs are only classified based on the value of investment in plant & machinery or equipment. In addition, the investment value in plant & machinery ranges from \$ 7,000 to \$ 140,000 for Indian MSMEs³ (Annual Report of the Ministry of MSMEs: Government of India, 2018). This tremendous difference in world and Indian rating criteria brings different aspects to consider. Various barriers such as lack of access to credit, technological improvements, labor unpreparedness can be linked to the financial status of the organization. This is very much felt by the Indian MSME organization because of the company's financial strength. The lower limit of the classification of MSMEs in India is nowhere near the threshold of other markets in the world. One of the factors causing this problem is the lack of analytical tools and the lack of real time data availability (El-Mawla N.A., Badawy, M., Arafat, H, 2019). Based on the definition above, it can be seen that small industry can be seen from several sides, namely based on the number of workers, assets, the level of technology used, the amount of income generated (Sentosa. S.U , Ariusni, M.Triani: 2015).

MSME sector entities are the backbone of the Indian economy. Traditionally, MSMEs have seen a lack of a professional approach to running a business as 95.98% of total MSMEs are controlled by individuals / families / ownership (SME

Ministry Annual Report: Government of India, 2018) with most of them based in rural areas. The lack of management education in rural India means that MSME owners do not know the best of the available management principles (Akshay G. Khanzode, Pappu R.S. Sarma, S.K. Mangla, Hongjun Yuan: 2020).

One of the most important variables applied in most small business studies is the property of the ordinary company such as the size of the business. Business size refers to the extent to which a firm's environment is suitable for accommodating or utilizing various innovations (Gantz, 1990; Iacovou., 1995; Saarinen and Vepsäläinen, 1994).

2.2. The Role of Small Industry

Small industry makes an important contribution to the economic development of a country. This helps business success for large-scale industries that are concerned with providing their needs such as new goods and services (Ogechukwu, 2011). Small industry has an impact on the development of the industrial sector (Juliana A, 2013). In Nigeria, the role of small industry in economic development is as capacity building, employment generation, encouraging growth, industrial deployment, backwash and advanced environment, technological development, technology acquisition and poverty alleviation (Oduntan, K.O, 2014). Small businesses play a major role in the small and medium enterprises (UKM) sector, which plays a very decisive role in the development of the economy and the conditions of a country (Monika Sipa, 2015). Small and medium enterprises (SMEs) are playing an increasingly important role for market growth at home and abroad, driving sustainable growth in the trade, production and service sectors by attracting investment. SMEs also play an important role in maintaining a healthy economic balance and are the main job creators in society. Therefore, identifying the factors that determine their competitiveness is an important area (Monika Sipa , 2015).

Small and medium enterprises (SMEs) around the world contribute significantly to the economy (Revell et al., 2010). They account for

about 90 percent of businesses worldwide, are responsible for 60-70% of workers and contribute up to 50% of the gross domestic product (GDP) of countries (OECD, 2018). India is a fast growing and developing economy. In India, SMEs contribute around eight percent of total GDP through production, exports and job creation (GOIMSME, 2016). In addition, unlike companies in developed countries, SMEs in India do not have data / evidence-based decisions (Mathur, Mittal, M.L., Dangayach, G.S., 2012). Most of the SMEs in India are family owned businesses, and perform operations based on traditional business methods due to the availability of cheap labor (Panizzolo R., Garengo, P., Sharma, M.K., Gore, A, 2012). Indian SMEs mainly focus on their production of output, and generally pay little attention to the management of waste production due to less stringent environmental norms (Seth D., Rehman, M.A.A., Shrivastava, R.L., 2018). In recent years, with the launch of the "Make in India" initiative, there has been substantial growth in the manufacturing sector in India (Seth D., Rehman, M.A.A., Shrivastava, R.L., 2018). The "Make in India" program, started in 2014, supports SMEs with the aim of making India the world's largest manufacturing hub (Centobelli P., Cerchione, R., Singh, R., 2019).

Although the state has large-scale businesses, both foreign and domestic owned, whose roles are very important, the main tool for work in the process of increasing LDC is the role of small and medium enterprises (SMEs) (Djankov, Miguel, Qian, Roland, & Zhuravskaya, 2005. ; Djankov, Qian, Roland, & Zhur-avskaya, 2006). . SMEs in LDCs tend to be small in size, including a mix of self-employed and "micro" enterprises with fewer than 10 employees (UN, 2014). SMEs in LDCs face many challenges that are common to many small businesses around the world, such as small economies of scale, limited access to capital and technology, low managerial skills, lack of training opportunities, etc. (Cook & Nixon, 2005). A higher contribution by small firms to an economy is associated with higher growth and may not always be pro-poor.

Successful entrepreneurial development depends on a healthy business culture, education, skills, and availability of capital, among others. Facilities, such as business incubators, venture capital funds, and business development support

programs, further drive business growth; many developing countries lacked the above, therefore few businesses were able to break through. The obstacles that hinder the development of SMEs are described as funnels.

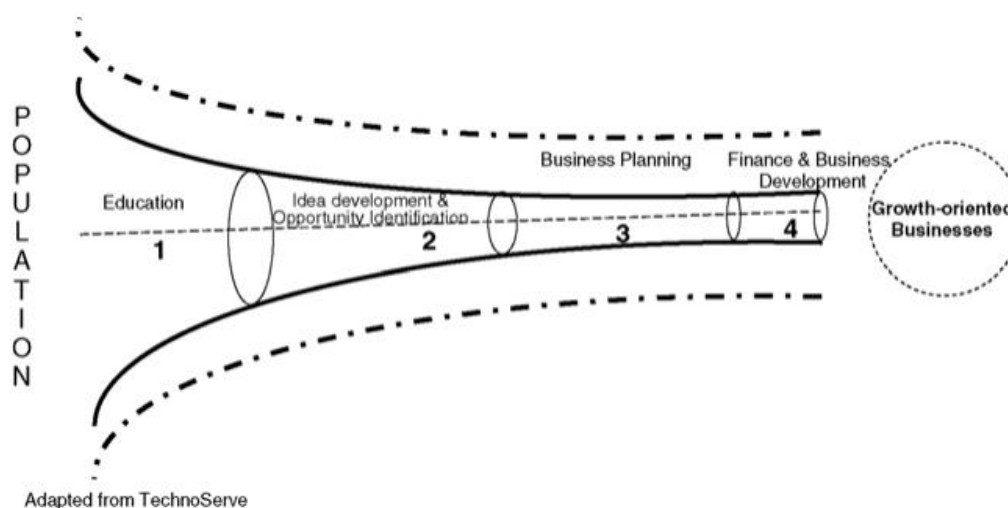


Figure 2: Funnel of entrepreneurship constraints in developing countries)

As one moves from left to right in Figure 2, the number of entrepreneurs and businesses passing through each filter decreases. The challenge for the Entrepreneurship Development Program is to expand the funnel to enable more entrepreneurs and SMEs to overcome these barriers.

2.3. Production Cost

Production costs are costs incurred in processing raw materials into finished products that are ready for sale. Production costs are costs related to the manufacture of goods and the provision of services (Besanko, David, & Braeutigam. R.R. 2016). The role of the owner (especially in SMEs) is to take actions resulting from long-term strategies and plans aimed at strengthening the company's competitive position. In addition, in the process of creating and developing the company's competitiveness potential, we may talk about initially but never happened in the end. Studies on SME behavior show that innovation helps these companies effectively create their competitive advantage. (Monika Sipa, 2015).

Companies that are able to reduce costs with new production methods (schumpeter theory),

this means that the company has made an innovation. This is possible for small businesses. Innovation enables companies to survive and succeed both "now" and in the future (Koc 2007). Innovation also means "(...) the ability to allocate resources efficiently in a way to form an optimal configuration of competitive advantage" (Bielski 2000). It is the result of mutually beneficial penetration (interaction) of R&D, markets, and production (Janasz 2002). In the case of SMEs, their financial resources may be a key factor in their innovation. However, most of them do not have sufficient means to develop innovative solutions. In addition, they experience great difficulty in obtaining external funding (unlike large companies). As a result, they are "forced" to cooperate with other entities, public institutions, and R&D centers to implement and share their innovations (OSLO 2005).

Small business innovation is defined as the willingness of the owner to explore innovations and incorporate them from both internal and external markets (Verbees 2004, Tomski 2014). It is the small companies that are forced to use their means of production and labor more efficiently and are

constantly looking for new technical and organizational solutions. Changes in the small and medium enterprise sector require constant analysis (Okr glicka 2015). In addition, Gorze-Mitka (2013) points to the need for continuous improvement of this group of companies. He points out a set of assumptions that should model corporate management according to the improvement paradigm.

Williams and Dalal (1981) found decreased returns for small firms and increased returns for large firms, suggesting that the cost curve has an inverted "U" shape. In general, there are a number of large empirical studies whose results are consistent with a U-shaped mean cost function with the scale of yield increasing for smaller operators changing to a constant and then yield scale increasing as the size of the operator grows. Fernández J.E., De Cea, J., De Grange, L.. (2005) consider congestion as a source of diseconomies for the large-scale bus industry.

2.4. Forms of the Production Cost Function

2.4.1. Constant Elasticity Cost Function

This CES production function derives separately from different groups of economists: one consists of K.J. Arrow, H.B. Chenery, B.S. Minhas, and R.M. Solow; and another group consisting of Murray Brown and De Cani. The two are different from each other, and may eventually be included in the level returns to scale. Murray Brown and De Cani 1963 used this function very ambitiously to separate the effects or effects of changes in output, economies of scale, technical changes and changes in relative factor prices on labor demand, United States economic data for the period 1890 to 1958.

This production function states that a basic calculation of the substitution rate will be necessary, but not limited to any value. This function is called the CES Production Constant Elasticity of Substitution. Here it is explained that the Cobb-Douglas and Leontief production function is a special case in the CES relationship,

when the elasticity substitution is stated to be constant, then it is only considered the relative change in the input factor and the price does not show this elasticity. The value of elasticity is determined by the technique used and changes in the technique used will affect variations in elasticity at each level in the input factor and price. Thus the elasticity constants refer to their invariance with respect to changes in the relative factor supply and not to the transformation of the technique used.

Advantages of the CES Production Function compared to the Cobb Douglas Production Function: a. The CES function represents the production function of all types of returns that can be analyzed, because s is not simply proportional to one $s \neq 1$, but rather represents the general form of production techniques.

A function that is specifically in the form of constant elasticity to total costs and is related to output and input prices is called the Constant Elasticity Cost Function. In general, the functional form of the constant elasticity cost function specifically shows a multiple relationship between total costs, output prices and input. In a production process that has two inputs, capital and labor, the form of the long-run total cost function of this constant elasticity is as follows (Nicholson, Walter. 2012: Varian, Hal R, 2010):

$$TC = a Q^b w^c r^d \quad (1)$$

Where a , b , c and d are positive and constant.

The form of the function above can be converted into a linear function using logarithms so that it is in the following form:

$$\log TC = \log a + b \log Q + c \log w + d \log r \quad (2)$$

The function above is also in constant form with positive a , b , c and d values and can be estimated using multiple regression. The equation also explains the constant elasticity specification in which the constant b is the elasticity of the total cost output. Analogous, the constants c and d are long-run total cost elasticities with respect to the prices

of labor and capital, respectively. This elasticity should be positive as seen above, meaning that an increase in input prices will increase total long-run costs. If w and r increase by a certain percentage, the total long-run cost will also increase by the same percentage. The implication is that c and d are constant which should increase by one (ie $c + d = 1$) to estimate the long run total cost function to be consistent with the minimization of long run costs. These values can be seen from multiple regression analysis.

2.4.2. The Translog Cost Function Model

The translog cost function is a function that formulates a quadratic relationship between the log of total costs and the log of input and output prices. The constant cost elasticity function shows average costs decreasing first and then increasing as Q increases (i.e. economies of scale followed by scale of diseconomies). The equation of the translog cost function is as follows (Nicholson, Walter. 2012: Varian, Hal R, 2010):

$$\begin{aligned} \log TC = & b_0 + b_1 \log Q + b_2 \log w + b_3 \log r + b_4 \\ & (\log Q)^2 + b_5 (\log w)^2 + b_6 (\log r)^2 + b_7 (\log w)(\log r) \\ & + b_8 (\log w)(\log Q) + b_9 (\log r)(\log Q) \end{aligned} \quad (3)$$

This equation turns out to have many applicable benefits. For example, this is often a good estimate of the resulting cost function regardless of the production function. Then, if (often happens in most cases) we don't know the exact form of the production function, the translog might be a good choice for the functional form of the cost function. Furthermore, the average cost function is U-shaped. Further, it allows economies of scale and diseconomies to occur. For example, the short-run average cost curve is estimated as a translog function. If $b_4 = b_5 = b_6 = b_7 = b_8 = b_9 = 0$ then the translog cost function reduces the constant elasticity cost function. Then the constant elasticity cost function is a special case of the translog cost function (Nicholson, Walter. 2012: Varian, Hal R, 2010).

Several previous research results found that there are several factors that affect the production

costs of a business. There are several researchers who found that if the amount of production increases, the costs needed in production will also increase. Meanwhile, several other researchers stated that wages are a component in production. If wages increase, production costs will increase. On another occasion, several other researchers stated that capital can increase production costs because it is an input component in production (Dewan, Ambuj & Nathanael Neligh. 2020; Miettinen. Jenni, M. Ollikainen, M. Nieminen, Lauri Valsta. 2019; C.C. Chang, J.F Huang, C. Schafferer, J.M Lee and L.M. Ho. 2019; Macea, Luis F, V. Cantillo & J. Arellana. 2018; Eakin, Kelly & Thomas J. Kniesner 2018; Gudmundsson, S. Vidar, Rico Mercet & R. Redondi. 2017; Robert G, C. J. Quiggin. 2017; Rulon, D, Chavas. 2016; Binswanger, Hans P. 2014; William J. Meland. 2014; Ray, Subhash C 2012). However, from the results of this study, no one has examined what form the appropriate production cost function is for culinary products.

3. Research Methodology

The population in this study were all packaged rendang entrepreneurs in the city of Padang. Data from the Padang City Trade Office in 2019 noted that there were 37 packaged rendang entrepreneurs in Padang City. If the members of the population are less than 100, all members of the population are sampled. So the sample in this study were all members of the population as many as 37 entrepreneurs.

To answer the problem formulation, the first method used is (Nicholson, Walter. 2012: Varian, Hal R, 2010).

1. Constant Elasticity Cost Function Model

$$TC = a Q^b w^c r^d \quad (4)$$

Where a , b , c and d are positive and constant

2. The Translog Cost Function Model

$$\begin{aligned} \log TC = & b_0 + b_1 \log Q + b_2 \log w + b_3 \log r + b_4 \\ & (\log Q)^2 + b_5 (\log w)^2 + b_6 (\log r)^2 + b_7 (\log w)(\log r) \end{aligned}$$

$$r) + b_8 (\log w)(\log Q) + b_9 (\log r) (\log Q) \quad (5)$$

Where, TC = Total cost; Q = quantity of production; w = wage; r = rent of capital; b_0 = Constant; $b_1 - b_9$ = elasticity of each variable.

Based on the opinion of Gujarati (2006), the model selection in this study can be done using the R^2 value because the dependent variable is the translog cost function in equation 5 and the CE cost function in equation 4 is the same. If the R^2 value of the CE function provides a value greater than the translog cost function, then the CE cost function is more precise in explaining the production cost

function of packaged rendang in Padang City compared to the translog production cost function. Vice versa, if the R^2 value of the translog function provides a value greater than the constant elasticity cost function, then the translog cost model is more appropriate in explaining the cost function of packaged rendang production in Padang City compared to the CE cost function.

4. Research Finding

After fulfilling all the classical assumptions, the regression result is obtained as follows;

Table 1: Regression result of CES

Source	SS	df	MS	Number of obs = 37		
Model	2.17403869	3	.724679563	F(3, 33) = 457.66		
Residual	.052253206	33	.00158343	Prob > F = 0.0000		
Total	2.22629189	36	.061841441	R-squared = 0.9765		
				Adj R-squared = 0.9744		
				Root MSE = .03979		
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
logtc						
logq	.1853287	.0281929	6.57	0.000	.1279699	.2426876
logw	.1567191	.0456756	3.43	0.002	.0637915	.2496468
logr	.6052521	.0186044	32.53	0.000	.5674012	.643103
_cons	1.454094	.2844507	5.11	0.000	.8753744	2.032813

Source: Data processed, 2020

Based on the results of the model estimation in the regression, the regression equation is made as follows;

$$TC = 1.454094 + 0.1853287 \log Q + 0.1567191 \log w + 0.6052521 \log r$$

Based on the research results, it shows that the production results have a positive and very significant effect on production costs. A one percent increase in production yields will increase 0.1853 percent of the cost of producing packaged rendang in the city of Padang. This suggests that the higher the production yield, the higher the production costs of packaged rendang in the city of Padang and conversely the lower the production the lower the production costs of packaged rendang in the city of Padang. This means that the increasing amount of packaged rendang results in increasing production costs. This means that there is a

marginal cost that occurs in the production of packaged rendang. Particularly changing costs or variable costs such as raw materials from rendang, meat, rendang spices, cooking fuel, packaging and others, these costs will increase if rendang production also increases. Conversely, if the production of packaged rendang is reduced, the costs of producing rendang will also decrease.

The next research results, it shows that wages have a positive and significant effect on production costs. A one percent increase in wages will increase 0.1567 percent of the cost of producing packaged rendang in the city of Padang.

This suggests that the higher the wage, the higher the production cost of packaged rendang in the city of Padang and conversely the lower the wages the lower the production costs of packaged rendang in the city of Padang. This means that wages affect the cost of producing packaged rendang. This means that increased wages affect the cost of producing packaged rendang, because wages are one of the factors determining the increase in production costs so that it has an impact on increasing the price of packaged rendang that is sold even though the effect is small. Based on the results of World Bank research, although the data obtained is quite old, it can be used as a reference that it turns out that from 100 percent of the production cost, only labor costs or wages incurred by entrepreneurs increase, it is actually only 8-12 percent of total production. In general, those who work in producing packaged rendang are families. The workers are generally family members and even the owner and worker in producing packaged rendang. In general, this packaged rendang business is a family business or it is called a micro or small business so that the use of labor from family members or relatives is rarely calculated. Therefore, although wages have an effect on production costs, they do not have a big effect on production costs.

Furthermore, capital costs have a positive and significant effect on production costs. A one percent increase in the cost of capital will increase 0.6053 the cost of producing packaged rendang in the city of Padang. This suggests that the higher the capital cost, the higher the production cost of packaged rendang in the city of Padang and conversely, the lower the capital cost, the lower the production costs of packaged rendang in the city of Padang. This means showing that the increased cost of capital encourages increased production costs, because the cost of capital for rendang is such as the cost of borrowing funds due to making a rendang business, it takes capital or investment for rendang so that there must be expenses on borrowed capital or own money that must be paid for. Part of the scale of the packaging rendang production business is already large, so it requires capital financing. Therefore this capital cost affects

the production costs of this packaged rendang. As it is known, the average price of one kilo of rendang production is Rp. 288,000, so of course it requires a large amount of capital for this packaged rendang business. Large capital requires financing. Therefore, the cost of capital has a significant effect on the overall cost of production.

The translog model equation with the equation formula previously described produces an ineffective equation, which does not pass the classical assumption test, both the heroscedasticity test, and multicollinearity and only some significant variables. It can be concluded that this equation model is not feasible to be a function of the cost of packaged rendang in Padang City.

5. Conclusion

From the results of multiple regression analysis and the discussion of this research between the variables of production, wages and capital costs against production costs as explained, the following conclusions can be drawn; (1). The cost function equation model that meets the requirements is the CES equation model; (2). Production results have a positive and very significant effect on production costs. This suggests that the higher the production yield, the higher the production cost of packaged rendang in Padang city and conversely the lower the production, the lower the production cost of packaged rendang in the city of Padang; (3). Wages have a positive and significant effect on production costs. This suggests that the higher the wage, the higher the production cost of packaged rendang in the city of Padang and conversely the lower the wages the lower the production costs of packaged rendang in the city of Padang; (4). Capital costs have a positive and significant effect on production costs. This suggests that the higher the capital cost, the higher the production cost of packaged rendang in the city of Padang and conversely the lower the capital cost, the lower the production costs of packaged rendang in the city of Padang.

6. Suggestion

There are several policies that must be carried out by packaging rendang entrepreneurs and the government; (1). Packaged rendang entrepreneurs must improve the quality of their products which will encourage a lot of demand so that their production increases. Increased production can minimize the increase in production costs; (2). Packaged rendang entrepreneurs provide decent wages for their workers even though most of the workers generally come from families; (3). The Padang City Government should help ease loan capital financing in the form of soft loans in the form of loans or special loans for UKMN businesses so that entrepreneurs can produce minimal production costs that can increase the rendang production business and will create jobs for job seekers.

7. Acknowledgements

The author would like to thank Padang State University for supporting this research, especially the Research and Service Institute, Padang State University.

References

- [1] Agbeibor, Winfred Jr. (2006), "Pro-poor economic growth: Role of small and medium sized enterprises". *Journal of Asian Economics* 17, pp.35–40
- [2] Akshay G. Khanzode, Pappu R.S. Sarma, Sachin Kumar Mangla, Hongjun Yuan, (2020), "Modeling the Industry 4.0 Adoption for Sustainable Production in Micro, Small Medium Enterprises", *Journal of Cleaner Production*, <https://doi.org/10.1016/j.jclepro.2020.123489>
- [3] Barney, J.B, (1991), "Firm resources and sustained competitive advantage". *Journal of Management*, 17, (1), pp. 99-120.
- [4] Besanko, David, & Braeutigam. R.R. (2016). "Microeconomics". Ohn Willey and Sons (Asia) Pte Ltd.
- [5] Bielski I., z. (2000), "Przebieg i uwarunkowania procesów innowacyjnych", OPO: Bydgoszcz, pp. 155.
- [6] Binswanger, Hans P. (2014), "A Cost Function Approach to the Measurement of Elasticities of Factor Demand and Elasticities of Substitution". *American Journal of Agricultural Economics*. Vol. 156. No. 2. pp.377 - 386.
- [7] Case, K.E, Fair, R.C. (2007) "Principle of Economics". Jakarta: Penerbit Erlangga.
- [8] Centobelli, P., Cerchione, R., Singh, R., (2019). "The impact of leanness and innovativeness on environmental and financial performance: insights from Indian SMEs". *Int. J. Prod. Econ.* 212, 111e124
- [9] Chi-Cheng Chang, Jung-Fu Huang, Christian Schafferer, Jie-Min Lee and Li-Ming Ho. (2019), "Impacts of Culture Survival Rate on Culture Cost and Input Factors: Case Study of the Hard Clam (*Meretrix meretrix*) Culture in Yunlin County, Taiwan". *Journal of the World Aquaculture Society*. Vol. 51. No. 1. pp139-158.
- [10] Dewan, Ambuj & Nathanael Neligh, (2020). "Estimating Information Cost Functions in Models of Rational Inattention". *Journal of Economic Theory*. Vol. 187. No. 1. 1-9. Doi : [10.1016/j.jet.2020.105011](https://doi.org/10.1016/j.jet.2020.105011).
- [11] Djankov, S., Miguel, E., Qian, Y., Roland, G., & Zhuravskaya, E.. (2005), "Who are Russia's entrepreneurs?" *Journal of the European Economic Association*, 3(2-3), pp 1–11.
- [12] Djankov, S., Qian, Y., Roland, G., & Zhuravskaya, E, (2006). "Entrepreneurship in Brazil, China, and Russia". CEFIR working paper no. 66.
- [13] Eakin, Kelly & Thomas J. Kniesner, (2018), "Estimating a Non-Minimum Cost Function for Hospitals". *Southern Economic Journal*. Vol. 54. No. 3. pp.583 – 597. Doi : 10.2307/1059003.

- [14] El-Mawla, N.A., Badawy, M., Arafat, H., "IoT for the Failure of Climate-Change Mitigation and Adaptation and IIoT as a Future Solution". *World 6*, (2019), pp.7–16
- [15] Fernández, J.E., De Cea, J., De Grange, L., "Production costs, congestion, scope and scale economies in urban bus transportation corridors". *Transp. Res. Part A* 39, (2005), pp.383–40.
- [16] Iacovou, C.L., Benbasat, I., Dexter, A.S. (1995), "Electronic data interchange and small organizations: adoption and impact of technology". *MIS Q.* 19 (4), pp. 465–485.
- [17] Gantz, J. (1990), "Outsourcing: threat or salvation?" *Netw. Manag.* 10 (90), pp. 25–40.
- [18] Gorze-Mitka I. (2013), "Doskonalenie jako paradygmat zarz dzania wspóczesnym przedsibiorstwem. [in:] Problemy doskonalenia zarz dzania przedsibiorstwem." Gorze-Mitka I. (Ed.) Sekcja Wydaw. WZ PCzst. Czstochowa, p.11-21
- [19] Government of India, Ministry of Micro, Small and Medium Enterprises, (2016) "Annual Report 2015-16". Government of India, Ministry of Micro, Small and Medium enterprises, New Delhi. Retrieved from. <https://msme.gov.in/sites/default/files/MEME%20ANNUAL%20REPORT%202015-16%20ENG.pdf>.
- [20] Grange, L, de., Troncoso, Ignacio Briones, (2018). "Cost, production and efficiency in local bus industry: An empricial analysis for the bus system of Santiago", *Transportation Research Part A*. journal homepage: www.elsevier.com/locate/tra.
- [21] Gudmundsson, Sveinn Vidar, Rico Mercet & Renato Redondi, (2017) "Cost Functions and Determinants of Unit Cost Effects in Horizontal Airline M & As". *Transportation Research Part A: Policy and Practice*. Vol. 103.. pp.444 - 454. Doi : 10.1016/j.tra.2017.05.025.
- [22] Hubbard, R.G. & O'Brien A.P. (2008). "Microeconomics". Pearson International Edition, Person Prentice Hall.
- [23] Janasz W., Janasz K., Prozorowicz M., wiadek A., Winiewska J. (2002), "Determinanty innowacyjności przedsibiorstw", Uniwersytet Szczecinski, Szczecin., p. 12.
- [24] Jualiana A, Oboniye. (2013) "Small Scale Industries and Rural Development in Edo State, Nigeria". *Journal of Educational and Social Research*. Vol. 3 No 9.
- [25] Kim, J.H., (2017). "A review of cyber-physical system research relevant to the emerging IT trends: industry 4.0, IoT, big data, and cloud computing". *J. Ind. Integr. Manag.* 2 (03), 1750011.
- [26] Kim, H.-s., Kim, J.-j., Shin, J.-y., (2017). "Report on the 4th industrial revolution and transformational challenges of small and medium-sized companies in Korea". Korea Small Business Institute.
- [27] Koc T., Ceylan C. (2007), "Factors impacting the innovative capacity in large-scale companies", *Technovation* 27, pp. 105–114.
- [28] Macea, Luis F, Victor Cantillo & Julian Arellana, (2018). "Influence of Attitudes and Perceptions on Deprivation Cost Functions". *Transportation Research Part E: Logistics and Transportation Review*. Vol. 112. pp.125 – 141. Doi : 10.1016/j.tre.2018.02.007.
- [29] Madanchian, Mitra et al. (2019). "Assessment of Leadership effectiveness Dimension in Small and Medium Enterprises". *Procedia Manufacturing* 32 (2019) 1035–1042. Elsevier.
- [30] Mathur, A., Mittal, M.L., Dangayach, G.S. (2012), "Improving productivity in Indian SMEs". *Prod. Plann. Contr.* 23 (10e11), 754e768..
- [31] Miettinen, Jenni, Markku Ollikainen, Mika Nieminen, Lauri Valsta. (2019) "Cost Function Approach to Water Protection in Forestry". *Water Resources and*

- Economics. Vol. 96. 45-51. Doi : 10.1016/j.wre.2019.100150.
- [32] Ministry of Industry. (2009). "Regulation of the Minister of Industry on the Development of Consulting Services for Small and Medium Industries (IKM) in 2009", Article 2.
- [33] Monika Sipa, (2015), "Determinants of Competitiveness of Small Enterprises: Polish Perspective. 22nd International Economic Conference – IECS 2015 Economic Prospects in the Context of Growing Global and Regional Interdependencies", IECS 2015. Procedia Economics and Finance 27 , pp.445 – 453.
- [34] Nicholson, Walter. (2012), "Intermediate Microeconomic. : Theory and Application". New York : South-Western,.
- [35] OECD, (2018) "Raw materials use to double by 2060 with severe environmental consequences" - OECD [WWW Document], URL. <https://www.oecd.org/newsroom/raw-materials-use-to-double-by-2060-with-severe-environmental-consequences.htm> (accessed 5.25.19)..
- [36] Ogechukwu, A.D. (2011). "The Role of Small Scale Industry in National Development in Nigeria", Universal Journal of Management and Social Sciences, Vol.1, No.1, December.
- [37] Oduntan, K.O. (2014). "The role of Small and Medium Enterprises in Economic Development: The Nigerian Experience", International conference on Arts, Economics and Management (ICAEM'14), March 22-23, 2014, Dubai (UAE).
- [38] OSLO, Oslo Manual. (2005), "The Measurement of Scientific and Technological Activities". Proposed Guidelines for Collecting and Interpreting Technological Innovation Data. Third edition, OECD Eurostat, pp.39.
- [39] Padang City Trade Office. (2019) "MSME Statistics". Padang : Department of Trade.
- [40] Panizzolo, R., Garengo, P., Sharma, M.K., Gore, A., (2012). "Lean Manufacturing in developing countries: evidence from Indian SMEs". Prod. Plann. Contr. 23 (10e11), 769e788.
- [41] Ray, Subhash C. (2012) "A Translog Cost Function Analysis of U.S. Agriculture". *American Journal of Agricultural Economics*. Vol 144. No. 4., pp.218 - 232.
- [42] Revell, A., Stokes, D., Chen, H. (2010), "Small businesses and the environment: turning over a new leaf?" Bus. Strat. Environ. 19 (5), 273e288.
- [43] Robert G. Chambers John Quiggin, (2017), "Cost Functions and Duality for Stochastic Technologies". *Journal of Economics and Business*. Vol. 79. No. 1. pp.33 - 46.
- [44] Rulon, D. Pope Jean-Paul Chavas. (2016), "Cost Functions Under Production Uncertainty". *American Journal of Social and Economics*. Vol. 121. No. 2. pp.89-99.
- [45] Saarinen, T., Vepsäläinen, A.P. (1994), "Procurement strategies for information systems". J.Manag. Inf. Syst. 11 (2), pp.187–208.
- [46] Seth, D., Rehman, M.A.A., Shrivastava, R.L. (2018), "Green manufacturing drivers and their relationships for small and medium (SME) and large industries." J. Clean. Prod. 198, 1381e1405.
- [47] Tomski P. (2014), "Entrepreneurship as a Career Choice. The Empirical Perspective", Polish Journal of Management Studies PJMS Vol. 9 – 2014, Czestochowa University of Technology, , pp. 244-253.
- [48] UN, (2014). "State of the least developed countries". Special theme extreme poverty eradication in the least developed countries and the post- development agenda.
- [49] Vargas, M.I.R, (2015), "Determinant Factors for Small Business to Achieve Innovation, High Performance and Competitiveness:Organizational Learning and Leadership Style". The 6th Indonesia International Conference on Innovation, Entrepreneurship and Small Business, 12 –

- 14 August 2014.. Procedia - Social and Behavioral Sciences 169 43 – 52. Elsevier
- [50] Varian, Hal. R. (2010).. “Intermediate Microeconomics: A Modern Approach”, 8th edition. New York: W.W. Norton & Company,
- [51] Verbees F.J.H.M., Meuelenberg M.T.G. (2004),, “Market Orientation, Innovativeness, Product Innovation, and Performance in Small Firms”, *Journal of Small Business Management*, 42, pp. 138.
- [52] Williams, M., Dalal, A. (1981),. “Estimation of the elasticities of factor substitution in urban bus transportation: a cost function approach”. *J. Regional Sci.* 21, , pp.263–275.
- [53] William J. Meland(2014),. “Measurement of a Cost Function for US Airlines: Restricted and Unrestricted Translog Models”. *Journal of Transport Literature*. Vol. 8. No. 2. pp.38 - 72.