An Analysis of Production Efficiency and Marketing System on the Competitiveness and Welfare of Corn Farmers

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Abstract:- The purpose of the study to analyze the partial influence of production efficiency and marketing efficiency on the competitiveness and welfare of farmers. Also, the partial influence of competitiveness as a mediation between production efficiency and marketing efficiency on farmers' welfare. Research objects in Maros, Pangkep, Bone and Wajo. Sample size as many as 399 people. Collection techniques using questionnaires and sampling techniques purposive sampling. Metode analysis using path analysis. The results showed that: (a) production efficiency and marketing efficiency partially positively and significantly affect the competitiveness and welfare of farmers. (b) production efficiency and marketing efficiency partially positively and significantly affect farmers' welfare through competitiveness.

Keywords:- Production Efficiency; Marketing Efficiency; Competitiveness; Welfare of Corn farmers.

I. INTRODUCTION

Word Economic Forum (WEF), an institution that regularly publishes the "Global Competitiveness Report "defines competitiveness as the ability of a national economy to achieve sustainable high economic growth. Integrated competitiveness can be obtained based on three indicator systems, each regional economic potential, regional efficiency, and competitive advantage (Mashokhida et al., 2018). Increasing the competitiveness of a country in the international arena is basically determined by two factors, namely comparative advantage (comparative advantage) and competitive advantage factors (Tulus., 2012).

The majority of Indonesians occupy rural areas and their lives depend heavily on agriculture. According to BPS data in 2017, Indonesia's Agricultural sector contributes at least 13.13% to Indonesia's Gross Domestic Product. Similarly, the BPS report (2018) related to economic growth in the second quarter of 2018 stated the contribution of agriculture to the growth rate of gross domestic product (GDP) reached 13.63%. This fact indicates that the agricultural sector is one of the main drivers in the economic development of the Indonesian people.

The analysis unit in this study is farmers who cultivate food commodities, namely corn in Bulukumba Regency, Jeneponto Regency, Takalar Regency, and Gowa Regency in South Sulawesi. The development of corn production in Indonesia during 2014-2018 according to BPS and directorate general of food crops (2018), every year has increased. Corn production in 2014-2018 in Indonesia amounted to 19,008,426 tons, 19,612,435 tons, 23,578,413 tons, 28,924,015 tons, and 30,055,623 tons, respectively.

Sulawesi is one of the regions in Indonesia producing the most corn and ranked 4th. According to the report of BPS and directorate general of food crops (2018), shows in 2014-2018 the development of corn production in the area, respectively amounted to 1,490,991 tons, 1,528,414 tons, 2,065,125. 2,341,336 tons, and 2,341,659 tons. This proves the interest of farmers in south Sulawesi to cultivate corn crops is very large. The focus of this research is 4 largest corn production districts in South Sulawesi, namely Bulukumba Regency, Jeneponto Regency, Takalar Regency, and Wajo Regency.

Table 1. Land Area and Corn Production

№.	District	Land Area (ha)	Production (ton/ha)
1.	Bulukumba	27.083,6	105.097,6
2.	Jeneponto	68.099,3	399.850,1
3.	Takalar	11.921,6	69.710.4
4.	Gowa	46.579,5	300.849,0

Source: BPS Agriculture Food Crops, Land Use (2018).

Competitiveness, has a strong correlation to farmers' incomes. Farmers who have the ability to create competitiveness, have an impact on increasing income. According to Mosher (1987) in Hernanto (2004), indicators measure farmers' welfare, including income, because some aspects of household welfare depend on income level. In order to increase the income and welfare of corn farmers, through the creation of competitiveness, efforts to increase production alone are not enough. It takes efforts to create efficiencies to production and marketing systems.

Production efficiency can be interpreted as an effort to use inputs or production factors as small as possible to obtain a certain production result. While the efficiency of the marketing system is related to the process of commodity flow accompanied by the transfer of property rights and creation for time, place and use of form, conducted by marketing agencies by carrying out one or more marketing functions (Soekartawi, 2007).

Anita (2012), proves efficiency in the marketing system provides benefits and health for farmers. Similarly, Aiginger, Bärenthaler-Sieber and Vogel (2013) have identified efficiency as having a significant effect on price competitiveness. Research from Siviardus Marjaya (2015), Shinta Tantriadisti, Suriaty Situmorang, and Teguh Endaryanto (2010) proves that efficiency has a positive and significant effect on competitiveness. Further research from Cut Mardian.2013 relates to the efficiency of corn marketing in Kuala Pesisir District, Nagan Raya District, West Aceh. The results prove that the marketing channels in Kuala Pesisir Subdistrict Nagan Raya district have been categorized in a very efficient marketing system.

II. LITERATURE REVIEW

2.1 Production Efficiency

Production efficiency can be interpreted as an effort to use inputs or production factors as small as possible to obtain certain production results (Soekartawi, 2002). Efficiency is divided into: (a) technical efficiency is a comparison between actual production and the level of potential production that can be achieved by farmers, so in this study production is said to be efficient when the production factors used to produce maximum production, (b) price efficiency or localative efficiency is a comparison between marginal productivity of each input with the price of input equal to one. Therefore, in this study it is said that it can achieve price efficiency if the marginal production value is equal to the price of the production factor, (c) economic efficiency is the result of all efficiency, both technical efficiency and the price of all input factors.

2.2 Marketing System Efficiency

Agricultural marketing is the process of commodity flow accompanied by the transfer of property rights and creation for time, place and form, conducted by marketing agencies by carrying out one or more marketing functions. Indicators for measuring the efficiency of marketing systems according to Hasyim (2012), namely: (a) marketing margins, (b) prices at the consumer level, (c) the availability of physical marketing facilities, (d) the level of market competition, (e) *market structure,*is an overview of the relationship between sellers and buyers judging by the number of marketing agencies, product differentiation, andconditions in and out of the market (entry*condition*), (f) market *conduct,*is a description of thebehavior of marketing institutions in the face of the market structure, for the purpose of obtaining maximum profit, which includes buying activities, sales, pricing, and market strategy, such as: discounts, fraudulent weighing, and others, (g) *market perfomance,*is a picture of market symptoms that appear due

to interactions between market structure (market structure) and market behavior (market*conduct*).

2.3 Competitiveness

The process of competitiveness is key in coordinating management processes such as strategic management, human resource management, technology management, and operations management (Ambastha and Momaya, 2004). The competitiveness of a commodity is often measured using a comparative and competitive approach of excellence. Aiginger, Bärenthaler-Sieber and Vogel (2013) have identified several forms of competitiveness, namely: price competitiveness, quality competitiveness, and *outcome*competitiveness. The emphasis of each form of competitiveness is: (a) price competitiveness starts from efforts to efficiency of business costs (in a company) especially in the components of wages, energy and taxes, (b) quality competitiveness emphasizes on efforts to achieve business productivity and sustainability.

Determining the competitiveness of food commodities needs to be examined to find out how the competitiveness is formed (Bohari, Hin and Fuad, 2013). Take it from et.al. (2015) explains that the main factors determining the competitiveness of a commodity consist of: (1) the condition of factors; (2) the condition of the request; (3) related and supporting industries; (4) strategy, structure, and competition of the company. Interaction between the four factors is determined by two things, namely opportunity and government policy. Simultaneously, these factors form the system in building competitiveness.

2.4 Farmer Welfare

Welfare is a condition where the physical and spiritual needs of the home can be met according to the standard of living. People's welfare can be observed from various aspects, namely: (a) population, (b) education, (c) health and nutrition, (d) employment, (e) consumption or expenditure of households, (f) housing and the environment, (g) social, and others (Hernanto, 2004). Some indicators used to reduce the welfare of farmers, namely: (a) the structure of income of farmers' households, (b) the structure of expenditure / consumption of household food, (c) the level of household food security, (d) the diversity of the purchasing power of farmers' households, (e) the development of farmers' exchange rates. (Sadikin & Subagyono, 2008). Meanwhile, according to the Central Bureau of Statistics (2007), indicators measure welfare, namely: (a) population, (b) health and nutrition, (c) education, (d) employment, (e) patterns of consumption or expenditure of households, (f) housing and the environment, and other social.

III. RESEARCH METHODOLOGY

3.1 Research Approach

In order to answer the formulation of problems that can be quantified or measured by numbers, the researchers used a quantitative research approach. Quantitative approach focuses on numerical aspects as the data, both in the collection process and the results of analysis. Scott and Deirdre (2009). The basic considerations of researchers using quantitative

research approaches are: (1) the type of data used is a phenomenon described numerically, (2) the method of analysis using descriptive and inferential statistics, (3) the scope of the study using hypotheses, and (4) the magnitude of the sample and the validity of statistics accurately reflect the population.

3.2 Types and Data Sources

The type of data used in this study by its nature is data expressed in the form of numbers (quantitative). These types of data are collected directly from farmers (primary data) and indirectly (secondary data) from the Central Bureau of Statistics and the Directorate General of Food Crops (secondary data). Primary data collection techniques through methods: (1) interviews, (2) observations, (3) questionnaires. The questionnaire is organized based on items related to variables to be studied, using *Likert's Summated Rating* (LSR) method (strongly agree = 5, agree = 4, do not know = 3, disagree = 2, strongly disagree = 1).

3.3 Population and Samples

The population in this study is all corn farmers in Bulukumba Regency, Jeneponto Regency, Takalar Regency, Gowa Regency that are 105,507 farmers. minimum sample of 399 farmers.

3.4 Data Analysis Techniques

Data analysis techniques are a way of analyzing research data, including relevant statistical tools for use in research (Eng & Slamet, 2017: 42), namely instrument validity and reliability tests, descriptivetatistic analysis, and path analysis.

IV. RESULTS AND DISCUSSION

4.1 Production Efficiency

regression Is: $\text{Ln } Y = \text{Ln}\beta_0 + \beta_1 \text{Ln}X_1 + \beta_2 \text{Ln}X_2 + \beta_3 X_3 + \beta_4 \text{Ln}X_4 + \beta_5 \text{Ln}X_5 + \mu$ Or $\text{Ln } Y = \text{Ln } 1.848 + 0.721 \text{ Ln}X1 + 0.960 \text{ Ln}X2 + 0.084 \text{ Ln } X3 + 0.004 \text{ Ln } X4 + 0.482 \text{ Ln}X5$. Results Efficiency Price (alokatif) Show Turns out use of Seeds Dan Fertilizer Yet Efficient Because Value NPMx/px (Seeds) > 1 and NPMx/px (Fertilizer) < 1. So To Reach Conditions that Efficient Then Use Seeds Need Added Dan Use Fertilizer Need Reduced.

4.2 Marketing Efficiency

The average farmer share obtained is 66.14% and the average marketing margin is 33.86%. Therefore, it can be concluded that the marketing system is efficient because farmer share is margin marketing.

4.3 Competitiveness

Indicators	Respondent response score									
	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Y1			13	3,2	134	33,3	184	45,8	68	16,9
Y2			16	4,0	128	31,8	190	47,3	65	16,2
Y3			18	4,5	115	28,6	191	47,5	75	18,7
Y4			19	4,7	116	28,9	192	47,8	72	17,9
Y5			18	4,5	119	29,6	194	48,3	68	16,9
Average										

Source: Primary data processed, 2020

The respondent's perception of competitiveness indicators is agreed (3.76-3.81). The first highest indicator of competitiveness is dependency. Dependence is related to how farmers cooperate with employees and fellow farmers as well as cooperation with marketing agencies. The second highest indicator is the flexibility of products related to corn varitas. The third highest indicator is production flexibility related to weather, skills, and experience. Similarly, the fourth highest indicator is the price associated with competitive prices and rebates. While the fifth highest indicator is the quality associated with the quality of corn and the quality of service.

4.4 Farmer Welfare

The average gross income of farmers in four (4) districts before being reduced by production costs and other operational costs is Rp 13,178,859 with a standard deviation of Rp 4,336,498. Minimum and maximum gross opinion obtained by farmers amounted to Rp 1,850,000,- and Rp 24,150,000,- Average corn production of 5.56 tons with standard deviation of 1,839 tons. Minimum and maximum production of 3 tons and 10 tons, respectively.

4.5 Path Analysis

Descriptive Statistics

	N	Min.	Max.	Mean	Std. Dev
PRODUCTION	399	3	10	5.56	1.839
FARMER WELFARE	399	1.850.000	24.150.000	13.178.859,65	4.336.498,456
Valid N (listwise)	399				

Direct and Indirect Influence

	Coefficient		Total	Sig.	Conclusion
	Direct	Indirect			
X1->Y	0,065		0,065	0,005	Positive and Significant
X2->Y	0,037		0,037	0,047	Positive and Significant
X1-------Z	0,018		0,018	0,022	Positive and significant
X2-------Z	0,026		0,026	0,002	Positive and Significant
Y---------Z	0,004		0,004	0,034	Positive and Significant
X1----Y----Z	0,018	0,0003	0,0183	0,027	Positive and significant
X2----Y----Z	0,026	0,0002	0,0262	0,039	Positive and significant

Source: Primary data processed results, (2020).

4.6 Discussion

Hypothetical test results show that production efficiency, partial marketing efficiency have a positive and significant effect on the competitiveness and welfare of farmers. Similarly, it was found that competitiveness can mediate positively and significantly the influence between production efficiency and marketing efficiency on farmers' welfare. Production efficiency with price efficiency indicators (alokatif) related to the efficiency of the use of seeds and fertilizers can improve the competitiveness and welfare of farmers. Price efficiency (alokatif) is a comparison between the marginal productivity of each input and the input price equal to one. Therefore, price efficiency can be achieved if the marginal production value is equal to the price of the production factor. The results of this study support the findings of Siviardus Marjaya. (2015) with the title Influence of Production Efficiency on Commodity Competitiveness in Corn-Cow Integration Farming System in Kupang Regency. Similarly, the results of this study support the findings of Shinta Tantriadisti et al. (2010) with the title Production Efficiency and Competitiveness of Hybrid Variety Corn Farming on Dry Land in Ketapang District, South Lampung Regency. The results prove that: (a) technically the use of production factors is already efficient, (b) economically the use of production factors has not been efficient, (c) production efficiency can improve competitiveness by reducing the actual cost of production factors.

Marketing efficiency with price indicators, quality, dependency, product flexibility; and production flexibility can improve the competitiveness and well-being of farmers. Marketing a product is considered efficient if it is able to deliver agricultural products from farmers to the marketing of a product is considered efficient if (a) able to deliver agricultural products from producer farmers to consumers at the lowest cost, and (b) able to hold a fair and equitable distribution of the overall price paid by the end consumer to all parties participating in the production and marketing activities of such commodities at the lowest cost.

The results of this study support the findings of Cut Mardian. (2013) with the title Corn Marketing Efficiency in Kuala Pesisir District, Nagan Raya District, West Aceh. The results prove that the marketing channels in Kuala Pesisir Subdistrict Nagan Raya district have been categorized in a marketing channel that is very efficient and supports the improvement of farmers' welfare. However, the results of the study from M. Gafur Supriadi. (2013) with the title Efficiency of The Use of Production Inputs and Income of Rice Paddy Farmers in Bangkir Village, South Dampal District, Toli Toli District shows that input factors are inefficient in increasing production so as to impact the income and welfare of farmers. So Competitiveness is related to the ability of farmers to create added value from their production. Indicators of competitiveness, namely price; quality; dependency; product flexibility; and flexibility of production can improve the welfare of farmers. The first highest indicators of competitiveness that have a strong relationship to the welfare of farmers are: ketergantungan. Dependence is related to how farmers cooperate with employees and fellow farmers as well as cooperation with marketing agencies. The second highest indicator is the flexibility of products related to corn varitas. The third highest indicator is production flexibility related to weather, skills, and experience. Similarly, the fourth highest indicator is the price associated with competitive prices and rebates. While the fifth highest indicator is the quality associated with the quality of corn and the quality of service.

The theory of competitiveness according to Porter (1998) in Fred (2011) explains that the strategy that can be used to create competitiveness is a low cost strategy. The low cost strategy emphasizes on producing standard products (equal in all aspects) at a very low cost per unit. This product is intended for consumers who are relatively easily affected by price shifts or use price as a decision-making factor. This strategy emphasizes efficiency in production factors and marketing system efficiency is a way to create low prices. Production efficiency can be achieved through the addition or reduction of the use of production factors. Similarly, marketing efficiency can be achieved through consideration of the use of marketing chains/channels.

V.   CONCLUSSION AND SUGGESTIONS

5.1 Conclusion

Based on the results of the study, the conclusions that can be put forward are as follows:
1. Production efficiency and marketing efficiency partially positively and significantly affect competitiveness.
2. Production efficiency, marketing efficiency, and partial competitiveness have a positive and significant effect on farmers' welfare.
3. Production efficiency and marketing efficiency partially positively and significantly affect the welfare of farmers through competitiveness.

4. The number of seedlings used needs to be increased in order to achieve efficiency and the number of pesticides needs to be reduced in order to achieve efficiency.

5. The marketing system used has reached the level of efficiency with a 1-level marketing channel.

5.1 Suggestions

The suggestions that can be put forward are as follows:

1. For farmers, production efficiency and marketing efficiency need to be improved because it affects the competitiveness and welfare of farmers.

2. For future researchers need to add a marketing chain as a study material to determine the most optimum level of efficiency among the marketing chain.

3. The need for the role of the government in helping capital to the availability of saprodi to farmers in this case by providing capital loans through cooperatives or other financial institutions.

4. Comparing the level of production efficiency and marketing competitiveness of corn in the two growing seasons to see the possibility to expand the area of planting per year so as to increase the frequency of planting per year and achieve the level of welfare of farmers.

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