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Analysis of the Effectiveness of Chili Auction Market in Sleman Regency, Special Region of Yogyakarta

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ABSTRACT

Chili auction market in Yogyakarta was established with the farmer's cooperative to strengthen the bargaining position of Sleman's farmers in receiving fair price for chili. Therefore, this study aims to analyze the effectiveness of chili auction market and the problems affecting its implementation. A quantitative approach was used and the location was determined using the purposive method. The sample population comprised chili farmers, who were selected as participants using the accidental sampling method. This study used both primary and secondary data, which were obtained through observation, interviews, and documentation. Subsequently, analysis was carried out using descriptive analysis and a fishbone diagram. The results showed that the effectiveness rate of auction market based on three approaches (external, internal, and technical) reached 70,03%. In addition, the problems affecting its implementation included the low availability of chili due to climate change, pest and disease attacks, the absence of machines or supporting facilities, price information that was not transparent, and the limited capability of auction market administrators. Requirements for traders also needed to be updated regarding regional boundaries to open opportunities for traders outside DIY and Central Java.

INTRODUCTION

Availability, affordability as well as quality, and food security in Indonesia are important aspects that must be integrated for the realization of food security. The availability of food in Indonesia is closely related to the certainty of food prices that are created. Food prices should be certain and by the HPP (Cost of Goods Sold) that has been determined to protect prices from upstream to downstream. Improvements in the marketing system are the key to ensuring stable food availability and certainty of food prices, especially vegetables, fruits, fish, and meat.

The market has three functions,

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namely the distribution function, the promotion function, and the price forming function. Market mechanisms form interactions between demand from the consumer side and supply from the producer side, so that the prices created are a combination of the strengths of each party (Imronah, 2022). Chili is one of the commodities that often experience price fluctuations. According to (Kusumah, 2018), the price of an item will fluctuate if there is uncertainty in supply and demand for the item.

A price balance will be created when the quantity of goods demanded is equal to the number of goods offered. The difference between the amount of consumption and available supply causes price fluctuations commonly in agricultural products (Hammond and Dahl, 1990). According to (Devi, 2022), the factor that causes price fluctuations in commodities is because the goods are seasonal. Seasonal price pattern is regularly repeating price that is completed once in every twelve months such a regular pattern might arise from seasonality demand, seasonality in supply and marketing or a combination of the both (Tomek & Robinson, 1990). Agricultural or farm productions are much more prone to price variation than non-farm productions (Islam. et al., 2017). According to (Suprihanti, 2010), chili is one of the commodities with fluctuating prices, and it makes farmers and traders get high profits cause of rising prices. Vice versa, the falling chili price causes farmers to suffer losses. By improving the marketing system and chili distribution process from production centre to consumption areas is the right step to stabilize prices by balancing demand with chili supply.

Frequent fluctuations in chili prices have a huge impact on farmers and traders. The difference between the amount of consumption and available supply causes price fluctuations in chili commodities. Therefore, the government continues to make various efforts to ensure the availability of chili, one of which is establishing an auction market. The purpose of the auction market was established to guarantee the quantity and quality of chili peppers as well as transparent and fair prices. (Abidin & Meitasari, 2019) said that auction.

Decree of the Minister of Agriculture of the Republic of Indonesia Number 472/Kpts / RC.040/6/2018 concerning the Location of National Agricultural Areas, states that Sleman Regency is one of the locations of national chili centres. This condition is the result of the formation of the Sleman Regency Chili Auction Market to maintain the stability of chili supply in the market and so that farmers get reasonable prices with good quality commodities. The Sleman Regency Government collaborated with the Perkumpulan Petani Hortikultura Puncak Merapi (PPHPM) in forming the Koperasi PPHPM to improve the welfare of farmers.

The auction market is a trading system carried out by bringing together sellers and buyers directly in the same place with competing offers

to ensure that the highest price is obtained (Siallagan & Tirayoh, 2018). According to Rusdiyana (2018), the marketing function is more effectively carried out by auction market compared to the ordinary market. In Indonesia, the implementation of this trading system in the agricultural sector offers several benefits, such as increasing the bargaining position of farmers (Nugroho, 2021). In this context, auction market managers can represent farmers in negotiating with traders and provide accurate market information, specifically price. This is consistent with fish auction in the trading of marine fish, which aims to protect fishermen from price games carried out by middlemen and provide a fair price (Abidin & Meitasari, 2019).

Auction market starts with chili farmers who deliver the crops to assembly points that have been provided in various regions. In the next stage, managers transport the commodity from various assembly points to the center point of auction market. After collection from various regions, an online auction is immediately carried out using a mobile-based application, namely the Dipanen.id application. Although the transaction process in auction market has become easier, the facilities and management of human resources are not adequate (Suprihanti et al., 2023), necessitating further efforts.

Sleman Regency Chili Auction Market aims to unite sellers at one gate and one price. Although auction market has been established since 2017, price is still fluctuating due to uncertainty in quality and supply. This indicates that an analysis is needed to compare the effectiveness of the system with a target value (Aramyan et al., 2007). Despite the existing literature on the effectiveness of auction market (Marta Seli et al., 2021) and (Putri et al., 2023), there is no information on the implementation for chili commodities and the associated problems. Therefore, this study aims to analyze the effectiveness of Sleman Regency Chili Auction Market and identify the main problems in its implementation. The results are expected to provide insights into the benefits obtained by chili farmers during the existence of auction market.

METHODS

This study was conducted with a quantitative approach, and the sample population comprised chili farmers in 9 assembly points. Table 1 showed 9 assembly points spread to various regions in Sleman Regency.

Samples of chili farmers were taken using the accidental sample because there was no data on the identity that addressed chili farmers' and investigators could not meet farmers. This sampling technique was carried out based on chance, namely anyone who happened to meet investigators and was suitable as a data source (Sugiyono, 2019). Therefore, investigators visited each gathering point and waited for farmers who met the criteria, namely chili farmers who were collecting the crops at that time to be sold at auction market.

The data used primary and

Table 1. Assembly Points

Assembly Points
Karangasem
Kebon Agung
Trimulyo
Mlati
Turi
Nganggglik
Seyegan
Pakem
Tempel

Source: Dipanen.id (2023)

secondary data. Primary data were obtained from observations and direct interviews with the farmers and chairman of auction market, while secondary data was sourced from the Department of Agriculture, Food and Fisheries of Sleman Regency. Farmers who received benefits could be seen from farmer satisfaction with services at auction market. Additionally, farmers were also suppliers of chilies at auction market could influence the effectiveness of auction market. This study was carried out in Special Region of Yogyakarta (DIY) Province, particularly in Sleman Regency one of the national chili center locations in Indonesia.

After obtaining the necessary data, it was then analyzed using a proportion test. This showed the comparative results of several populations represented by the sample studied regarding the relationship between the phenomena investigated (Devi, et al, 2015). When the effectiveness rate of auction market was less than equal to 50%, Sleman Regency Chili Auction Market had not been effective. When the effectiveness rate of auction market was more than 50%, Sleman Regency Chili Auction Market was effective.

The data analysis method used descriptive analysis and a fishbone diagram. Analysis of the effectiveness of chili auction market was analyzed using data from interviews with farmers based on three approaches, namely external approach, internal approach, and technical approach. Farmers interviewed were chili farmers who regularly sold their crops to auction market. The main problem in the implementation of auction market was analyzed using data from observations and interviews with auction market managers and could be illustrated with a fishbone diagram.

Fishbone diagrams were a method that could be used to identify potential causes of a problem to find the root cause of the problem (Raman and Basavaraj, 2019). The advantage of fishbone diagrams was that it was easy to readm and readers could quickly understand the root cause of a

problem. Fishbone diagrams were even able to describe in detail how the root cause of problem in each category. The causes of problems were grouped into main categories and the determination of the root cause of the problem could be more structured, using 5M, namely man, method, machine, material, and milieu.

RESULTS AND DISCUSSION

Auction market was a trading with competing bids to reach the highest price. The effectiveness of auction market in carrying out marketing functions could determine the welfare of farmers as producers.

The effectiveness of auction market was measured based on 3 approaches, namely external, internal, and technical. An organization was said to be effective when it could manage skills and resources from outside, coordinate skills and resources from internally to

Table 2. The Effectiveness Rate of Sleman Regency Chili Auction Market

Indicators	Interval Score	Average Score	Effectiveness Rate (%)
External Approach			
Reduce production costs for	1-5	4.12	82.40
Creating competitive price	1-5	3.40	68.00
Increase the supply of chili pep-	1-5	3.70	74.00
Creating cooperation between	1-5	2.19	43.80
Average			67.05
Internal Approach			
Provide convenience in transac-	1-5	3.95	79.00
Establish transparent pricing	1-5	3.14	62.80
Resolve issues quickly	1-5	3.63	72.60
Provide assembly points in differ-	1-5	3.93	78.60
Average			73.25
Technical Approach			
Improving the quality of chili peppers in auction market	1-5	3.35	67.00
Auction is held by SOP (Standard	1-5	3.12	62.40
Farmers satisfied with auction	1-5	3.47	69.40
No costs borne by farmers	1-5	4.02	80.40
Average			69.80
Overall Average			70.03

Source: Primary Data (Processed)

meet needs while increasing consumer satisfaction, and utilize skills and resources through technical implementation (Gareth R. Jones, 2013). Table 2 presented the percentage effectiveness rate of Sleman Regency Chili Auction Market.

External approach was used to measure how effective an organization was at managing skills and resources from outside the organization. The purpose of measuring the effectiveness through external approach was to determine the effectiveness rate of auction market in reducing production costs from farmers, creating competitive price, increasing chili supplies in auction market, and creating cooperation between PPHPM and farmers. The cost was 82.4% but in creating a competitive price was only 68%. The effectiveness rate of auction market in increasing chili inventory in Sleman Regency Chili Auction Market reached 74% while the effectiveness rate of auction market in creating cooperation was very small at 43.8% due to the absence of a written agreement between PPHPM Cooperative and chili farmers who sold to Sleman Regency Chili Auction Market.

Internal approach was used to measure the effectiveness of an organization's functions and operations. The effectiveness measurement through internal approach aimed to determine the effectiveness rate of auction market in providing convenience in transactions, forming transparent price, solving problems quickly, and providing gathering points in various regions. The effectiveness rate of auction market in providing ease of transaction was 79%. Additionally, the effectiveness of auction market in forming transparent price was only 62.8% because information related to chili price had not been widely spread to all farmers. The effectiveness rate of auction market in solving problems quickly was 72.6%, while the effectiveness of auction market in providing gathering points in various regions reached 78.6%.

Technical approach was used to evaluate an organization's ability to efficiently utilize skills and resources. The effectiveness measurement through technical approach aimed to determine the effectiveness rate of auction market in improving the quality of chili in auction market, ensuring that auction was under SOP, farmers were satisfied with auction market services, and there were no costs borne by farmers. The effectiveness rate in improving the quality of chili was only 67%. The same was the effectiveness rate of auction market in organizing auctions according to SOP which was only 62.4% due to the performance of human resources that had not been maximized. The effectiveness rate of auction market regarding farmers' satisfaction with auction market services was 69.4% and the effectiveness rate of auction market regarding the absence of costs borne by farmers was 80.4%.

According to Marta Seli et al. (2021), a well-managed auction market could help suppress price

fluctuations that were often complained by farmers. The selling price of chili had proven feasible although it sometimes decreases, but chili sold through auction market had a higher selling price than through direct traders (Devi et al., 2015). In addition, auction market was expected to be able to keep price stable and made sure farmers were not played by traders.

The effectiveness rate in all 3 approaches was good because it had an average value of 70.03%. This meant that Sleman Regency Chili Auction Market was effective. The effectiveness rate of each indicator was good, but there were rates below 50%. The statement on creating cooperation between PPHPM and farmers on external approach indicators had the effectiveness rate of 43.8%. This was because there was no written agreement between PPHPM and farmers who had decided to join and sell chili to Sleman Regency Chili Auction Market. The agreement between the 2 parties was very important to be written in detail because it could be used as a reference in cooperation.

Perkumpulan Petani Hortikultura Puncak Merapi which was previously called Puncak Merapi Horticultural Farmers Association was formed by 9 farmers who were worried about the sustainability of horticultural cultivation in Sleman. PPHPM was established in September 2013 by holding farmer mentoring activities regarding the proper cultivation of horticultural crops. Mentoring activities aimed to increase production yields but there were still some problems that disturbed farmers. One of these products was the marketing section of agricultural products, specifically chili. Therefore, chili auction market was formed which was still held manually.

Chili auction market in 2017 was organized by writing price on small papers. Furthermore, the small paper was folded and could be read sequentially after 8.00 p.m. Along with the development of technology, chili auction market also organized auctions through SMS (Short Message Service). Arriving at 8.00 p.m., incoming messages could be read simultaneously and the highest price could be selected. PPHPM transformed into a social institution in 2020 and then established cooperation with Bank Indonesia. This assistance lasted for 3 years and even helped provide halls and marketing systems. The hall was built to facilitate the holding of a chili auction market. The marketing system provided was in the form of a mobile-based application, namely Dipanen.id.

PPHPM had a horticultural marketing institution in the form of a marketing cooperative which was established in 2021. PPHPM Cooperative aimed to improve community welfare, specifically by increasing farmers' income. This cooperative was located on the Street. KM.15 Student Army Field, Kardangan RT. 02 RW. 27, Purwobinangun, Pakem, Sleman, DIY. PPHPM Cooperative had tried well in organizing Sleman Regency Chili Auction Market but there were

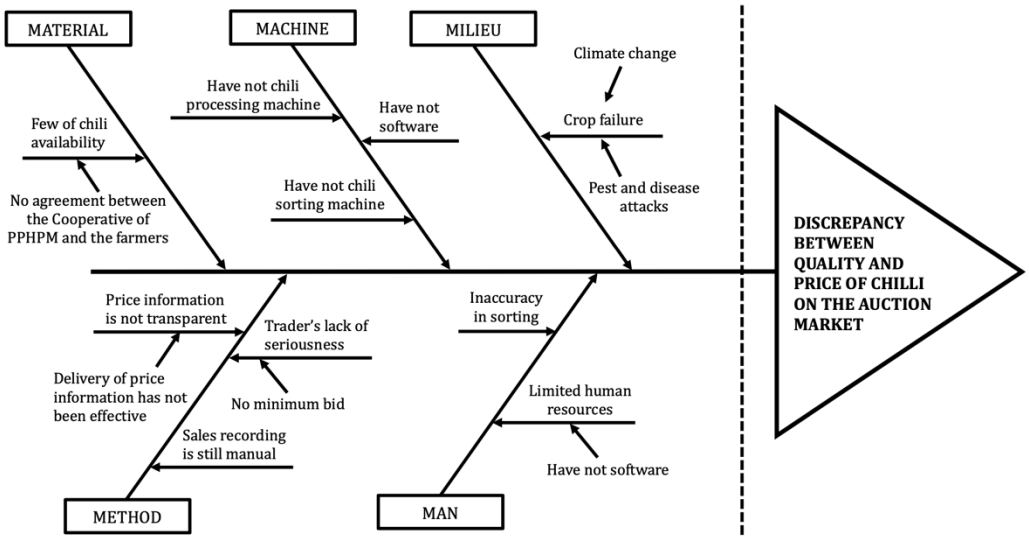

Figure 1. Fishbone Diagram of Main Problems in the Implementation of Chili Auction Market in Sleman Regency
Source: Processed Primary Data (2023)

problems in the implementation.

The effectiveness rate of auction market based on 3 approaches (external, internal, and technical) was 70%, meaning that Sleman Regency Chili Auction Market, auction DIY was already effective. However, chili auction market was still facing some problems, therefore, the main problem of this needed to be out. The implementation of Sleman Regency Chili Auction Market's main problem was the discrepancy between the quality and price of chili offered. The root cause of the problem was identified using fishbone diagrams through 5 main categories, namely material, machine, milieu, method, and man (Raman and Basavaraj, 2019). The root of the problem in the first category, material, was the availability of chili which was still small. That was because there were farmers who did not sell chili to auction market, and this was in line with the low effectiveness rate of auction market on indicators of cooperation between PPHPM and farmers. Farmers were reluctant to sell chili to auction market because there was no written agreement between PPHPM and chili farmers. The writing of the agreement aimed to provide legal certainty for the parties and served as perfect evidence, when disputes arose in the future (Suhadi and Fadilah, 2021).

The root of the problem in the second category, machines, was that there were no machines or supporting facilities that could help facilitate the implementation of auctions. Sleman Regency Chili Auction Market did not have a chili sorting machine and the process was carried out manually by auction market manager. This resulted in the quality of chili that did not pass the sorting that was returned to farmers because Sleman Regency Chili Auction Market did not have a chili

processing machine and farmers felt burdened and less satisfied. Sales data collection from farmers was hampered due to the absence of software such as computers and laptops that could be used at Sleman Regency Chili Auction Market. Therefore, a chili sorting machine, milling machine, and software for data input were needed.

The problem in the third category, milieu, was crop failure. Farmers had the potential to experience crop failure at a time of uncertain climate change. Similarly, when a prolonged dry season caused land drought, and even pest and disease attacks can lead to crop failure. According to Supatminingsih (2022), efforts to minimize the risk of crop failure were by providing knowledge related to chili cultivation technology and how to overcome pests and diseases. These efforts could be realized through counseling accompanied by agricultural experts, specifically on chili commodities. Great hope, farmers had high enthusiasm and were motivated to improve the quality of the crops.

The root of the problem in the fourth category, the method, namely sales recording was manual, and the trader's lack of seriousness, and price information was not transparent. Recording chili sales from farmers was done manually by handwriting and it was not effective. The development and synchronization between digital scales and "farmer cards" were needed to make it easier for managers and farmers to record sales. Farmer card in question was a card containing a QR code along with farmer identity. QR Code stood for Quick Response code which was a barcode consisting of a pattern of black and white pixels. According to (Tehusula et al., 2023), it was mentioned that QR Code system could help and facilitate officers in processing transaction data.

Requirements for traders also needed to be updated regarding regional boundaries to open opportunities for traders outside DIY and Central Java. The update of the requirements for the minimum bid price of chili in auction could be adjusted to BEP (Break Even Point) of chili in Sleman Regency. Acting Head of Sleman Agriculture, Food, and Fisheries Office, Suparmono, said that BEP for chili in Sleman Regency was around Rp12,500 per kilogram. This requirement update could reduce the risk of traders who provided price quotes below BEP and were considered not serious about buying because chili price information was the only information needed on that day. Price-related information could be misused by rogue traders because this offered farmers a higher price than the price in auction market.

The commodity auction market provided price transparency and efficiency, commodity quality and quantity assurance, and transaction settlement protection (BAPPEBTI, 2021). Price information at farmer level was not transparent due to ineffective information delivery, and there were still many farmers who did not know information related to price in Sleman Regency Chili Auction

Market. As stated by (Kusumah, 2018), farmers did not have adequate information about market conditions, cultivation technology, post-harvest, to chili processing. Subsequently, farmers only got information from fellow farmers or television.

The lack of information about market price could be used as an opportunity by traders to control the market to form an imperfect competition market (oligopoly) (Hilmiyah and Supriono, 2022), because traders could control the purchase price of farmers. When price at the consumer level were relatively fixed, traders could easily reduce the purchase price from farmers to maximize the profits obtained. This form of price transmission was very detrimental to farmers. Therefore, as a farmer, the development of chili price information must be followed.

Effective information delivery was the notion of effective communication. Rombean et al. (2021) stated that effective communication must contain messages that were easy to understand to promote communicants to give feedback and even change the attitude or behavior of the parties involved. The creation of effective communication was characterized by communicators and communicators who could create the same understanding as a result of communication. Therefore, the effort that could be made by PPHPM was to create effective communication with all chili farmers in Sleman Regency. Effective information delivery methods could be done through extension activities to farmers at all assembly points in Sleman Regency.

The problem in the fifth category, man, was the limited capability of auction market administrators in operating software due to the absence of software facilities that could be used for learning. In addition, managers were also not careful during the sorting process, resulting in the quality of chili which was not entirely good. Therefore, it was important to develop human resources both through training and mentoring as well as providing adequate facilities. Human Report Development was useful for improving the abilities, skills, attitudes, and responsibilities of employees in achieving organizational goals effectively and efficiently (Monalis et al., 2020).

CONCLUSION AND SUGGESTION

In conclusion, the effectiveness rate of auction market based on 3 approaches (external, internal, and technical) was 70%, meaning that Sleman Regency Chili Auction Market was already effective. However, chili auction market was still facing problems, namely the discrepancy in the quality and price of chili offered. The root of the problems in Sleman Regency Chili Auction Market included the availability of chili which was still small due to climate change, pest and disease attacks, no machines or supporting facilities, price information that was not transparent, and limited capability of auction market administrators.

Based on the results, the suggestions included (1) making an

agreement between PPHPM and chili farmers in Sleman Regency, (2) procurement of chili sorting machines, chili milling machines, and maintaining software (computers and laptops), counseling on cultivation, price information, and SOP of auction market to ensure the availability of chili, (3) update of chili price quotation terms to be adjusted to HPP as the basic price of chili in Sleman Regency, and (4) human resource development through training and assistance on software operation and provision of adequate facilities.

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