



Research Article

Has the COVID-19 Pandemic created a New Pattern of Sugar Cane Trading?

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Abstract | The pattern of sugar cane trading that occurred during the COVID-19 pandemic has created a new pattern of sugar cane trading in Indonesia. This study aims to determine the pattern of the trading system undertaken by sugarcane farmers, to reveal the role of social capital in shaping the sugarcane trade system during the pandemic. This research is a qualitative research that uses primary data from interviews with key informants by multistage sampling technique. The data processing includes data reduction, data display using Decision Explorer version 3.3 software. Data were analyzed through descriptive methods and content analysis. The study found that the COVID-19 pandemic formed a new pattern of sugarcane trading system, switching from a contractual trade model to a free market model (redeemer). The model refutes the theory stating that the contractual model will be more efficient than the free market model due to its lower transaction costs. The proposition (substantive theory) produced in this study states that in conditions of sugarcane commodities facing a captive market, the market mechanism is more efficient than the contractual mechanism. Furthermore, this study found that the development of accelerative information technology during the COVID-19 pandemic (social media) has destroyed social capital between sugarcane farmers and partners (sugar factories) due to cheaper information costs borne by sugarcane farmers.

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Introduction

The COVID-19 pandemic has created a new pattern of sugarcane trading. The farmers' participation in sugar cane trading is determined by the price and the social capital of the actors in the trading system (Deng *et al.*, 2020). Sugarcane high prices are a condition for farmers' involvement in agriculture. At

the same time, farmers from smallholder groups cannot access good information about the selling price of sugarcane. Sugarcane sales are no longer measured based on good sugarcane quality but on actors' price power and social capital (Hasan *et al.*, 2020). The COVID-19 pandemic has changed the sugarcane trade system into a process that legitimizes changes in the existing trading system. The short sugarcane

trade system should be a way to improve the economy of sugarcane farmers, but the opposite happens (Haqiqi and Horeh, 2021; Mercier, 2020).

So far, studies on the relationship between the COVID-19 pandemic and the pattern of sugarcane trading were inclined to analyze linear relationships, ignoring the nonlinear relationships that occurred widely in the sugarcane trade system during COVID-19. This linear trend can be seen in three types of research. First, the study of the relationship between the pandemic and the development of the sugarcane trade system cannot be separated from the influence of cultural and scientific patterns constructed by the local community (Zhan and Chen, 2021). Second, studies evaluating the trading system's performance during a pandemic are still growing (Ilesanmi *et al.*, 2021). Third, a study emphasizes the psychological aspect of changing trading patterns due to economic factors that were previously through a contractual mechanism (Kerr, 2020). The three trends in the correlative study between the pandemic and the sugarcane trade system pattern see the sugarcane trade system's pattern as a process of the relationship between farmers and the trading pattern, ignoring the function of the trading system to be a social capital bargain. For a long time, the farmers have believed the contractual trading system to gain a bargaining position against sugar factories.

This article is intended as additional knowledge and completes the shortcomings of previous studies regarding the relationship between the COVID-19 pandemic and the sugarcane trading system by analyzing whether there were changes in the sugarcane trading system during the COVID-19 pandemic. This research further reveals whether massive technological developments during the COVID-19 pandemic have distorted social capital that already exists in society. This research is very influential in changing farmers' income. Accordingly, two questions are answered in this study: (a) how the sugarcane trading process takes place and is carried out by sugarcane farmers during the pandemic; (b) how is the influence of information technology on social capital in the business system during the pandemic.

This paper is based on an argument that social capital directly influences the trading system pattern and restrictions on sugarcane farmers in selecting a trading pattern in line with that the economy also affects the sugarcane trading economy. (Bocharnikova and

Matichenkov, 2020; Janker, 2020). Economic influence determines the pattern of sugarcane trading in its sales. Small farmers with narrow land and far away cannot access sugar cane prices or determine sales. Such limitations that are influenced by the background of sugarcane farmers have become the basis for determining the pattern of sugarcane trade. When the economy is affected and cannot determine the selling price of sugar cane, farmers from small groups will get a lower price than farmers from large groups.

Materials and Methods

The relationship between the COVID-19 pandemic and the sugarcane trade system is explained through qualitative research that relies on primary data (Corven *et al.*, 2021). Primary data was collected from respondents using a multistage sampling technique (Elahi *et al.*, 2020; 2021a; 2021b). First, primary data was collected through direct interviews with sugarcane farmers who are not members of farmer groups, five farmers and farmers who are members of sugarcane farmer groups, and three farmers. Second, these eight key informants were selected based on their experience during farming and selling agricultural products; they were aware of and experienced this incident firsthand. The information obtained from the eight key informants is sufficient (saturated) information required in this study. Third, Primary data with in-depth interviews are used as the basis for analyzing the relationship between the new sugarcane trade system and the COVID-19 pandemic.

This research involves sugarcane farmers who are not members of the sugarcane farmer group and sugarcane farmers who are members of the group. (The description of these two groups was obtained from direct interviews with informants). Sugarcane farmer groups are presented concerning the experiences the farmers have experienced. Farmers' difficulties were identified through in-depth interviews. Farmers who are members of sugarcane farmer groups are also identified with various characteristics and different difficulties. The two groups of participants were identified from the interviews to evaluate and analyze their experiences in the sugarcane trading system during the COVID-19 pandemic.

Research on the pattern of sugarcane trading during the COVID-19 pandemic took place through the primary data collection stage through in-depth interviews with key informants. First, primary data

was collected through direct interviews with sugarcane farmers who are not members of farmer groups, five farmers and farmers who are members of sugarcane farmer groups, and three farmers. Second, each sugarcane farmer was interviewed separately, and a triangulation process was carried out to obtain the validity of the data. Implementing this informant triangulation process and the validity of the data is also to dispose of data that other informants do not support. The data sourced from the interview results with these informants became the basis for analyzing the relationship between the sugarcane trade system and the COVID-19 pandemic.

The data processing process takes place through three stages and two data processing techniques. The three stages include: (a) data reduction as a process of organizing data in a more systematic form, especially thematically; (b) display data as an effort to present research results in the form of images (interview results that have been analyzed using Decision Explorer Version 3.3) (O'Kane *et al.*, 2021); and (c) data verification as a stage of data inference, especially following the trend of the data obtained. The data processed through these three stages were analyzed through descriptive and content analysis methods (Bengtsson, 2016; Hays and McKibben, 2021). Data description as the basis for the interpretation process was carried out contextually. Content analysis is carried out following the process shown by Spradley (Prehofer *et al.*, 2021). Content analysis was used to analyze the understanding of the text trying to describe it objectively and systematically and then interpret it. These stages include formulating problem questions, sampling the data, making categories, coding, scaling, and interpreting. The analysis stages and the analytical techniques allow us to conclude the relationship between the new sugarcane trade system and the COVID-19 pandemic.

Results and Discussion

The interview results with sugarcane farmers who are not members of sugarcane farmer groups and sugarcane farmers who are members of sugarcane farmer groups. The findings include sugarcane farmers, sugar factories, government, traders, Regional House of Representatives (DPRD), communities, and redeemers. The groups above influence the new pattern of the sugarcane trading system. The interview results with informants have shown the linkage of each trading

system actor to the formation of a new pattern; a decrease follows the tendency of this new pattern in the number of sugarcane sales in the old pattern of the sugarcane trading system. Farmers through farmer groups in interviews said:

“The absence of government regulations has also strengthened the change in the sugarcane trading system pattern. Changes in the pattern of sugarcane trading that took place due to the lack of strict rules in it, rules that can guarantee and protect the existence of sugarcane farmers and the domestic sugar industry.”

The old sugarcane trade system before the COVID-19 pandemic, sugarcane farmers who were members of sugarcane farmer groups and sugarcane farmers who were members of groups, most of them sold sugarcane harvests to farmer groups or the Indonesian People's Sugar Cane Farmers Association (APTRI) since the establishment of sugar factories in Indonesia. Sugar factories have always fostered the old sugarcane trading system in their respective working areas. Through APTRI, the sugarcane farmers' complaints and needs for sugarcane cultivation are accommodated by Association; APTRI is seen by sugarcane farmers who are members of sugarcane farmer groups can fight for the aspirations of sugarcane farmers. On the other hand, farmers who are not the sugarcane group also sell through the old trading system pattern. Sugarcane trading by sugarcane farmers to APTRI through a mechanism determined by APTRI, all stages of the cutting schedule, felling officers, and transport fleet were provided by the association. APTRI is a marketer of sugar cane owned by farmers, as the person in charge of all risks owned by sugar cane farmers.

The old sugarcane trading system incorporated in farmer groups or sugarcane farmers who are not members of farmer groups is an inseparable network and their groups. Every farmer has the same opportunity and role in the sugarcane trading system, including sugarcane cultivation and selling their sugarcane harvest. The role of the government, APTRI and sugar factories, and the involvement of the entire network of business actors above affects the development of the old sugarcane trading system. Developments that occurred before the COVID-19 pandemic showed the integrity of an economic group for the welfare of all sugarcane business actors (Agizan and Bayramoglu, 2020; Syarifudin and Ishak, 2020; Udjiyanto *et al.*,

2021). However, after the COVID-19 pandemic, the old pattern of the sugarcane trading system began to shift and began to be replaced by a new pattern of the sugarcane trading system.

The new trade system was marked by the COVID-19 pandemic, which gave new business actors. This new trade system's actors are sugar cane redeemers, and sugar cane redeemers are usually in groups. Farmers, through interviews, said:

"The redeemer comes from out of town, usually has several slashing assistants. A slashing assistant is expected to provide information if sugar cane is ready to be harvested to be sold. The task of the redeemer assistant is limited to informing the existence of such information. The task of each redeemer is to find raw materials for sugar cane from farmers who are not members of the farmer group, but it does not rule out the possibility of farmers who have joined the farmer group."

Farmers who are members of farmer groups can also sell sugar cane to the redeemer; the price given by the redeemer is indeed higher than the purchase of the sugar factory. In addition to higher prices, the redeemer pays the farmers in cash (Hariyono, 2021). The price formed between the farmer and the redeemer is the price agreed upon by both of them. Prices between sugarcane farmers always vary depending on the quality of sugarcane. The farmers' decision to sell sugar cane is transferring ownership rights from farmers to the redeemer.

The interview results with informants were analyzed using the Decision Explorer version 3.3 software as follows:

Figure 1 shows the linkages formed as many as 18 loops; the analysis results of the actors' linkage in the trading system that has little attachment are loop 5, loop 10, loop 13, loop 14, loop 15, the fewer actors involved in the loop, the linkage is not essential. The linkage of sugar cane sales by sugarcane farmers to redeemers is considerable. Furthermore, the relationship between actors can be seen in the loop analysis. The analysis of the linkage of actors in loop 11 and loop 12 trading systems shows that the more involved in the loop, the more critical the linkage is.

The new pattern of the sugarcane trading system is

characterized by sugarcane price negotiations between sugarcane farmers and redeemers. For the first time, farmers usually take a long time to negotiate by selling to the redeemer; apart from social relations, the price offered is usually not appropriate. The transaction process between sugarcane farmers and redeemers is done transactionally. This relationship is temporary, time-bound and the amount of sugarcane traded is limited. Sugarcane farmers are increasingly interested in this new pattern because it is more efficient than previously; the money disbursement from the sugar cane sale is done in cash. The rule applied by the redeemer is that the final calculation of the sugar cane scale is less than one quintal, then the sugar cane is considered 0; it is not considered in the cane scale count. According to the farmers, this regulation was conveyed before the sugar cane sale and the purchase agreement. This regulation is a new pattern for the sugarcane trade system during the COVID-19 pandemic.

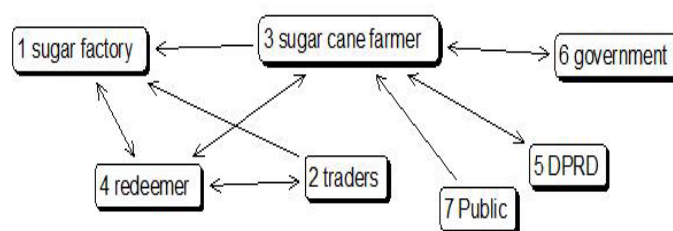


Figure 1: Relationship between business actors.

Loop 1 set contains: sugar factory, sugarcane farmers, redeemer; **Loop 2 set contains:** sugar factory, sugarcane farmers, redeemer, governments; **Loop 3 set contains:** sugar factory, sugarcane farmers, redeemer; **Loop 4 set contains:** sugar factory, traders, redeemer; **Loop 5 set contains:** sugar factory, redeemer; **Loop 6 set contains:** traders, sugarcane farmers, redeemers, DPRD; **Loop 7 set contains:** traders, sugarcane farmers, redeemers, governments; **Loop 8 set contains:** traders, sugarcane farmers, redeemer; **Loop 9 set contains:** sugar factory, traders, sugarcane farmers, redeemer; **Loop 10 set contains:** traders, redeemer; **Loop 11 set contains:** sugar factory, traders, sugarcane farmers, redeemer, DPRD; **Loop 12 set contains:** sugar factory, traders, sugarcane farmers, redeemer, governments; **Loop 13 set contains:** sugarcane farmers, DPRD; **Loop 14 set contains:** sugarcane farmers, governments; **Loop 15 set contains:** sugarcane farmers, redeemer; **Loop 16 set contains:** sugarcane farmers, redeemer, DPRD; **Loop 17 set contains:** sugarcane farmers, redeemers, governments; **Loop 18 set contains:** sugarcane farmers, DPRD, governments.

The farmers' price determination of sugarcane sold to the sugar factory is lower than the price given by the redeemer. In addition to higher prices, redeemers also make cash payments to sugarcane farmers. The sugar factory cannot do this method in which the payment by the sugar factory is made after the sugar auction

has been completed and paid for by the auction winner. During the COVID-19 pandemic, farmers and APTRI rarely held regular member meetings due to government regulations prohibiting meetings in one room. For a long time, sugarcane farmers felt they did not get enough information about the purchase price of sugarcane. One of the causes that made the shift in sales by sugarcane farmers carried out through the old pattern began to be replaced with a new pattern.

In the results of the analysis of Figure 1 above, the relationship between the COVID-19 pandemic and the new pattern of the sugarcane trade system has been linked to interest groups in the sugarcane trade system. The interest groups are sugar factories, traders, sugar cane farmers, redeemers, and the government. The groups' roles have their own goals, including sugar factories aiming to maximize profits from processing sugar cane into granulated sugar, traders aiming to make profits from the difference between buying and selling sugar cane. Meanwhile, sugarcane farmers aimed to get the highest price of sugar cane sales, cutting aims to get profits from sugarcane purchases made to farmers and the government as regulators of sugarcane trading system policies (Gyapong, 2020; Jagdambe and Kannan, 2020; Murray-Prior, 2020). The role of groups can be described from the interests of each group.

The new sugarcane trading system based on these interests has emerged from the establishment of a sugar factory. Still, the new pattern of the sugarcane trading system during the COVID-19 pandemic emphasizes that this new pattern is becoming more real. In addition, what triggers a new pattern of sugarcane trading system is the decline in sugarcane farmers' trust in the group leader. The head of a sugarcane farmer group in a sugarcane farmer community is a symbol of a role model in the local community; before the covid 19 pandemic, the group leader and APTRI management always gave directions and information about sugarcane market info and obstacles in selling sugar cane. Group leaders and administrators often hold regular meetings with sugar factories that foster sugarcane farmers. Since the COVID-19 pandemic hit, these routine meetings have become unscheduled, and it seems as if the farmer and the chairman are at a distance. It made the strength fostered and preserved began to falter during the covid 19 pandemic. The following is a picture of the patterns of the sugarcane trade system.

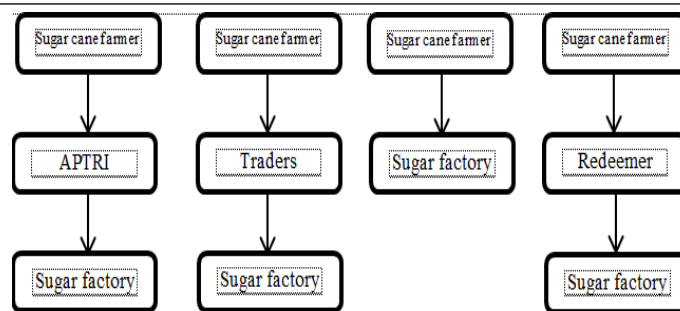


Figure 2: The pattern of sugarcane trading.

The COVID-19 pandemic has changed the local community's pattern of selling sugar cane inherited from generation to generation. Starting from the sugar factory establishment, their ancestors have passed down the sales pattern that has been created for hundreds of years since the factory was founded. The local culture has maintained and tested the old pattern of sugar cane sales consisting of sugarcane farmers, farmer groups, or APTRI and sugar factories (contractual model). During the COVID-19 pandemic, the sugarcane pattern was slowly replaced by a new pattern of sugarcane trading system consisting of slashing sugarcane farmers and sugar factories (free-market model), as shown in Figure 2. There is also an adjustment in the price of the sugarcane during the COVID-19 pandemic. The farmers get paid Rp. 72.000/100kg, 41% higher than the price before pandemic. The role of the APTRI chairman as a figure who has strong trust in the sugarcane farmer community when the COVID-19 pandemic began to erode (Kingsley *et al.*, 2020).

This study has proven a change in the sugarcane trading pattern; this change is marked by a decrease in the sugar cane supply to sugar factories through APTRI and an increase in sugarcane farmers who sell sugar cane to the redeemer. Sugarcane farmers in selling sugarcane crops during the COVID-19 pandemic prioritize the price of sugar cane as if the price of sugar cane has led farmers to make transactions. Usually, the patterns of community culture and science constructed have the power to determine this pattern of sugar cane sales. Culture and science are now only about sugarcane cultivation (Zhan and Chen, 2021). Sugarcane sales are more dominant than ever in the market mechanism. Culture is local wisdom that should be maintained, including in the sugarcane trade system of the local community.

The new pattern of sugarcane trading that was formed during the COVID-19 pandemic needs to be given

serious attention by the DPRD and the government. The existence of solid and binding regulations will protect the sugarcane farmers themselves. On the other hand, if there are no solid and binding regulations, in the long term, farmers will be disadvantaged, and sugar factories that do not have sufficient raw material land will close their sugar industry. Currently, this is the beginning that must be done immediately to fix the national sugar industry; the role of the DPRD and the government needs to make sugarcane trading regulations to protect sugarcane farmers in the continuity of the national sugar industry. The land for sugarcane raw materials is 20% of the sugar factory's milling capacity. Land ownership can be seen in [Table 1](#).

Table 1: *Informant's Identity.*

No	Informant's identity of Sugar Cane farmers	Land Area (ha)	Informant's identity of Sugar Cane farmers group	Land Area (ha)
1	Mr. Faturrahman	2,2	Mrs.Gravika	4,1
2	Mr. Rahman	1,6	Mr. Rofi	2,6
3	Mr. Candrasa	0,8	Mr. Fauzi	3,9
4	Mr. Tohari	1,8	Mr. Baihaqi	3,8
	Total	6,4		14,4

The new pattern of the sugarcane trading system clearly shows us that high sugarcane buying prices influence sugarcane sales; when the covid 19 pandemic is ongoing until now, it is necessary to make regulations regarding the sugarcane trading system immediately. The regulations are expected to inhibit the sale of sugar cane to redeemers by inhibiting the distribution of sugarcane concentrated in the region. The need for raw materials for sugar cane for the regional sugar industry will be fulfilled. The slayer who attended was an example of an increase in the income of sugarcane farmers, although this income only applies to individuals and farmers' families. When the COVID-19 pandemic began to emerge, a new pattern of sugar cane trading began to emerge; leaving the old pattern of sugar cane trading; sugarcane farmers began to calculate profits as soon as their sugarcane was sold to the redeemer.

A study ([Heerman, 2020](#); [Kao and Sapp, 2020](#); [Khoshmaram et al., 2020](#)) has shown that the local community's influence of cultural and scientific patterns can determine new patterns of commerce. Other research ([Ilesanmi et al., 2021](#); [Kustepeli et al., 2020](#); [Syarifuddin and Ishak, 2020](#)) shows that selecting a sugarcane

trading system is a way for the improvement and welfare of sugarcane farmers.

The government needs to ensure the welfare of sugarcane farmers through regulation of the sugarcane trade system with the certainty of the sugar cane purchase price by the sugar factory. Good trade regulation will ensure the availability of sugarcane supply. Sugarcane will be concentrated in sugar factories in their respective regions to save fuel and transportation time and not cause negative externalities for the community. At the same time, the certainty of the purchase price of sugar cane will ensure an increase in the standard of living of farmers and the welfare of sugarcane farmers.

Conclusions and Recommendations

The discussion of the research above, we can draw the following conclusions: a. when the covid 19 pandemic formed a new pattern of sugarcane trading system consisting of farmers and redeemer, the old pattern of trade system (contractual model) began to shift with many farmers selling sugar cane to redeemer (free-market model); b. the social capital that has been maintained by the local community with the existence of redeemer is starting to erode and fade. The accelerated development of information technology during the COVID-19 pandemic has destroyed social capital between sugarcane farmers and partners (sugar factories) due to cheaper information costs borne by sugarcane farmers.

For the sake of the existence of sugarcane farmers in the national sugar industry, it is necessary to arrange a sugarcane trade system that can guarantee the purchase price of sugarcane farmers. Farmers are no longer suppliers who do not have a bargaining position; more than that, the role of farmers is strategic. This strategic position needs to be regulated by regulations that can accommodate the interests of sugarcane farmers and the sugar industry's interests. The current COVID-19 pandemic has shown that sugarcane is a strategic commodity that is contested as raw material for the sugar industry. The price of sugar cane formed during the COVID-19 pandemic is through a market mechanism that legitimizes the institutions built since the establishment of the sugar factory. The limitation of this research lies in the small number of key informants who participated in the interview.

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Novelty Statement

The sugarcane price formed during the Covid 19 pandemic was through a market mechanism that legitimized the institutions built since the establishment of the sugar factory. The model refutes the theory stating that the contractual model will be more efficient than the free market model due to its lower transaction costs. The proposition (substantive theory) produced in this study states that in conditions of sugarcane commodities facing a captive market, the market mechanism is more efficient than the contractual mechanism.

Authors' Contribution

Zainuri: Designed, Supervised the research, and also wrote the manuscript.

Mochamad Rizal Umami: Wrote the manuscript, data analysis, and informant interview.

Sebastiana Viphindartin: Data analysis and wrote the manuscript

Rafael Purtomo Somaji: Wrote the manuscript

Conflict of interest

The authors have declared no conflict of interest.

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