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Sociological Factors Influencing Paddy Yield Production in Malaysia's Granary Area

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Abstract: The paddy industry is one of the main industries concentrated in the national plan, which aims to reach a production level of 3.62 million tons by 2030. The industry's ability to reach production levels depends on the ability of farmers to produce sufficient production by 2030. The level of production is still low and it is necessary to understand why this is happening from a sociological point of view. A sociological perspective by Paulus Wirutomo of Model of Structure, Process and Culture was used to understand the differences in daily paddy activities that affect yield production. The study was conducted in all granary areas in Malaysia with a total of 618 respondents over main and off seasons during the period of RMK11. The structural part explains to what is provided by the authority and law that was the guideline for them to follow the need for the necessary conditions for successful cultivation. With all the necessary prerequisites, the farmers' agricultural practices (process section) must be carried out accordingly, such as regular inspections of the granary and good management of the agricultural practices to be fully carried out. Fulfilling both the structural and the process section, it also indirectly benefits the culture section, which is created when the impact of the trainings attended and trusted sources of information allow farmers to carry out their agricultural activities well and meet expectations of environmental factors sites and good agricultural practices also have an indirect impact on achieving good yields. Therefore, the structural section, provided by the government through its agency, enables the process to be conducted successfully with the impact on the farmers that have created the cultural benefits needed from the perspective of the farmers. But to ensure how structure-process-culture benefits farmers by producing higher yields, all the prose must be done with full commitment from farmers.

Keywords: Culture, Process, Sociology and Structure

1. Introduction

The country's paddy industry is a commodity that was developed before independence. According to Mohamaed Halib (2004), paddy is a crop grown mainly in Perak since the 16th century. In the direction of the post-colonial era, the importance of the raw material paddy continued to grow until it included states such as Kedah, Perlis, Kelantan and Selangor and is still the focus today. The opening of grain storage areas such as Lembaga Kemajuan Pertanian Muda (MADA), Lembaga Kemajuan Pertanian Kemubu (KADA) and Integrated Agricultural Development Area (IADA) focused on paddy cultivation, as in IADA Penang, IADA Barat Laut Selangor, IADA KETARA, IADA Kemasin Semerak, IADA Rompin and more. In addition, the process of changing the status of non-grain areas to grain areas shows the seriousness and importance of paddy for the country.

The projection in the National Agrifood Policy 2.0 (DAN 2.0) is to increase the country's paddy production by 2.16% per year so that the country can reach a production level of 3.62 million tons by 2030. But, referring to Rosnani Harun (2015), the production level from 1990 to 2013 was only 2.63 tons and still nowhere near the desired level of 3.62 million tons. This shows that the country's production level still cannot reach the desired level of domestic demand, and the country still needs to import paddy to meet domestic demand.

The country's inability to reach this level of production is seen as a shortcoming in efforts to ensure a sufficient supply of paddy and rice in the country. This inability is due to several factors such as low practice in using technology (Rosnani, 2016), control of paddy imports by Padiberas Nasional Berhad (BERNAS), paddy quality and production

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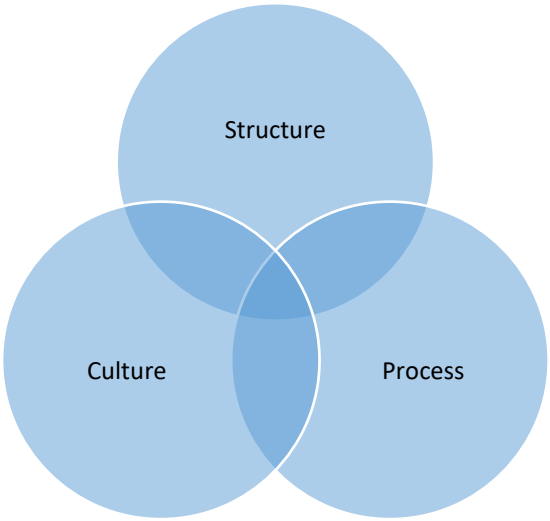
productivity is still low, and farmers not using recommended agricultural practices (Noorlidawati, 2015), are a factor in the fact that the country's production level is currently not being successfully achieved.

This study will allow us to identify the behaviors that bring these farmers to their own levels of productivity based on the Paulus model of structure-process-culture. This study aims to understand which sociological factors, behaviors and practices among farmers in the granary area influence variance yield.

2. Methodology

This study uses a structural model by Paulus Wirutomo (2011). The Structure-Process-Culture model shows that the relationship of structure, process and culture can determine the course of event when we looking at the problem in the sociological approach (Figure 1). Through this model, it will determine how effective the work culture performed by farmers in farm management and daily activities determine the success of yield production.



Source: Paulus Wirutomo, 2011.

Fig. 1: The model of Structure-Process-Culture

Wirutomo (2011) and Herman (2013) explain the concept of Structure-Process-Culture in a way that the three dimensions overlapping-related, in order to develop the concept of social development in a very systemic and sociological way. Therefore, to understand the model for this study, some modifications were made to meet the necessary requirement using the model. Throughout the study, each section will explain the purpose and effect of each activity related to each section (Figure 2). In the structure section, it will explain ability to government policy relation and rule in structuring the behavior. For process section, it will explain how does the farmer action in contributing the production yield and culture section will explain the norm of the way of the working habit influence the yield.

Structure	Relationships between social groups that have formal and informal power in society. It is usually a government institution or a group that has a voice in the
Process	A dynamic process that results 'day by day' without formal methods that are based on structure and culture. The implementation process that exists or does not exist as a result of
Culture	A system that has values, norms, beliefs and traditions used by the community to shape behavior. Is a system that is usually inherited or exists later as a result of structural

Fig. 2: Explanation of structure, process, and culture.

The study used a stratified sampling method. Farmers and service providers are randomly selected from each area. The data was collected using a structured questionnaire from each granary area. The analysis was conducted with descriptive analysis using SPSS Statistics V23 to find the highest percentage of response in each item that reflect each respond with the model. The study was conducted in all 12 granary areas in Malaysia with a total of 618 respondents (Table 1). The data collection took place in two seasons, namely the peak season and the off-season in the period of RMK11.

Table 1: List of respondents by granary area years of survey conducted.

Granary	Respondent	Year of survey conducted
1. MADA	60	2016
2. IADA Pulau Pinang	60	
3. KADA	60	2017
4. IADA Ketara	40	
5. IADA Kemasin Semerak	30	
6. IADA Seberang Perak	60	2018
7. IADA Kerian	60	
8. IADA Barat Laut Selangor	60	
9. IADA Pekan	40	2019
10. IADA Rompin	27	
11. IADA Batang Lupar	63	2020
12. IADA Kota Belud	58	
Total	**618**	

The question has been constructed base on the model to see the sociological factors influencing yield production the with each section consist of three items in structure, three in process and seven item in culture as in table 2. The better or higher the response for each item, the more likely it helps yield production as a result of sociological practices affecting the outcome.

Table 2: Sociological factors influencing paddy yield production

Structure	Process	Culture
● Location and infrastructure ● Farm management assistance ● Financial assistance	● Monitoring ● Farm activities according to planting guidelines ● Problems & constraints	● Training Benefits ● Increased knowledge from the training ● Trust in information sources ● The effectiveness of the information provided by the agency ● Environmental factors ● Location factors

3. Results and Discussion

The number of respondents on 12 granary area within Malaysia are 618 consist of the same farmers in two seasons. For each granary having in range of 1.47 tan to 6.6 tan per ha, with average 4,64 tan/ha, which is slightly higher than national average of 4.4 tan/ha in 2020 (Table 3).

Table 3: Number of respondent and average yield by granary.

	Respondent	Average Yield
1. MADA	60	6.4
2. IADA Pulau Pinang	60	6.6
3. KADA	60	5.57
4. IADA Ketara	40	5.13
5. IADA Kemasin Semerak	30	4.36
6. IADA Seberang Perak	60	5.6
7. IADA Kerian	60	4.59
8. IADA Barat Laut Selangor	60	6.3
9. IADA Pekan	40	3.35
10. IADA Rompin	27	3.35
11. IADA Batang Lupar	63	1.47

	Respondent	Average Yield
12. IADA Kota Belud	58	2.97
Total	618	4.64 (average)

3.1 Structure section

In the structural section, it is basically a pattern of relationships (especially power relations) between individuals or social groups that imperatively and coercively limits and regulates the interactions and interrelationships in society. Usually, it refers to what is provided by the authority or the condition or manual and law that was the guideline for them to follow. To understand what is provided by the authority, three variables were asked to the farmer either the variable were provided accordingly.

Table 4. Sociological factor persuading yield production on structure section

Indicator		Respond	Description
Location and infrastructure		100%	All the granary area develops on sites equipped with all necessities such as development agency (MADA, KADA, IADA), a water system near the planting area, a specific plot area with the right type of soil for paddy planting and facilities to support the activities.
Farm management assistance	Attend the training	53%	Most farmers have taken trainings on agricultural practices or paddy cultivation.
	Receive subsidies	100%	All farmers receive a subsidy, which is granted based on the specified requirements.
Financial assistance		100%	All farmers receive the subsidy, which is granted based on the specified requirements.

The results show that the government, as the main formal power in structural aspects, created the necessary structures such as location and infrastructure, management support and financial support that satisfied the farmers (Table 4).

3.2 Process section

For the process section, it explains the dynamics of informal and day-to-day interactions between members of society that have not yet been formally structured or cultivated. It's either the working prose or the problem that arose along the prose. To understand it better, three variables were asked consist of monitoring process, farm management activity process and problem &constraint.

Table 5: Sociological factor persuading yield production on process section

Indicator		Respond	Description
Monitoring Process		4 days	Most farmers monitor their granary four times a week
Farm Management Activity Process	Seed Preparation	64%	Farmers **sometimes** follow rice check's recommendations for these activities
	Method Of Planting / Sowing Seeds	100%	Farmers **always** follow rice check's recommendations for these activities
	Land Preparation	49%	Farmers **rarely** follow rice check's recommendations for these activities
	Land Plowing	66%	Farmers **sometimes** follow rice check's recommendations for these activities
	Water Management	75%	Farmers **often** follow rice check's recommendations for these activities
	Fertilization	73%	Farmers **sometimes** follow rice check's recommendations for these activities
	Weed Management	47%	Farmers **rarely** follow rice check's recommendations for these activities
	Pest & Disease Management	59%	Farmers **sometimes** follow rice check's recommendations for these activities
	Post-Harvest Management	98%	Farmers **often** follow rice check's recommendations for these activities
Problem & Constraint	Cost Of Capital	80%	There are **extremely** concerned about this matter.

continued

Indicator		Respond	Description
	Workforce	69%	There are **moderately** concerned about this matter.
	Technology	74%	There are **moderately** concerned about this matter.
	Input	70%	There are **moderately** concerned about this matter.
	Infrastructure	67%	There are **moderately** concerned about this matter.
	Diseases & Pests	76%	There are **extremely** concerned about this matter.
	Post-harvest	70%	There are **moderately** concerned about this matter.
	Agency services	65%	There are **moderately** concerned about this matter.

Based on the result, frequency of four times per week is good practice for their granary when monitoring field surveillance practices. For farm management practices, two activities that rarely been doing by the farmers are land preparation and weed management. By not doing these practices regularly in each season, it can increase the weed at the field. For others practices such as seed preparation, land plowing, fertilization, and pest & disease management, sometime are done by service provider and not been done by the farmers them self. Problems they usually find are related to capital cost where there is high input cost and lack of capital to cover operational costs during the planting session. It was somehow reflected in the fight against diseases and pests. Other issues are seen as having a moderate impact on their practices (Table 5).

3.3 Culture section

Culture is specifically defined here purely subjectively as: a system of values, norms, beliefs, customs and traditions that are internalized by individuals, communities or all members of society and thereby form the patterns of behavior and attitudes from within (Wirutomo,2014). Therefore, in this section we will examine the relationship as all structural and process sections are continued to argue how they shape the sociological factor. Culture section representee on six items.

Table 6. Sociological factor persuading yield production on culture section

Indicator	Respond	Description*
Training Benefits (how training that given to the farmers meet the expectation and need in gaining new information or knowledge in the perspective of the farmers themselves)	74%	The farmers **satisfied** with the trainings that have been attended related to agricultural practices or related to paddy cultivation.
Knowledge enhancement from the training (how the training can increase the level of knowledge in the perspective of the farmers themselves)	83%	The farmers **very satisfied** with the knowledge enhancement from the training attended.
Trust in information sources (how the source of information obtain by the farmers are trustworthy in the perspective of the farmers themselves)	76%	The farmers **very satisfied** with the information that been share with them by the respective parties.
The effectiveness of the information provided by the agency (level of effectiveness of the information provided by the agency to the farmers benefit the farmers in the perspective of the farmers themselves	70%	The farmers **satisfied** with the effectiveness of the information provided by the agency
Environmental factors	76%	The farmers consider that environment factor is **very influential** in the yield production
Location factor	81%	The farmers consider that location factor is **very influential** in the yield production

*Indicator: 0%-25%: Not very satisfied/ influential, 25%-50%: Not satisfied/ influential, 51%-75%: Satisfied/ influential, 76%-100%: Very satisfied/ influential.

The training attended by the government agency or even the private sector and the effectiveness of the information provided by the agency gives a satisfied response from the farmers. The farmers have also increased their knowledge through the trainings and have very satisfies in the information they receive. Other issues related to the environment, location and best practices, farmers said, had a very influential on the yield production aspect (Table 6).

4. Conclusion

The identified sociological factors explain how sociological aspects indirectly affect farmers in improving their agricultural yields in paddy. The sociological aspects of structure, process and culture show how institutions and the preparation of structures act on the initiation of the process, i.e., the activities carried out in the successful implementation of agricultural and cultural practices explain the indirect effect on the structure and the process for increasing results.

Through the structural part, it is shown that the government policy has created sufficient conditions and requirements that farmers need to manage their farms, such as location and infrastructure, operational management support and financial support. The government has provided sufficient assistance and required it within the limits of its ability in relation to government policy and rule in structuring structural behavior.

After all the necessary things that should be provided have been provided by the authorities, it allows farmers to carry out their daily farming activities based on the provided paddy guide. The process section explains that the farmers did their part to ensure that farming method practices were fully applied. Nonetheless, there is some work that needs to be done better to ensure the process is being performed to the full standard of operation as recommended in the Rice Check. The lack of some activities like soil preparation and weed control can result in yield losses. In addition, our farmers are aware of the risk involved in farming operations as farmers are really concerned about the rising cost of capital and problem related pests and diseases.

The cross-section between the structure-process-culture section shows how an ideal cohesion of a social unit develops from the micro level (individual), the meso level (community or organization) to the macro level (society, national or global). Therefore, the structural section, provided by the government through its agency, enables the process to be conducted successfully with the impact on the farmers that have created the cultural benefits needed from the perspective of the farmers. But to ensure how structure-process-culture benefits farmers by producing higher yields, all the prose must be done with full commitment from farmers.

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Conflict of Interest

The authors declare no conflicts of interest.

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