The dynamics of household residence and decision making where to purchase rice in a sustainable development era: A case study in urban and rural Indonesia

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Abstract. Food security is a condition in which food is available to every individual at any time, both physically and economically. In line with the Sustainable Development Goals, the Indonesian government has made efforts to improve food security, especially rice as main staple food. This study aims to know the form of purchased rice of household in urban and rural areas and to examine the relationship between household residences on decisions about where to purchase rice in a sustainable development era. This study uses micro data of 1047 households, consists of 486 urban households and 561 rural households. The data was collected through web survey in August 2020, then it was analysed by using descriptive method. The results showed that households in urban and rural Indonesia had quite different decisions in purchasing rice. The rice purchasing in modern places, such as supermarkets and minimarkets, is mostly carried out by urban households. Meanwhile, rice purchasing in non-modern places, such as markets and rice millings, is mostly performed by rural households. In addition, households in the rural area also prefer to buy uncooked rice from rice milling and farmers, and some households do not buy rice since they have owned rice fields. The number of household who buy cooked rice is larger in urban than in rural. Urban household is more widely on where to purchase rice than rural households.

1. Introduction

Goal 2 of the Sustainable Development Goals (SDGs) is to end hunger, achieve food security and improved nutrition and promote sustainable agriculture [1]. To achieve the goal of zero hunger by 2030, targets are set which are measured through indicators. The targets are to eliminate hunger and malnutrition, increase agricultural productivity, ensure sustainable food agriculture, and manage genetic diversity [2]. The efforts made to achieve these targets are described in the policies, programs and activities to be carried out by the government and non-governmental organizations [2]. The Indonesian government is trying to achieve food security by increasing production and diversifying food so that dependence on rice decreases [3]. In addition, the government also tries to make food available and affordable in all regions of Indonesia, both in urban and in rural areas.

The pattern of household consumption in urban and rural areas is very interesting to observe. There are several types of food that are mostly consumed in the regions rural versus urban. The biggest difference is in the rice commodity [3]. Monthly Average Consumption per Capita in urban areas is 6,018 kg, while in rural areas it is 7,365 kg. Figure 1 illustrates the weekly average consumption per capita of rice in urban and rural Areas in 2011–2018. From this figure, it can be seen that rice...
consumption in rural areas is greater than in urban areas. This condition may occur due to differences in household income in urban and rural areas, where the average income of urban households is higher than that of rural households. According to [4] per capita rice consumption tends to decrease with increasing household income. The larger household income, the more diverse the source of calories. They shift to noodles, flour, eggs, chicken meat and milk to reduce consumption of calories from rice [5].

There has never been a study that examines the effect of household residence on decisions about where to buy rice. Previous research has focused on consumer behavior or rice purchase decisions [6–8]. Bunyasiri and Sirisupluxana [9] stated that modern trade, supermarket and convenient store are the main marketplaces to purchase rice of Chengdu consumers. Nurmalina and Astuti [10] explained that consumer decisions in determining where to buy rice differ between social classes. The lower class often buys rice in warung or shop/food stalls/groceries, the middle class in the traditional market, and the upper class in the modern market.

Access to food, especially rice, both in rural and in rural is very important in the era of sustainable development. Therefore, it is very interesting to study about where urban and rural people buy rice, so that we can know how to access food in the rural and urban areas. This is very important to ensure the availability of food for all levels of society wherever they live. Food access involves physical access to a place where food is available is an important element of food security that rural households concerned [11]. This also affects rural households whether to sell their rice production to the market or for their own consumption. Farm household in rural areas increase their rice self-consumption when prices are high [12].

This study aims to know the form of purchased rice of household in urban and rural areas and to examine the relationship between household residences on decisions about where to purchase rice. This is the first study to observe how households in urban and rural areas buy rice based on the form of rice (cooked and uncooked) and the place of purchase.

2. Methods
This study applies descriptive method by comparing the household in urban and rural areas in making decision about place to purchase rice [13]. This study uses micro data of 1047 households, consists of 486 urban households and 561 rural households. The data was collected through web survey in August 2020. The rice commodity in Indonesia usually has many points in the distribution channel to reach consumers. Where consumers live will affect how to buy rice. Households in urban and rural areas both have several option places for buying rice.
The flow of observations in this study uses the path of purchasing rice by urban and rural households as depicted in Figure 2. As rice consumers, urban and rural households buy rice in the form of uncooked or cooked rice or both. For uncooked rice, it can be purchased at rice milling, farmer, relative/friends/neighbors, shops/food stalls/groceries, market, supermarket, mini market, online, office. Meanwhile, cooked rice can be purchased at restaurants, markets, supermarkets, mini markets and online.

![Figure 2. The path of rice purchase](image)

3. Results

3.1. Overview of respondents
Table 1 illustrates household characteristics in the study area. Respondents in this study were dominated by female. Household income in rural areas is mostly in the range of 1–5 million (IDR/month), while household income in urban areas is dominated by the group of > 5 million (IDR/month). It is concluded that the average income of urban households is greater than that of rural households.
Table 1. Household characteristics

|                        | Rural | Urban |
|------------------------|-------|-------|
| Gender of respondent   |       |       |
| - Male                 | 156   | 154   |
| - Female               | 405   | 332   |
| Age (years)            | 37    | 38    |
| Income (%)             |       |       |
| < 1000000 (IDR/month)  | 23    | 15    |
| 1000000 – 5000000 (IDR/month) | 43.3 | 36.8  |
| > 5000000 (IDR/month)  | 33.7  | 48.2  |
| Number of households   | 561   | 486   |

3.2. The form of purchased rice

Households in both urban and rural areas predominantly buy rice in the form of uncooked rice. However, for purchases in the form of cooked rice, there are more households in urban areas than in rural areas. Likewise for the purchase of a combination of uncooked and cooked rice, the percentage of household in urban is larger than that in rural areas. This is due to the differences in culture and habits of urban and rural communities. Households in rural areas prefer to cook their own rice instead of buying cooked rice. Meanwhile, households in urban areas, due to their busy work and tight time, prefer the simplicity of buying cooked rice (see the Figure 3).

3.3. Dynamics in making decisions about where to buy rice

Household residence results in dynamics in making decisions about where to buy rice. The location of residence in urban or in rural areas can influence decisions about place and in what form they purchase rice. Based on Figure 3, in general there are some differences between households in urban and rural areas. Nevertheless, both of them mostly buy rice only at shop/food stalls/groceries, it is about 44% of urban households and 50.2% of rural households, respectively. Besides that, about 10.6% of households in rural areas and 4.9% of households in urban areas buy rice in the market. On the other
hand, urban households that purchase rice at supermarkets are larger than in rural areas, namely 7.2%, while in rural areas only 3%. This is consistent with Swasta [14] stated that there are differences in location preferences for urban and rural to market and supermarket use because of the unequal behaviour of consumers in urban and rural areas. Furthermore, 5.9% of rural households buy uncooked rice in rice milling, while in urban only 0.8%. Rural households also like to buy rice directly from farmers, it is about 1.4%, while 3.6% admit that they never buy rice, because they have their own rice fields and some of the rice productions are stored for their own consumption. Buying rice directly from rice milling and farmers is believed to be cheaper and the purity of the rice is more guaranteed. The behaviour of households who own their own rice fields and save their production for self-sufficiency is in accordance with Ani and Antriyandarti [12]. There are about 0.6% of urban households also own rice fields and stated that they never bought rice. This household who owns rice fields lives in the border area between the urban and the rural areas, or it is called suburban.

![Figure 4. Number of respondents based on where to buy rice (in %)](image)
The invasion of franchise mini markets reaching rural areas has prompted rural households to buy daily consumer products in mini market [15] it is about 1.8% of rural households purchase rice in there. And in urban, 3.5% of households buy rice at mini markets. Besides those main places to purchase rice, both urban and rural households buy rice at some places. From Figure 3, it can be indicated that urban households have more varied places to purchase rice. About 12.3% of urban households and 5.9% of rural households buy rice at Shops/Food Stalls/Groceries and Markets. Urban household is also identified to consume rice through online purchase besides offline purchases. For both urban and rural households, around 1.2% households buy rice from Relatives/Friends/Neighbors due to close relationship and kinship factors. In general, it can be concluded that the purchase of rice in modern places, such as supermarkkets and minimarkets, is mostly carried out by urban households. Meanwhile, rice purchasing in non-modern places, such as markets and rice milling, is mostly performed by rural households. Rural household also prefer to buy rice at shop/food installs/groceries or usually called warung. As for cooked rice, urban households are more likely to buy it in restaurant. The difference in household income implies differences in purchasing decisions. This finding corresponds to Nurminalina and Astuti [10].

4. Conclusion

Households in urban and rural Indonesia had quite different decisions in purchasing rice. Even though, both of them predominantly prefer shops/food stalls/groceries for purchasing uncooked rice, purchasing in modern places are dominated by urban households. In addition, households in the rural area also prefer to buy uncooked rice from rice milling and farmers, and some households do not buy rice since they have owned rice fields. The number of household who buy cooked rice is larger in urban than in rural. Urban household is more widely on where to purchase rice than rural households. They purchase cooked rice in the restaurant, market, supermarket, mini market and online. The results of this study imply that there is an institutional of rice purchasing access in urban and rural areas that have been running according to household characteristics. Therefore, in the sustainable era, strengthening institutional of rice purchasing access must be considered. The development process must not weaken the existence of local place to purchase rice.

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