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Conceptual Paper

A Conceptual Exploration of Factors Influencing Local Rice Patronage in Gombe Metropolis

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Abstract

Agriculture serves as a fundamental pathway for poverty alleviation and food security, yet domestic rice production in Nigeria faces significant patronage challenges despite its economic potential. This conceptual study explores the various factors influencing the patronage of locally produced rice within the Gombe Metropolis. The main objective of the research is to examine how variables such as family size, cost, and accessibility shape consumer preferences and market demand for local rice. Adopting a conceptual research approach based on scouting analysis, the study synthesizes insights from an extensive review of existing literature, empirical reports, and agricultural datasets. Findings indicate that while larger households and lower relative costs drive local patronage, structural barriers—including poor mechanization, inconsistent quality, and limited market accessibility—often push urban consumers toward imported alternatives. The implications of the study suggest that without targeted interventions in the local rice value chain, Nigeria's goal of self-sufficiency will remain undermined by consumer preference gaps and high production overheads. Based on these insights, the study recommends that the government provide affordable mechanization and credit to farmers while strengthening distribution networks to ensure local rice is as accessible as imported brands. Limitations of the study include its reliance on secondary data and a lack of primary empirical evidence specifically from the Gombe urban consumer demographic. Therefore, suggestions for further research include conducting a field-based quantitative study using the double-hurdle model to correct for selectivity bias and performing a comparative analysis of local rice quality versus consumer perception in Northeast Nigeria.

Keywords: *Family Size, Cost, Accessibility, Quality, Local Rice Patronage.*

1.1 INTRODUCTION

Agriculture remains one of the strongest pathways to ending extreme poverty worldwide. It plays a central role in improving shared prosperity and is essential for feeding an estimated 9.7 billion people by 2050. Evidence shows that growth in agriculture is two to four times more effective in raising the incomes of the poorest than growth in any other sector. In fact, a 2021 report revealed that about 65% of poor working adults earn their livelihood from farming. For the 80% of the world's poor who live in rural areas, agriculture is not only a source of income but also a major factor in food security. The World Bank highlights this importance by remaining one of the biggest supporters of global agriculture, committing about US$6.8 billion through IBRD and IDA (World Bank Group, 2020). Rice production, for example, has steadily increased by an average of 1% each year over the past decade, reaching 486.7 million tons in 2017 (Bui & Nguyen, 2024). Asia accounts for 89% of this output, with China and India leading at 29.6% and 22.6%, respectively. Outside Asia, rice production has also grown rising to 15% of global output in 2017, up from 12% two decades earlier (Ouma et al., 2024).

Across Africa, agriculture holds enormous potential. The continent has vast arable land, abundant water resources, a youthful workforce, and large markets advantages that could help eliminate hunger and strengthen food security. Recognizing this, the African Union in 2010 identified agriculture as a key pillar of the New Partnership for Africa's Development (Akanbi et al., 2024). The sector remains central to African economies and contributes significantly to poverty reduction, intra African trade, industrialization, environmental sustainability, and job creation (NEPAD, 2020). Nigeria mirrors this continental trend. Agriculture forms a major part of its non-oil economy, alongside sectors such as ICT, hospitality, finance, and education. The sector consists of four main activities: crop production, livestock, forestry, and fishing (Ekanem et al., 2020). According to the National Bureau of Statistics, agriculture contributes about 25% of Nigeria's GDP valued at N4.575 trillion and employs roughly 70% of the labor force. Key outputs include cassava, yam, cocoa, peanuts, rubber, fish, and various livestock. While most of these products are consumed locally, a portion is exported. National agricultural development is overseen by the Federal Ministry of Agriculture and Rural Development (FMARD) (Wang, 2024).

In response to Nigeria's heavy dependence on imported rice, the Federal Government has made deliberate efforts to promote domestic rice production. Through various financial support programs targeting cereal farmers especially rice growers government aims to boost both dry-season and wet-season farming (Yarkoni, 2022). Yet despite these interventions, Nigeria still struggles to meet local demand. Local rice is often abundant in markets but receives poor patronage, as many consumers prefer imported varieties. This low demand contributes to both structural and demand-deficient challenges in domestic rice processing. Nevertheless, Nigeria has the capacity to produce a wide range of rice varieties for both consumption and commerce. In many parts of the country, rice farming is becoming increasingly market-oriented, although rice consumption itself is relatively new in several regions (WARDA, 2023). Rice thrives in high-rainfall areas and remains a staple food in the country. The most widely consumed type in Nigeria is the parboiled long-grain white rice. However, local rice continues to face low acceptance whenever foreign alternatives are available. This preference gap weakens Nigeria's processing sector and undermines its self-sufficiency goals. Globally, rice remains one of the most important cereals, feeding nearly half of the world's population (Dogara & Jumare, 2020).

1.2 STATEMENT OF PROBLEM

Nigeria's level of agricultural mechanization remains very low only about 0.3 hp/ha, compared to 2.6 hp/ha in India and 8 hp/ha in China. The country has an estimated 22,000 agricultural tractors, far below the 1 million in China and 2.5 million in India. This weak mechanization is largely due to low farmer income, limited access to affordable financing, and inadequate technical skills. These challenges restrict the effective adoption of mechanization across the rice value chain.

Although several studies in Nigeria have examined rice consumption, patronage, and production and many agree that rice is a key staple with strong economic potential (Blanc et al., 2021) most of the research has focused on identifying constraints to domestic rice production or explaining rising consumption patterns (Alfred & Adekayode, 2020). Other studies have explored consumer preferences for local rice mainly within rice-producing regions (Creppy et al., 2024; Ekanem et al., 2020; Ajayi & Ajiboye, 2020; Ogundele, 2020). However, these findings may not reflect the realities of non-producing areas, particularly urban centers in Northeast Nigeria.

Additionally, previous studies did not account for selectivity bias in their analytical methods, an issue that can be corrected using more robust models such as the double-hurdle approach. Importantly, none of the existing studies have specifically examined the factors influencing local rice patronage in Gombe Metropolis. To the best of my knowledge, research on this topic is scarce, creating a clear gap that this study seeks to address.

1.3 RESEARCH QUESTIONS

i) What is the relationship between family size and local rice patronage in Gombe metropolis?
ii) What is the relationship between cost and local rice patronage in Gombe metropolis?
iii) What is the relationship between accessibility and local rice patronage in Gombe metropolis?

2.0 LITERATURE REVIEW

2.1.1 Concept of Rice patronage

Rice (Oryza sativa) is a major cereal crop and one of the world's most important staple foods. Nearly half of the global population especially in East and Southeast Asia depends on rice for daily nutrition, and about 95% of all rice grown is consumed directly by humans. It can be boiled, ground into flour, or used in foods like noodles, cereals, and beverages such as Japanese sake. The rice plant is an annual grass that grows up to about 1.2 meters, with long leaves, hollow stems, and grain bearing clusters called panicles. Rice varieties differ in grain size, shape, and yield potential (Blanc et al., 2021).

2.1.2 Domestication and Cultivation

Rice has ancient roots, with early cultivation traced to China between 7000 to 5000 BCE. Today, over 90% of global rice comes from Asia mainly China, India, Indonesia, and Bangladesh. Rice is also grown in parts of Europe, the Americas, and Australia (Rodriguez, 2023). Most rice varieties require flooded fields (paddies). Seeds are first planted in nursery beds, and then transplanted into water covered fields. Terracing is common in hilly regions. Successful production depends on irrigation, fertile soils, and long hours of sunlight. Yields vary widely, from 700 to 4,000 kg per hectare. Before harvesting, fields must be drained and dried, and grains must reach proper moisture levels for safe storage.

2.1.3 Rice Processing and Uses

Harvested rice, called paddy, is covered by a husk. Milling removes the husk and sometimes the bran layer. Brown rice retains the bran and more nutrients, while white rice after further milling loses many vitamins and minerals (Rodriguez, 2022). Parboiled and enriched rice help retain or restore nutrients.

Modern rice mills use advanced drying and polishing systems, though in many Asian regions, traditional milling practices still exist. By products such as bran, husks, and straw are used for livestock feed, oil extraction, fuel, packing materials, fertilizer, and even industrial chemicals (Wang, 2024; Lotha, 2024).

2.1.4 Rice Production in Nigeria

Rice is one of Nigeria's most widely consumed staple foods, with about 7 million tons eaten annually. After the government restricted rice imports in 2015, local production and demand rose sharply. Many rice mills such as Abakali, Lake Rice, Anambra Rice, and Labana have since expanded operations (Blanc et al., 2021; RIFAN, 2022). Nigeria is Africa's largest rice producer, harvesting about 8.4 million tons yearly. However, it still imports around 2 million metric tons, making it one of the world's top rice importers. Local production surged from 2 million tons in 2015 to 9 million tons in 2021, yet smallholder farmers still struggle due to limited technology and mechanization.

Rice consumption in Nigeria stands at 32 kg per person annually. Local rice accounts for 57% of consumption, while the remaining 43% comes from smuggled or illegal imports (NBS, 2021). Rice farming significantly contributes to Nigeria's GDP and employs over 12 million people across production, marketing, and sales (RIFAN, 2022).

2.1.5 Concept of Family Size

Family size refers to the total number of individuals living within a household, particularly the number of children. It plays a significant role in shaping an individual's early life experiences and has strong implications for both social and economic development. Researchers typically distinguish between a family of origin, which is the household a person is born into, and a family of procreation, which is the household formed in adulthood. Unlike fertility which measures the number of births relative to the population of women family size offers a more practical lens for understanding how household dynamics influence personal outcomes, resource allocation, and wellbeing. This makes family size or sib ship size particularly useful for studies examining individual and household development (Yang et al., 2021; Blanc et al., 2021).

2.1.6 Concept of Cost

Cost refers to the monetary value of resources sacrificed to produce or acquire goods and services. It captures not only the money spent but also the materials, time, effort, and risks involved in any economic activity. In economics, the idea of cost is closely tied to opportunity cost, which represents the value of the next best alternative that must be given up when a choice is made. Costs are classified in different ways depending on their purpose. By nature, they include outlay costs, which involve actual spending such as rent, fuel, or electricity, and opportunity costs, which reflect the benefits forgone when one option is chosen over another. In terms of traceability, costs may be direct, meaning they can be clearly linked to a specific product or activity, or indirect, which support overall operations but cannot be traced to a single output. Accounting distinguishes between accounting costs, which are recorded expenses like raw materials and machinery, and economic costs, which include both actual expenditures and lost alternatives. Other common classifications include fixed and variable costs, private and social costs, as well as incremental and sunk costs. Understanding these cost categories enables businesses and policymakers to plan effectively, manage resources efficiently, and make informed production and financial decisions (Ouma et al., 2024; Creppy et al., 2024).

2.1.7 Concept of Accessibility

Accessibility refers to designing spaces, information, and services in ways that allow the widest range of people to use them comfortably and independently. This includes practical features such as ramps, elevators, wide walkways, and easy to read signs. Although many of these features are essential for people with disabilities, they ultimately benefit everyone parents pushing strollers, elderly individuals, travelers carrying luggage, and even people navigating unfamiliar

environments (Bui & Nguyen, 2024). At its core, accessibility is about removing physical, informational, and technological barriers so that people can interact with their surroundings with dignity and without unnecessary struggle.
An accessibility user is essentially anyone whose ability to use a product, space, or service is limited, whether temporarily or permanently. This includes individuals with physical, sensory, or cognitive disabilities, older adults, people facing health challenges, those with low literacy or language barriers, individuals with limited income or digital skills, and even people who lack reliable access to technology (Wang, 2024; Creppy et al., 2024). In this sense, accessibility is not a special feature for a few it is a universal approach that supports everyone at different points in their lives.

2.2 Conceptual Framework for the study

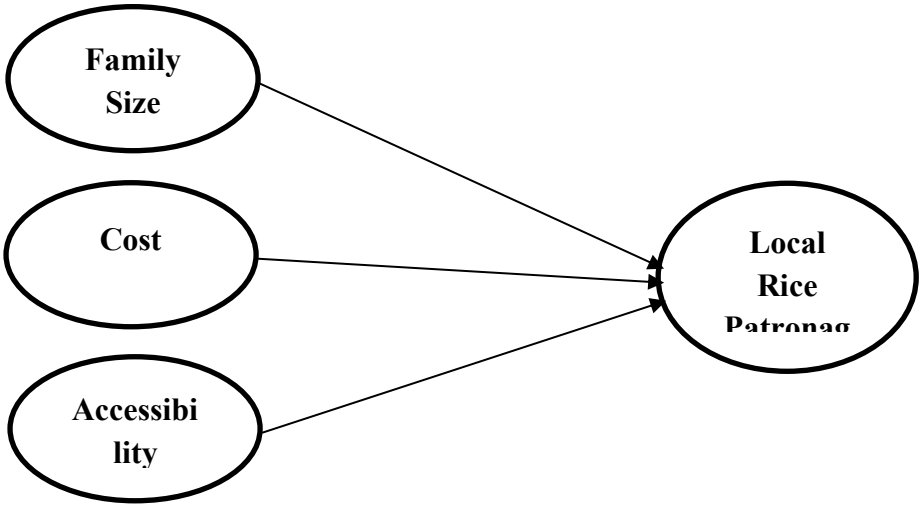

Figure 1: Conceptual Model developed by the researchers, 2026

2.3 EMPIRICAL REVIEW

2.3.1 Family Size and Local Rice Patronage

Ibrahim (2021) examined how the Tungan-Kawo irrigation scheme influenced rice production in Wushishi LGA of Niger State. Using the Yamane formula, 400 farmers were selected through purposive sampling and surveyed through questionnaires and interviews. With a high response rate of over 91%, the findings showed that most farmers (66.8%) were between 18 and 38 years old, suggesting a youthful and active farming population. The study also revealed a strong gender imbalance 93% were men and most respondents (92.1%) were married. These household characteristics, including family size, play a major role in labor availability, consumption patterns, and ultimately the patronage of local rice.

Similarly, Afrifa (2021) explored why consumers patronize fast food outlets in Ghana. From a population of 770 consumers, 253 were surveyed using structured questionnaires. Findings showed that dishes like fried rice, waakye, and jollof rice were the most frequently consumed, while foods such as pizza, burgers, and kelewele were least preferred. These results highlight how household size, food preferences, and lifestyle patterns all shape consumer choices including rice consumption behaviors.

2.3.2 Cost and Local Rice Patronage

Akanbi et al. (2024) compared the production costs and returns of upland and lowland rice farmers in North Central Nigeria using data from 387 farmers. Their analysis showed that households typically had large family sizes (around 9 members), which affects labor availability and cost structures. Upland farmers in Kwara State incurred higher production costs, but lowland farmers earned higher net profits overall. Key cost elements fertilizer, herbicides, seeds, pesticides, and labor significantly influenced farmers' revenues. Limited access to affordable inputs, inadequate credit, and poor storage were major constraints.

In Kenya, Ouma et al. (2024) assessed the economic benefits of adopting the System of Rice Intensification (SRI). Over a four year period, SRI increased per-acre production costs by 63%, yet still delivered higher returns about 28.6% more profit per shilling invested. This demonstrates that while new technologies may raise initial costs, they can improve long-term profitability for smallholders.

Bui and Nguyen (2024) evaluated the economic damage caused by PM2.5 pollution to rice yields in LXQ. Their findings showed a substantial reduction in rice output about 15,729 tons lost in 2018 translating to an economic loss of approximately USD 121 million. This shows how environmental costs, though indirect, significantly affect rice production and market supply.

Likewise, Piao et al. (2020) examined factors shaping consumer preferences for rice using data from 300 respondents. Important attributes included packaging, swelling capacity, grain stickiness, availability, price, and the degree of whiteness. Improving these quality attributes is essential to increase patronage for local rice.

Raymond and Njiddari (2021) studied sources of capital and labor for dry season rice farmers in Adamawa State. Their analysis revealed a positive relationship between access to finance, labor availability, and rice output, highlighting how production costs and financial constraints influence local rice supply and consumption.

Adams et al. (2020) explored the link between ecosystem based income and household poverty in Bangladesh. They found that income from natural resources, including rice ecosystems, reduced the likelihood of poverty and dissatisfaction. This reinforces the economic importance of rice production for rural livelihoods.

2.3.3 Accessibility and Local Rice Patronage

Wang (2024) applied perspectives from new institutional economics and political ecology to understand how power structures shape collaboration in agri-food supply chains. The findings showed that while farmer networks in the edamame value chain tended to be socially supportive, relationships within the rice value chain sometimes led to negative outcomes such as indebtedness. These structural barriers affect farmers' access to markets, inputs, and fair pricing key factors that influence the availability and patronage of local rice.

Similarly, Creppy et al. (2024) used a discrete choice experiment to analyze Ghanaian farmers' preferences for inclusive business models (IBMs) in the rice sector. Their results showed that 55% of farmers preferred joint venture arrangements, especially those offering shared decision making, fair pricing, and reliable payment systems. Accessibility to supportive institutional arrangements influences farmers' willingness to participate and remain competitive.

Obayelu et al. (2023) examined how household characteristics affect rice purchasing decisions in Oyo State. Using data from 174 households, the study found that consumers' choices were shaped by education, marital status, expenditure levels, price, and access to credit. Imported rice was preferred largely because it was easier to prepare, while low patronage for brown local rice was linked to high prices and perceived poor quality. These findings show that accessibility in terms of affordability, knowledge, and market availability strongly affects local rice patronage.

Finally, Iorlamen and Ogah (2021) assessed the impact of agricultural cooperatives on rice farmers in Benue State. Cooperatives significantly increased rice output, with a notable difference between farmers' productivity before and after joining. Access to cooperative services including input supply, information, and credit enhanced productivity, demonstrating how institutional accessibility contributes to higher rice output and potential increases in local rice patronage.

2.4 Maslow's Hierarchy of Needs

Abraham Maslow introduced his theory of human motivation in 1943 through his paper A Theory of Human Motivation and later expanded it in his 1954 book, Motivation and Personality. The theory, known as Maslow's Hierarchy of Needs, suggests that human needs are arranged in a hierarchy, with basic needs taking priority over higher level needs. According to Maslow, individuals are motivated to satisfy their fundamental requirements (physiological needs) first before seeking social, esteem, or self-fulfillment needs.

The hierarchy is typically divided into five levels. Physiological needs include essentials such as food, water, shelter, and sleep. The need for food which form the basis for Maslow's physiological need relates to this study under investigation. Once these are met, safety needs emerge, encompassing personal security, stability, and protection. Love and belonging needs refer to the human desire for social connections, friendships, family, and intimate relationships. Esteem needs involve the pursuit of self-respect, recognition, and achievement, while self-actualization needs represent personal growth, creativity, and the fulfillment of one's potential. While widely recognized, Maslow's theory has faced criticism. It has been labeled culturally biased, as it reflects Western values that may not universally apply. Some argue that it oversimplifies human behavior and ignores individual differences, while others question the empirical support for the strict hierarchical order. Moreover, it can be difficult to determine which needs are truly fulfilled, as personal perceptions of needs vary widely.

Despite these critiques, Maslow's Hierarchy of Needs remains a cornerstone in understanding human motivation. Scholars like Iorlamen and Ogah (2021) note that many researchers have adapted or expanded the theory, and alternative frameworks such as Manfred Max-Neef's Fundamental Human Needs and Self-Determination Theory have been proposed. Nevertheless, Maslow's model continues to provide valuable insights into how human needs influence behavior, decision-making, and personal development.

3.0 METHODOLOGY

This study takes a conceptual approach, drawing on existing research, reports, and scholarly literature to explore the factors that influence local rice patronage, such as family size, cost, and accessibility. Rather than collecting new data, the study carefully reviews and synthesizes past studies, identifying trends, patterns, and gaps in knowledge. By examining these insights, the study builds a clear understanding of the topic and provides a framework for thinking about how these factors shape consumer behavior and rice consumption in local contexts.

4.1 FINDINGS

From the review of existing studies, it is clear that several factors shape people's preference for locally produced rice. Family size influences consumption, as larger households naturally buy more rice to meet their needs. Cost also plays a big role affordable rice is more likely to be purchased, while high production costs and limited access to inputs can affect supply and prices. Accessibility matters too; rice that is easy to find in local markets or shops is more likely to be chosen, whereas poor distribution or limited awareness can discourage buyers. Together, these factors show that local rice patronage is influenced by a mix of household needs, economic realities, and market conditions, highlighting areas where interventions could improve both production and consumption.

The findings reveal that several factors work together to shape people's preference for locally produced rice. Family size plays a clear role households with more members naturally consume more rice to meet daily needs. This makes sense, as larger families have higher food requirements, which directly drives the demand for staple foods like rice (Ibrahim, 2021; Akanbi et al., 2024).

Cost is another major influence. People are more likely to buy rice that fits their budget, while high production costs and limited access to affordable inputs can make local rice more expensive and less attractive (Ouma et al., 2024; Piao et al., 2020). This suggests that reducing production costs or supporting farmers with subsidies or financing could encourage greater consumption of locally produced rice.

Accessibility also matters. Rice that is easy to find in markets and shops is more likely to be purchased, whereas poor distribution or lack of awareness can limit its reach (Wang, 2024; Obayelu et al., 2023). Improving supply chains, expanding market networks, and raising awareness about the benefits of local rice could help increase its patronage.

Overall, the discussion underscores that local rice patronage is shaped by a mix of household needs, economic realities, market access, quality perceptions, and social factors. Addressing these areas through policy, market support, and awareness initiatives can strengthen the production and consumption of local rice.

5.1 CONCLUSION

Local rice consumption in Nigeria is shaped by a mix of practical and social factors. Larger families naturally consume more, while affordability, availability, and quality influence everyday choices. People's income, education, and awareness also play a role in deciding whether to buy local or imported rice. Understanding these influences can help farmers, policymakers, and stakeholders create strategies that make local rice more appealing, widely available, and sustainable strengthening both livelihoods and food security across the country.

5.2 RECOMMENDATIONS

i) Support Farmers: Provide affordable inputs, access to credit, and modern processing facilities to reduce production costs and improve the quality of local rice.
ii) Enhance Accessibility and Awareness: Strengthen distribution networks, promote local rice in urban and rural markets, and educate consumers about its nutritional and economic benefits.
iii) Encourage Collaboration: Foster partnerships among government, cooperatives, and private stakeholders to implement policies and initiatives that sustain local rice production and consumption.

5.3 Implications of the Study

The findings of this research have significant practical and policy implications for the agricultural and economic landscape of Gombe State and Nigeria at large:

i) For Policy Makers: The study implies that government interventions should move beyond just increasing "production" to enhancing "marketability." Policies must address the price gap between local and imported rice and improve the physical infrastructure (roads and markets) that ensures local rice is accessible in urban centers.

ii) For Local Farmers and Millers: There is a clear implication that Quality is King. Even if the rice is local and affordable, consumers may still reject it if it contains stones or lacks the "long-grain" aesthetic of imported varieties. Farmers must focus on post-harvest processing and modern milling to compete.
iii) For Economic Security: By increasing patronage of local rice, Gombe State can reduce its "capital flight" (money leaving the local economy to pay for foreign imports). This strengthens the local currency and creates a more resilient food system
iv) Social Implications: Since family size is a driver of consumption, there is a need for "bulk-purchase" incentives or community-based distribution models that make it easier for large households to acquire local rice at a lower per-unit cost.

5.4 Suggestions for Further Research

To build upon this conceptual framework, future scholars should consider the following:

i) Empirical Quantitative Analysis: Conduct a field survey using the Double-Hurdle Model or Probit Regression to statistically measure the impact of variables like household income and education on the probability of local rice patronage in Gombe.
ii) Comparative Quality Study: Perform a laboratory or "blind taste test" study comparing the nutritional value and sensory attributes (taste, smell, texture) of local Gombe rice versus the top three imported brands.
iii) Impact of social media/Marketing: Explore how digital marketing and "Buy Nigerian" social media campaigns influence the perceptions of the younger, urban generation in Gombe Metropolis.
iv) Supply Chain Bottlenecks: A study focusing specifically on the Logistics and Distribution layer—why local rice often reaches the market slower or in poorer condition than smuggled imported rice.
v) Gender Roles in Patronage: Investigate the role of women as the primary "food purchasers" in the household and how their specific preferences dictate local rice demand.

5.5 Limitations of the Study

While this paper provides a strong theoretical foundation, it is characterized by the following limitations:

i) Conceptual Constraint: As a conceptual exploration, the study lacks primary data (surveys/interviews). Therefore, the findings represent "theoretical likelihoods" rather than statistically proven facts within the Gombe context.
ii) Geographic Focus: The study is restricted to Gombe Metropolis. The patronage factors in urban centers may differ significantly from rural areas, where local rice might be the only available option regardless of quality or cost.
iii) Scope of Variables: The study focused on family size, cost, and accessibility. However, it did not deeply explore other critical factors such as political instability, insecurity (farmer-herder conflicts), or seasonal price fluctuations which heavily impact local rice availability.
iv) Maslow's Hierarchy Bias: The use of Maslow's theory assumes that rice consumption is purely a "Physiological Need." In many urban settings, the choice of imported rice is often an "Esteem Need" (status symbol), a nuance that may require a different psychological framework to fully capture.

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