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Consumer Preferences for Rice Quality Attributes in Traditional Markets in Pangkajene and Kepulauan Regency

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Abstract

Rice quality policies and marketing strategies are often designed based on formal quality and product packaging, although many households in Indonesia still evaluate rice directly in traditional markets. This study examines how consumers rate the importance and perceived market performance of nine rice attributes in Pangkajene and Kepulauan (Pangkep) Regency, South Sulawesi. A market-based survey was conducted using an accidental sampling technique, resulting in 53 end consumers. Respondents rated brand, price, packaging, aroma, grain integrity, cleanliness, cooked rice texture, whiteness, and shelf life on a five-point scale. Descriptive statistics, importance-performance gaps, and data-centered importance-performance analysis (IPA) were used. Cleanliness received the highest importance rating (4.68), followed by cooked rice texture (4.04) and price (4.02). Brand (3.43) and packaging (3.49) received the lowest importance ratings. The mean perceived performance (3.45) was lower than the mean importance (3.86), and price showed the largest negative gap (-1.19), followed by cleanliness (-1.08). Using the overall average as a benchmark, price is the only attribute that is clearly "focused here." Cleanliness and texture of cooked rice fall in the high importance/high performance quadrant, while packaging, aroma, grain integrity, whiteness, and shelf life fall in the low importance/high performance quadrant relative to the sample average; brands are low on both dimensions. These findings suggest that affordability is the most immediately perceived drawback, while hygiene and food quality should not be sacrificed in price stabilization or product differentiation strategies.

Keywords: rice quality; consumer priorities; traditional retail; importance-performance analysis; affordability.

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INTRODUCTION

Rice remains central to food consumption and food policy in Indonesia. National rice production for human consumption was estimated at 30.62 million tonnes in 2024, while weekly household consumption data continue to show the prominence of rice in Indonesian diets (Badan Pusat Statistik [BPS], 2025a, 2026). This dependence makes retail rice quality and affordability consequential for both household welfare and food-policy implementation. The issue is especially relevant in South Sulawesi, a major rice-producing province where traditional markets connect local supply chains with consumers who may buy in small and flexible quantities.

Rice is not a homogeneous product from a consumer perspective. Purchase and consumption decisions can reflect price, grain appearance, broken-grain content, cleanliness, aroma, texture after cooking, origin, certification, packaging, and brand. The relative value of these attributes varies across countries, retail formats, income groups, and consumption cultures. Research in Asia and Africa has found that intrinsic sensory or safety-related attributes frequently matter alongside price, whereas certification, origin, and sustainability labels appeal unevenly across consumer segments (Adabrah-Danquah et al., 2025; Bairagi et al., 2021; Connor et al., 2022; Fang et al., 2024; My et al., 2018; Okpiaifo et al., 2020; Sekiya et al., 2024). Indonesian evidence likewise indicates that consumers value visible grain quality and may pay more for locally produced rice when its quality is credible (Antriyandarti et al., 2023).

Traditional markets deserve separate attention. In packaged-rice markets, a brand and label can reduce uncertainty about quality, safety, or origin. In traditional markets, consumers can often inspect loose rice, compare several grades, negotiate or select purchase quantities, and rely on repeated relationships with vendors. These conditions may shift attention away from packaging and brand towards directly observable or experienced attributes. Evidence from packaged-rice demand shows that education, income, household size, and intrinsic quality attributes can all influence purchasing, but the role of those factors depends on the retail context (Bairagi et al., 2021). It is therefore risky to transfer findings from supermarkets or certified-rice studies directly to open-market rice retailing.

Rice quality also spans distinct stages of use. Cleanliness and foreign-matter contamination are assessed before cooking; grain integrity and whiteness are visual cues; aroma and texture become salient during or after cooking; storability is learned over time. Rice breeding and postharvest research confirms that appearance, milling quality, aroma, and texture shape acceptance, while processing and storage affect

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breakage, safety, and cooking properties (Champagne et al., 2010; Custodio et al., 2019; Fitzgerald et al., 2009; Fukagawa & Ziska, 2019; International Rice Research Institute [IRRI], 2023, 2025). Consumers may thus attach different levels of importance to attributes that are immediately observable and those that are experienced only after purchase.

This study was formulated to explore in-depth the socio-demographic characteristics of rice consumers in Pangkep Regency, as well as to map the level of importance and performance of these rice attributes through an analytical approach of Importance-Performance Analysis (IPA). A comprehensive evaluation of nine quality attributes (brand, price, packaging, aroma, grain, cleanliness, fluffiness, whiteness, and shelf life) is expected to not only provide theoretical contributions to the literature on food consumer behavior, but also produce a tactical roadmap for local traders and policymakers. This analysis is crucial for formulating strategies for optimizing trade systems, efficient allocation of supply chain resources, and protecting people's purchasing power in order to strengthen the regional food security architecture.

RESEARCH METHODS

Research Area and Design

A cross-sectional survey was conducted at traditional rice markets in Pangkajene and Kepulauan Regency, South Sulawesi, Indonesia. The study population consisted of end-consumers who purchase rice for household consumption, not for resale. Data were collected through questionnaires, direct interviews, observations, and supporting documentation. The sampling technique used in this study was non-probability sampling with accidental sampling. According to Sugiyono (2019), incidental sampling is a sampling technique based on chance, meaning anyone who happens to meet the researcher can be used as a sample if they are deemed suitable as a data source. In this study, the sample taken was consumers who happened to be buying rice at traditional markets. This analytical sample consisted of 53 respondents.

Measurement

The questionnaire recorded the age, education, occupation of the head of household, number of dependents, monthly household income, and monthly household rice consumption. Respondents evaluated nine attributes: brand, price, packaging, aroma, grain integrity/broken grain condition, cleanliness, cooked rice texture (locally expressed as fluffiness, or softness/chewyness), whiteness, and shelf life.

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Each attribute was rated twice on a five-point Likert scale. Importance ranged from 1 (very unimportant) to 5 (very important), and perceived performance ranged from 1 (very poor) to 5 (excellent). Importance here is defined as a stated evaluative ranking. While these ratings are useful for managerial diagnosis, they do not reproduce the trade-offs obtained from discrete choice experiments, best-worst scaling, hedonic models, or actual purchase data (Lancaster, 1966; Louviere et al., 2010; Lusk & Briggeman, 2009).

Data Analysis

Respondent characteristics were summarized using frequencies, percentages, means, and ranges. For each attribute, the average importance score (I), the average performance score (P), and the difference (P - I) are calculated. A negative difference indicates perceived performance below stated importance but is not an inferential test of dissatisfaction.

Traditional data-centered IPA places performance on the horizontal axis and importance on the vertical axis (Martilla & James, 1977). The overall average across the nine attributes is used as a reference point: 3.45 for performance and 3.86 for importance. The attributes are classified as follows: Quadrant I, high importance/low performance (“concentrate here”); Quadrant II, high importance/high performance (“keep up the good work”); Quadrant III, low importance/low performance (“low priority”); and Quadrant IV, low importance/high performance (“possible over-service”). IPA is sensitive to the choice of crosshairs, direct measurement of importance, and attributes located close to boundaries (Abalo et al., 2007; Bacon, 2003; Feng et al., 2014; Kim et al., 2021; Oh, 2001). Therefore, quadrant labels are used as a descriptive heuristic.

RESULTS

Respondent profile

Participants were predominantly middle-aged household consumers. The average reported age was 42.64 years for heads of households and 42.17 years for wives or female household managers. Of the 53 respondents, 41.51% were aged 41-50, and 33.96% were aged 31-40. More than half of female household managers had completed high school (54.7%), while 22.6% had a bachelor's degree and 13.2% had a diploma.

Self-employment or informal sector employment was the most common occupation held by heads of households (66.04%), followed by civil servants (18.87%) and private sector employment (15.09%). Approximately 73.58% of households reported

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a monthly income below IDR 4 million. The average household rice consumption was 28.68 kg per month; 47.17% reported 21-30 kg per month, and 30.19% reported more than 30 kg. These characteristics place the research results in this case where rice is frequently purchased and food budgets tend to make price changes significant, although cross-sectoral descriptive data cannot prove that income causes a particular ranking.

Table 1. Characteristics of Participating Rice Consumers

Characteristic	Category	N	%
Age (years)	<30	5	9.44
	31-40	18	33.96
	41-50	22	41.51
	>50	8	15.09
Education of female household manager	Primary school	2	3.8
	Junior high school	3	5.7
	Senior high school	29	54.7
	Diploma	7	13.2
	Bachelor's degree	12	22.6
Occupation of household head	Self-employed/informal	35	66.04
	Civil servant	10	18.87
	Private employee	8	15.09
Monthly household income (IDR)	<2,000,000	11	20.75
	2,000,000-4,000,000	28	52.83
	4,000,001-6,000,000	10	18.87
	>6,000,000	4	7.55
Monthly rice consumption (kg)	<20	12	22.64
	21-30	25	47.17
	31-40	11	20.75
	>40	5	9.44

Source: Primary data analysis, 2026.

Importance, performance, and attribute gaps

Cleanliness had the highest importance score (4.68), exceeding the next two attributes by more than 0.6 points. Cooked-rice texture (4.04) and price (4.02) were the

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only other attributes above the grand importance mean of 3.86. Brand (3.43) and packaging (3.49) had the lowest importance ratings.

Perceived performance was highest for storability (3.79) and packaging (3.72), while price had the lowest performance score (2.83). The mean gap across attributes was -0.41. Price produced the largest negative gap (-1.19), closely followed by cleanliness (-1.08). Packaging (+0.23) and storability (+0.11) were the only attributes for which performance exceeded importance.

Table 2. Mean Importance and Perceived Performance of Rice Attributes

Attribute	Importance (I)	Performance (P)	Gap (P - I)	IPA quadrant
Brand	3.43	3.00	-0.43	III: low priority
Price	4.02	2.83	-1.19	I: concentrate here
Packaging	3.49	3.72	0.23	IV: possible over-service
Aroma	3.82	3.60	-0.22	IV: possible over-service
whole rice grains	3.85	3.50	-0.35	IV: boundary-sensitive
Cleanliness	4.68	3.60	-1.08	II: keep up the good work
Cooked-rice texture	4.04	3.51	-0.53	II: keep up the good work
Whiteness	3.80	3.48	-0.32	IV: boundary-sensitive
Storability	3.68	3.79	0.11	IV: possible over-service
Grand mean	3.86	3.45	-0.41	—

Source: Primary data analysis, 2026.

Figure 1. Data-centred importance-performance map of rice attributes. Dashed lines show the reported grand means (performance = 3.45; importance = 3.86).

Importance-performance positioning

Price was the only unambiguous Quadrant I attribute: consumers rated it as important, but its perceived performance was well below the performance mean. Cleanliness and cooked-rice texture occupied Quadrant II. Their performance scores were above the sample crosshair, even though both retained negative importance-

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performance gaps. This distinction matters. A high/high quadrant position means these attributes perform better than the other attributes in this dataset; it does not mean expectations have been fully met.

Brand occupied Quadrant III. Packaging, aroma, grain integrity, whiteness, and storability fell in Quadrant IV under the strict mean-based rule. However, “possible over-service” is too strong for aroma, grain integrity, and whiteness because their importance ratings were near the crosshair and their gaps remained negative. These attributes are better described as secondary or boundary-sensitive. Only packaging and storability combined below-average importance with positive gaps.

DISCUSSION

Cleanliness, texture, and price define the local quality proposition

The ratings reveal a practical ordering of consumer concerns. Cleanliness, cooked-rice texture, and price were more important than the extrinsic cues of brand and packaging. This pattern is plausible in a market where consumers can inspect rice directly and may know vendors through repeat transactions. Observable foreign matter or poor milling creates immediate preparation costs and can raise safety concerns. Texture, by contrast, is an experience attribute learned after cooking, but repeated household consumption gives consumers substantial knowledge about the varieties or vendor lots that produce the desired softness and stickiness.

The prominence of texture is consistent with rice-quality and sensory research. Amylose content, gelatinisation properties, and other physicochemical characteristics contribute to cooked-rice texture, while consumer acceptance reflects culturally learned preferences rather than a universal quality ranking (Champagne et al., 2010; Custodio et al., 2019; Fitzgerald et al., 2009; Knaapila et al., 2022). Recent studies also find that taste and sensory quality can outweigh nutritional or credence attributes in rice evaluation (Fang et al., 2024; Mizuki et al., 2025; Srisukwatanachai et al., 2025). The high rating for kepulenan therefore supports maintaining consistent eating quality when traders or millers adjust sourcing and price tiers.

Price presents a different problem. Its low performance score and -1.19 gap indicate that participating consumers saw current affordability or value for money as the largest shortfall. This is a perception measure, not proof of excessive mark-ups or supply-chain failure. Even so, it is policy relevant because 73.58% of the sample reported household income below IDR 4 million and average household consumption was 28.68 kg per month. National and regional programmes already use public rice

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stocks and the Stabilisation of Food Supply and Prices programme (SPHP) to protect access and purchasing power (Badan Pangan Nasional, 2024, 2026). The present result suggests that price interventions in traditional markets should be evaluated not only by volumes distributed but also by whether target consumers perceive acceptable quality at the offered price.

Intrinsic and extrinsic cues play different roles in traditional markets

The relatively low importance of brand and packaging should not be generalised to all rice consumers. Packaged-rice research shows that branding, labels, traceability, production information, and package design can affect demand, expected quality, or repurchase intention (Bairagi et al., 2021; Ma et al., 2022; Nie et al., 2018; Sekiya et al., 2024; Xu et al., 2023). Sustainability certification can also command premiums when consumers understand and trust the information (Adabrah-Danquah et al., 2025; Connor et al., 2022; My et al., 2018; Okpiaifo et al., 2020).

In the Pangkep sample, direct inspection may have substituted for formal market signals. The lower brand score is compatible with a channel in which vendor reputation, variety names, visible grain characteristics, and prior cooking experience provide the relevant assurance. Packaging performance exceeded importance, but this does not justify removing basic protection. Packaging still protects rice during handling and storage and can carry legally required or useful information. The managerial implication is narrower: spending on decorative packaging or brand communication is unlikely to compensate for an unattractive price, contamination, or inconsistent cooking quality in this particular channel.

Reading the IPA cautiously

The strict numerical classification corrects a potential misreading of the source report. With crosshairs at I = 3.86 and P = 3.45, cooked-rice texture is in Quadrant II, not Quadrant I; grain integrity is in Quadrant IV, not between Quadrants I and II; and storability has importance of 3.68 in the results table, not 3.85 as stated elsewhere in the report. Cleanliness is also a useful example of why quadrant labels and gaps answer different questions. It lies in Quadrant II because its performance exceeds the across-attribute performance mean, but it has a large negative gap because its importance is exceptionally high. Maintaining current cleanliness is necessary, yet further improvement may still be valued.

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Several methodological studies warn that IPA priorities can change with crosshair placement and the way importance is measured (Abalo et al., 2007; Bacon, 2003; Feng et al., 2014; Kim et al., 2021; Oh, 2001). Direct importance ratings can also suffer from scale-use effects and limited discrimination. In this dataset, grain integrity (I = 3.85) is only 0.01 below the importance crosshair, and whiteness performance (3.48) is only 0.03 above the performance crosshair. Without item-level observations, sampling uncertainty, or sensitivity analysis, it would be unwise to treat their quadrant membership as a firm resource-allocation rule.

A stronger future design would combine stated ratings with a discrete-choice experiment or best-worst scaling. Choice methods force respondents to trade off attributes and can estimate preference heterogeneity and willingness to pay (Lancaster, 1966; Louviere et al., 2010; Lusk & Briggeman, 2009). A stratified sample across markets and income groups could then test whether price sensitivity, sensory priorities, or reliance on brands varies systematically.

CONCLUSION

Consumers surveyed at Pangkep traditional markets placed the greatest importance on cleanliness, cooked rice texture, and price. The biggest perceived drawback was price, while cleanliness and texture were highly important, with relatively above-average performance. Brand and packaging were less important in this study, although packaging and shelf life were the only attributes that performed above average. These results support a channel-specific strategy: increasing affordability and price transparency while maintaining food hygiene and quality.

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