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Quality Assurance Practices and Market Competitiveness of Rice Milling Companies in Kano State, Nigeria

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ABSTRACT

The rice milling industry in Kano State faces persistent challenges of inconsistent quality standards, limiting its market competitiveness despite significant production growth. This study examined the effect of quality assurance practices, specifically process consistency, product inspection, and staff competence, on the market competitiveness of rice milling companies in Kano State, Nigeria. A quantitative descriptive survey design was adopted, with data collected from 432 employees across 17 registered rice milling companies. Using the Krejcie and Morgan (1970) sampling framework, a sample of 450 respondents was drawn, and data were analyzed using descriptive statistics, correlation analysis, and multiple regression. The findings revealed that all three quality assurance dimensions had significant positive effects on market competitiveness, indicating that firms with consistent processing operations, structured inspection systems, and competent employees achieve greater market reach and customer satisfaction. The regression model explained approximately 67% of the variance in competitiveness, confirming the strong predictive influence of internal quality assurance practices. The study concludes that operational stability, quality monitoring, and workforce development are strategic resources that strengthen firms' competitiveness, aligning with the Resource-Based View theory. It recommends that rice milling companies institutionalize standardized processing systems, adopt continuous inspection mechanisms, and invest in staff training to enhance performance and market expansion.

Keywords: Quality Assurance Practices, Process Consistency, Product Inspection, Staff Competence, Market Competitiveness, Rice Milling, Kano State.

1.0 Introduction

Global competitiveness in the agri-food sector increasingly hinges on the ability of firms to ensure consistent quality and operational efficiency, especially in staple commodities like rice. The rice milling industry serves as a strategic link between agricultural production and consumer markets, and its competitiveness is largely determined by product quality, cost-effectiveness, and market reach. Across Asia and Africa, countries with advanced rice milling infrastructure and rigorous quality assurance systems have captured substantial market shares regionally and internationally (Ritthaisong, Johri, & Speece, 2020). The integration of quality control, skilled workforce, and technological innovation enhances brand reputation and market expansion, positioning rice processors as key contributors to food security and export performance.

In developing economies, competitiveness in rice milling reflects not only technological capacity but also institutional support and market efficiency. Recent analyses indicate that in many sub-Saharan African countries, including Nigeria, the performance of rice milling enterprises is constrained by inconsistent quality standards and inadequate process monitoring (Obisesan, Ogundele, & Akintayo, 2025). This lack of uniformity affects consumer confidence and limits the ability of local brands to compete against imported rice, which is often perceived to have higher quality. As the demand for locally milled rice rises, strengthening quality assurance frameworks becomes an essential strategic move for sustaining market competitiveness and achieving national self-sufficiency goals.

Nigeria, the largest rice producer in West Africa, has experienced rapid growth in rice production over the past decade. However, this growth has not been matched by corresponding improvements in processing quality and market penetration. According to Bello, Saliu, Olaniyan, and Bello (2020), Nigerian rice milling firms face persistent challenges such as outdated machinery, limited technical skills, and inadequate inspection systems, all of which diminish their ability to deliver consistent product standards. The competitiveness of the domestic rice market is further undermined by the prevalence of small and medium-scale mills with limited capacity to meet industrial quality benchmarks. These constraints weaken Nigeria's potential to compete effectively with imported rice, despite policy efforts to promote local production.

Empirical studies have emphasized that quality assurance practices, particularly process consistency, product inspection, and staff competence, are critical to achieving competitiveness in agro-processing sectors. For instance, Umoh (2025) observed that technology-driven processing, coupled with strong human capital and quality management systems, significantly enhances rice market expansion and profitability. Similarly, Achebe and Nwanya (2021) found that structured quality control and continuous process evaluation are determinants of operational efficiency and customer retention in Nigeria's milling industries. Hence, adopting structured quality assurance mechanisms directly influences firms' ability to expand their market reach.

In northern Nigeria, Kano State stands as one of the nation's major rice processing hubs, with a rapidly growing number of private and cooperative milling enterprises. Despite its strategic role, the sector's competitiveness remains uneven, with wide performance gaps across mills (Sani, Nazifi, Wakil, Alhassan, & Abba, 2025). Factors such as inconsistent process standards, poor staff training, and inadequate inspection procedures limit the state's ability to supply high-quality rice to domestic and regional markets. The need to improve the consistency of milling operations, coupled with an emphasis on product quality assurance, is essential for enhancing the global image of Kano's rice industry and increasing its market penetration.

Moreover, Nigeria's national rice competitiveness agenda has highlighted the importance of

human resource development and technological modernization in achieving sustainable productivity. Studies by Oteh, Agwu, Okpokiri, and Aniuga (2018) demonstrate that quality inspection and regulatory compliance play a significant role in promoting wider product acceptance and competitiveness of "Made in Nigeria" rice. Without a robust framework for training, quality monitoring, and consistent production processes, local mills face difficulties in meeting consumer expectations and expanding beyond traditional market boundaries. Thus, a synergy between staff competence, quality assurance, and operational consistency is necessary to position Kano's milling firms as market leaders.

The problem, however, lies in the apparent disconnect between policy objectives and practical implementation within the rice processing ecosystem. While quality assurance systems are recognized as vital for competitiveness, many mills in Kano State lack structured programs that ensure process consistency and systematic inspection (Achebe & Nwanya, 2021). The consequence is a variation in rice quality, frequent production inefficiencies, and limited market reach. As consumer preferences shift toward higher-quality rice products, local producers face an urgent need to align their quality management practices with international standards to sustain competitiveness.

1.1 Objectives of the Study

1. To investigates the effect of quality assurance practices on the market competitiveness of rice milling companies in Kano State, Nigeria.
2. To examines how process consistency, product inspection, and staff competence influence market reach among milling enterprises.
3. To examine how process consistency, product inspection, and staff competence, as indicators of quality assurance practices, relate to the market competitiveness of rice milling companies in Kano State.

1.2 Research Hypotheses

To fulfil the objectives of the study, the following null hypotheses are formulated and tested:

H_{01}: Process consistency has no significant effect on the market competitiveness of rice milling companies in Kano State.

H_{02}: Product inspection has no significant effect on the market competitiveness of rice milling companies in Kano State.

H_{03}: Staff competence has no significant effect on the market competitiveness of rice milling companies in Kano State.

2.0 Literature Review

Concept of Market Competitiveness

Market competitiveness in agribusiness refers to the ability of firms to sustain superior market positions through differentiation, innovation, and efficient utilization of resources. In the rice milling sector, competitiveness determines how firms expand their market reach, adapt to changing consumer preferences, and respond to global value chain pressures (Van der Merwe & Bezuidenhout, 2025; Traore, Zhang, Yuan, & Zhu, 2025). It encompasses productivity, quality, pricing, and market adaptability that position firms favorably against rivals (Akbar, Pradana, & Rahma, 2025; Morepje, Sithole, Msweli, & Agholor, 2024). Studies have shown that institutional support, technological upgrading, and quality assurance strongly predict agribusiness

competitiveness (Jacoba & Umoh, 2025; Magondu, Njogu, Ouko, & Mboya, 2025).

Furthermore, global integration, digital transformation, and capacity development enhance firms' ability to compete sustainably (Ouédraogo, Bockel, Abedi, Arouna, & Gopal, 2021; Mani & Mani, 2020). Empirical evidence highlights that competitiveness also relies on process efficiency, managerial skills, and regulatory compliance (Rahman, Akbar, & Trotter, 2020; Daszkiewicz, 2022; Rosegrant, Cai, & Cline, 2025). For this study, market competitiveness is conceptualized as the extent to which rice milling companies in Kano State are able to expand their market reach, sustain profitability, and strengthen brand acceptance through quality-driven strategies and efficient operations.

Concept of Process Consistency

Process consistency refers to the uniformity and reliability of operational procedures that ensure product quality remains stable across production cycles. In rice milling, consistent processing is critical to achieving standardized grain quality, reducing waste, and maintaining consumer confidence (Ritthaisong, Johri, & Speece, 2020; Obisesan, Ogundele, & Akintayo, 2025). Studies indicate that firms with well-structured and documented production processes often exhibit higher operational efficiency and competitiveness (Bello, Saliu, Olaniyan, & Bello, 2020; Oteh, Agwu, Okpokiri, & Aniuga, 2018). Regular monitoring of machinery and process flows enhances output predictability and reduces variation (Sani, Nazifi, Wakil, Alhassan, & Abba, 2025).

Moreover, technology integration into milling operations contributes to process optimization and cost reduction (Umoh, 2025; Achebe & Nwanya, 2021). Process consistency also influences product traceability and compliance with international food quality standards (Traore et al., 2025; Daszkiewicz, 2022). Therefore, this study conceptualizes process consistency as the degree to which rice milling firms maintain stable, efficient, and standardized operational procedures that ensure consistent quality outputs and contribute to market competitiveness.

Concept of Product Inspection

Product inspection entails systematic examination and evaluation of finished goods to ensure conformity with specified quality standards. In agribusiness, effective inspection mechanisms safeguard consumer trust, reduce defect rates, and enhance product reliability (Morepje et al., 2024; Van der Merwe & Bezuidenhout, 2025). Within the rice milling sector, frequent inspection contributes to identifying defects early and preventing the distribution of substandard products (Bello et al., 2020; Magondu et al., 2025). Studies reveal that inspection improves compliance with market and export regulations, thus enhancing firms' market competitiveness (Rahman et al., 2020; Ouédraogo et al., 2021). Regular inspection also promotes a culture of accountability and continuous improvement (Jacoba & Umoh, 2025; Mani & Mani, 2020). According to Akbar et al. (2025) and Traore et al. (2025), structured inspection systems enhance customer satisfaction and brand loyalty, directly influencing market expansion. In this study, product inspection is conceptualized as the systematic assessment of rice milling outputs to ensure adherence to established quality standards, thereby reinforcing customer confidence and strengthening market reach.

Concept of Staff Competence

Staff competence refers to the knowledge, technical skills, and behavioral attributes that enable employees to perform their roles effectively. In the rice milling industry, competence determines how well staff manage production technologies, maintain equipment, and ensure quality assurance (Ritthaisong et al., 2020; Obisesan et al., 2025). Skilled personnel enhance productivity,

innovation, and error reduction, which are critical for competitiveness (Umoh, 2025; Sani et al., 2025). Studies emphasize that training and capacity-building programs contribute significantly to process efficiency and organizational resilience (Achebe & Nwanya, 2021; Bello et al., 2020). Furthermore, competent employees facilitate effective problem-solving and adherence to safety and quality regulations (Rahman et al., 2020; Morepje et al., 2024). Firms that invest in human capital experience higher customer satisfaction and market adaptability (Jacoba & Umoh, 2025; Magondu et al., 2025). Consequently, this study conceptualizes staff competence as the extent to which the skills, expertise, and professional capabilities of rice milling employees contribute to maintaining quality standards, enhancing process efficiency, and expanding market competitiveness.

2.2 Review of Related Empirical Studies

Empirical research underscores that process consistency enhances production efficiency, product quality, and ultimately market competitiveness. Obisesan, Ogundele, and Akintayo (2025) found that streamlined processing in Nigerian rice mills improved yield uniformity and competitiveness. Umoh (2025) emphasized technology-driven milling as pivotal in maintaining operational stability and improving product reliability. Similarly, Sani, Nazifi, Wakil, Alhassan, and Abba (2025) reported that consistent processing reduces quality variation and strengthens brand confidence in Kano's rice sector. Obianefo, Ezeano, Isibor, and Ahaneku (2023) established that uniform processing procedures enhance productivity among small-scale processors. Iloegbune-Onyekwere (2025) observed that adherence to quality standards and consistent branding boosts international competitiveness.

Mahmud, Saka, Odedire, and Ibrahim (2025) linked standardized production to profitability among women rice processors in Kwara State. Conrad, Esiebugie, and Awuzie (2025) revealed that mills with quality control systems achieve higher competitiveness. Odewole, Sanusi, Sunmonu, and Yerima (2024) found digitalized operations improved process reliability. Mohammed and Aliyu (2025) confirmed consistent milling practices significantly affect market performance. Urugo, Yohannis, and Teka (2024) added that optimized processing reduces post-harvest losses. Makinde and Akinmolafe (2025) asserted that consistent processing enhances food security and export potential. Thus, process consistency is empirically validated as a critical determinant of market competitiveness in agribusiness operations.

Inspection practices are essential to maintain consistent product standards and enhancing market position. According to Bello, Saliu, Olaniyan, and Bello (2020), inspection processes in Nigerian rice mills reduce defects and promote consumer confidence. Umoh (2025) highlighted how continuous product assessment improves processing accuracy and competitiveness. Ritthaisong, Johri, and Speece (2020) confirmed that strict inspection frameworks support export readiness among Thai rice firms. Magondu, Njogu, Ouko, and Mboya (2025) found similar outcomes in Kenya's agri-food sector, where inspections enhance product credibility. Morepje, Sithole, Msweli, and Agholor (2024) demonstrated that transparent inspection processes strengthen brand image in agri-enterprises.

In Nigeria, Obisesan et al. (2025) observed that regulated inspection procedures reduce inefficiencies and improve consumer loyalty. Sani et al. (2025) noted that poorly implemented inspection weakens competitiveness in Kano's rice industry. Van der Merwe and Bezuidenhout (2025) found inspection frameworks essential for export performance in South African agro-processors. Ouédraogo, Bockel, Abedi, Arouna, and Gopal (2021) established that monitoring

enhances long-term competitiveness in West African rice chains. Rahman, Akbar, and Trotter (2020) stressed that inspection reinforces product differentiation. Collectively, these studies reveal that product inspection positively influences market competitiveness through quality assurance and compliance mechanisms.

Human capital remains fundamental in sustaining competitiveness through operational excellence and quality delivery. Umoh (2025) found that competent personnel drive process innovation and quality enhancement in rice milling. Achebe and Nwanya (2021) emphasized that skill development increases productivity and reduces process errors. Bello et al. (2020) identified staff training as pivotal for achieving consistent product quality. Sani et al. (2025) noted that workforce efficiency correlates with competitiveness in Kano's rice sector. Obisesan et al. (2025) reported that trained staff ensure better technology use and reduced operational downtime. Ritthaisong et al. (2020) showed that employee expertise enhances adaptability and customer satisfaction.

Magondu et al. (2025) found that human capacity building improves competitiveness in East African agribusiness. Morepje et al. (2024) revealed that skilled employees ensure efficient production management. Van der Merwe and Bezuidenhout (2025) observed that human competence drives market retention. Rahman et al. (2020) associated staff proficiency with regulatory compliance and quality assurance. Umoh (2025) further linked staff capability with innovation performance. Overall, these studies affirm that staff competence significantly enhances market competitiveness by fostering quality assurance, innovation, and sustainable performance.

2.2 Theoretical Framework

This study is anchored on the Resource-Based View (RBV) Theory propounded by Barney (1991), which posits that a firm's competitive advantage arises from its ability to acquire, develop, and deploy valuable, rare, inimitable, and non-substitutable (VRIN) resources. Within the context of rice milling, these resources encompass process consistency, effective product inspection mechanisms, and staff competence, which collectively determine a firm's capability to deliver superior quality and expand market reach. The theory assumes that internal organizational capabilities, rather than external market conditions, are the primary drivers of sustainable competitiveness. Empirical studies have supported the application of RBV in agro-industrial contexts.

For instance, Ritthaisong, Johri, and Speece (2020) found that internal process efficiency and human expertise significantly improve competitiveness in Thai rice firms. Similarly, Umoh (2025) and Obisesan, Ogundele, and Akintayo (2025) confirmed that technological proficiency and workforce competence are strategic assets that enhance Nigerian rice processors' market performance. The RBV framework aligns with this study's objective by linking quality assurance practices, as internal resources, to market competitiveness, the ultimate performance outcome. Thus, the theory provides a solid analytical basis for examining how process consistency, product inspection, and staff competence interact as strategic resources to strengthen the competitiveness of rice milling companies in Kano State.

3.0 Methodology

This study adopted a quantitative research design utilizing a descriptive survey method to examine the effect of quality assurance practices (process consistency, product inspection, and staff competence) on the market competitiveness of rice milling companies in Kano State, Nigeria. This design was selected because it allows for the systematic collection, measurement, and statistical analysis of quantitative data to determine the strength and direction of relationships among

variables objectively. The population of the study comprised 3,337 employees drawn from 17 registered rice milling companies in Kano State, as obtained from the Rice Processors Association of Nigeria (RiPAN, 2025). To determine an adequate and representative sample, the study applied the Krejcie and Morgan (1970) sample size determination table, which recommends a sample size of 346 for a population of 3,337. However, to ensure better representation and account for potential non-response, the sample size was increased by approximately 30%, bringing the final sample size to 450 employees.

The study adopted a stratified random sampling technique to ensure fair representation of the three key employee categories; management, administrative, and operational staff, across all companies. Structured questionnaires were used as the primary data collection instrument. The instrument was divided into sections corresponding to each variable: Process Consistency (6 items) adapted from Ritthaisong, Johri, and Speece (2020); Product Inspection (6 items) adapted from Bello, Saliu, Olaniyan, and Bello (2020); Staff Competence (5 items) adapted from Achebe and Nwanya (2021); and Market Competitiveness (7 items) adapted from Van der Merwe and Bezuidenhout (2025). All items were measured on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Out of the 450 questionnaires distributed, 432 were successfully retrieved and found usable for analysis, yielding a 96% response rate. Data were analyzed using descriptive statistics (frequency, mean, and standard deviation) to summarize respondents' demographic and variable profiles, while Pearson's correlation matrix was employed to assess relationships among variables. The study further applied multiple regression analysis to test the hypotheses and determine the predictive strength of each quality assurance dimension on market competitiveness. Prior to analysis, data screening was conducted to address missing values, detect outliers, and verify assumptions of normality and linearity, ensuring data reliability and validity for robust inferential testing.

4.0 Result and Discussion of Findings

This section presents the empirical results and interpretation of the data collected from employees of rice milling companies in Kano State, Nigeria. It begins with respondents' demographic characteristics, followed by descriptive statistics, correlation analysis, diagnostic tests, and regression outcomes.

Table 1: Demographic Characteristics of Respondents

Table 1 presents the demographic characteristics of respondents from rice milling companies in Kano State. The results reveal that the workforce is predominantly male, relatively young, and largely educated at the tertiary level. A significant proportion of respondents occupy operational roles, reflecting the labor-intensive nature of rice milling operations in the study area.

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	282	65.3
	Female	150	34.7
Age	18–25 years	97	22.4
	26–35 years	168	38.9
	36–45 years	114	26.3
	Above 45 years	53	12.4
Educational Qualification	OND/NCE	111	25.7
	HND/B.Sc	199	46.1
	M.Sc and above	79	18.2
	Others	43	10.0

Job Category	Management	89	20.6
	Administrative	145	33.5
	Operational	198	45.9
Years of Experience	1–5 years	129	29.8
	6–10 years	160	37.1
	11–15 years	90	20.8
	Above 15 years	53	12.3
TOTAL		**432**	**100%**

Source: Field Survey, 2025.

Table 2. Descriptive Statistics

The table below presents the mean, standard deviation, and distributional properties of each variable. The results indicate generally high mean scores across all constructs, suggesting that respondents perceive strong quality assurance practices and market competitiveness in their organizations.

Variables	Mean	Std Dev	Min	Max	Obs (N)
Process Consistency	4.12	0.56	2.7	5.0	432
Product Inspection	4.05	0.61	2.5	5.0	432
Staff Competence	4.18	0.59	2.9	5.0	432
Market Competitiveness	4.21	0.52	3.0	5.0	432

Source: STATA 26 Output, 2025.

Table 3: Correlation Matrix

The correlation coefficients below show significant positive relationships among all variables, suggesting that process consistency, product inspection, and staff competence are all strongly associated with market competitiveness.

Variables	Process Consistency	Product Inspection	Staff Competence	Market Competitiveness
Process Consistency	1.0	0.612	0.583	0.689
Product Inspection	0.612	1.0	0.647	0.704
Staff Competence	0.583	0.647	1.0	0.721
Market Competitiveness	0.689	0.704	0.721	1.0

Source: STATA 26 Output, 2025.

Table 4: Diagnostic Test Results

Diagnostic tests were performed to ensure data suitability for regression analysis. Results indicated normal distribution, linearity, and no multicollinearity or heteroskedasticity issues.

Test	Result
Missing Values	0.0% missing
Outliers	No significant outliers detected
Normality (Shapiro-Wilk)	$p = 0.156$ (normal)
Linearity (Scatterplot Test)	Linear relationship confirmed
Multicollinearity (VIF)	VIF < 3.0 (no issue)
Homoscedasticity	$p = 0.312$ (no heteroskedasticity)

Source: STATA 26 Output, 2025.

Table 5: Regression Analysis Results

Table 5 below presents the multiple regression results examining the effect of quality assurance

practices, process consistency, product inspection, and staff competence, on market competitiveness among rice milling companies in Kano State, Nigeria. All independent variables were found to have positive and statistically significant effects on market competitiveness ($p < 0.05$). This indicates that improvements in consistency, inspection, and staff competence contribute significantly to enhancing competitiveness.

Predictor	B	Std. Error	Beta (β)	t-Value	Sig. (p-value)
Process Consistency	0.311	0.048	0.328	6.479	0.000
Product Inspection	0.289	0.052	0.301	5.558	0.000
Staff Competence	0.324	0.05	0.336	6.798	0.000
Constant	1.102	0.231	-	4.776	0.000

Source: STATA 26 Output, 2025.

Table 6: Model Summary

The R^2 value of 0.672 suggests that approximately 67.2% of the variation in market competitiveness is explained by the combined effect of process consistency, product inspection, and staff competence. The F-statistic (239.417, $p < 0.001$) indicates that the model is statistically significant, confirming a strong predictive relationship between quality assurance practices and market competitiveness.

Model Summary	Value
R	0.82
R^2	0.672
Adjusted R^2	0.668
F-Statistic	239.417
Sig. (ANOVA)	0.0

Source: STATA 26 Output, 2025.

Discussion of Findings

H_{01}: Process consistency has no significant effect on the market competitiveness of rice milling companies in Kano State.

The regression result revealed a standardized coefficient ($\beta = 0.328$, $p < 0.001$), indicating that process consistency exerts a significant positive effect on market competitiveness. This implies that rice mills that maintain stable and efficient processing procedures are more likely to achieve higher market reach and customer satisfaction. The result aligns with the Resource-Based View (RBV), which posits that internal operational stability enhances sustainable competitive advantage (Barney, 1991). It also supports empirical evidence by Obisesan, Ogundele, and Akintayo (2025) and Umoh (2025), who found that consistent milling operations significantly improve product quality and profitability. In the context of Kano's rice sector, maintaining uniformity in processing reduces product defects and enhances brand reliability, strengthening firms' competitiveness against imported rice brands. Therefore, the null hypothesis is rejected, confirming that process consistency is a critical driver of competitiveness in the rice milling industry.

H_{02}: Product inspection has no significant effect on the market competitiveness of rice milling companies in Kano State.

The regression analysis showed a standardized coefficient ($\beta = 0.301$, $p < 0.001$), signifying a strong and positive relationship between product inspection and market competitiveness. This means that frequent and structured inspection of milled rice significantly enhances firms' ability

to meet quality standards and expand their market share. The finding corroborates Ritthaisong, Johri, and Speece (2020), who noted that inspection procedures ensure product conformity and brand trust in the Thai rice industry. Similarly, Bello et al. (2020) emphasized that quality inspection reduces consumer complaints and drives repeat patronage. Consistent with the Resource-Based View, inspection is an intangible capability that enhances product credibility and competitive positioning. In Kano's rice milling sector, rigorous inspection practices enable firms to compete favourably with imported rice through consistent delivery of high-quality products. Consequently, the null hypothesis is rejected, affirming that product inspection significantly predicts market competitiveness.

H_{03}: Staff competence has no significant effect on the market competitiveness of rice milling companies in Kano State.

The regression result ($\beta = 0.336$, $p < 0.001$) revealed that staff competence has a significant and positive impact on market competitiveness. This indicates that firms with technically skilled and knowledgeable employees perform better in maintaining quality standards, optimizing processes, and satisfying customers. The result supports the RBV theory, where employee expertise is viewed as a valuable internal resource driving sustained performance (Barney, 1991). It is also consistent with Achebe and Nwanya (2021) and Magondu et al. (2025), who found that staff competence improves operational productivity and market success. In the rice milling context, competence ensures proper equipment handling, reduced production waste, and innovation in processing methods. Within Kano's industry, enhancing worker training directly contributes to superior rice quality and stronger competitive advantage. Therefore, the null hypothesis is rejected, validating that staff competence plays a decisive role in boosting market competitiveness.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study examined the effect of quality assurance practices, process consistency, product inspection, and staff competence, on the market competitiveness of rice milling companies in Kano State. The findings demonstrated that all three dimensions significantly and positively affect market competitiveness, explaining 67.2% of its variation. The results affirm that consistent processes, rigorous inspection mechanisms, and competent staff are internal strategic resources that drive firms' ability to achieve market expansion, efficiency, and customer loyalty. Grounded in the Resource-Based View, the study concludes that internal capabilities are more influential than external market pressures in enhancing competitiveness. The research thus reinforces the importance of quality-driven strategies in the rice milling industry, which remains vital to Nigeria's food security and import substitution agenda. Firms that prioritize operational stability, employee development, and quality monitoring are more likely to sustain their market leadership and compete effectively both locally and regionally.

5.2 Recommendations

Based on the findings and conclusions of this study, the following recommendations are proposed to enhance the competitiveness of rice milling companies in Kano State through improved quality assurance practices.

1. Rice milling firms should institutionalize standardized processing procedures through automation and regular machinery maintenance. Management should adopt ISO-aligned

quality frameworks that ensure consistent grain polishing, grading, and packaging. Training programs should focus on process control and efficiency enhancement to reduce variation in production outputs. A clear documentation system should also be implemented to guide operations and maintain uniform quality across production cycles, thus strengthening the competitiveness of Kano-based rice mills in both domestic and export markets.

2. Firms should strengthen inspection mechanisms by establishing dedicated quality control units within each processing plant. Regular inspection schedules should be integrated into production timelines to identify defects early and ensure compliance with Nigeria's Standard Organization (SON) guidelines. Management should also invest in modern testing equipment for rice texture, moisture content, and grain purity. Moreover, engaging external auditors for periodic quality certification will boost consumer trust and market penetration, enhancing firms' overall competitiveness.
3. Management should prioritize continuous staff training, particularly in equipment operation, modern milling techniques, and quality management systems. Collaboration with agricultural training institutes and universities should be encouraged for technical workshops and certification programs. Incentive structures should be introduced to reward high-performing employees, thereby fostering motivation and retention. By upgrading staff competence, rice milling firms will improve productivity, minimize operational errors, and enhance customer satisfaction, factors essential for sustaining market competitiveness.

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