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Demand and Supply Study on Domestic and Imported Rice in Kano Area

By

Optimum Agricultural Consultants, Kano

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Area**

**Final Report
By**

Optimum Agricultural Consultants, Kano

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Glossary of terms used in describing domestic rice grades among traders and consumers

Local name of variety or grade	Scientific equivalent
SANTANA	<i>WITA4</i>
KILAKI	Refer to rice varieties such as SIPI and WITA4
JAMILA	<i>SIPI</i>
DUKUSA	<i>SIPI, WITA4</i> and other short varieties
YAR KERA	Local rice variety
YAR -DAS	Upland variety that originate from Das in Bauchi state
SIPI	SIPI
WITA	WITA
YARZABUWA, MAIBIRO or MAIZABUWA	NERICA
JALLOF, KWANDALLA or CAROLINE	ITA150
YAR GARKO	Rice grades processed in Garko
YAR TUDUN WADA	Rice varieties processed in Tudun Wada
Yar Kura	Rice processed in Kura
Yar-Niger	Rice processed in Niger state

1. Executive Summary

The demand and supply study was conducted in Kano Township mainly with a sub-sample in Tudun Wada, Kura and Garko rice production-processing clusters. The respondents were consumers, traders both retailers and wholesalers of domestic and imported rice, restaurants including local food sellers. The data collection was done using sets of structured questionnaires mainly to conduct enumerator survey on a sample of 100 consumers and 80 traders whom where strategically selected to reflect socio-economic attributes such as gender, age and income status. Ten enumerators were trained for the conduct of the questionnaire survey by four field scientists. In-depth interviews with key traders and restaurants were also conducted to obtained qualitative responses. The result of the study reveals the following;

Traders

Majority of rice traders were found to be male only 5% were female. Majority of the traders represented by 56.25% fall within the age category of 41 to 50 years and thus in their middle age and active stage. Thus rice trade is dominated by middle age and young people. In terms of level of education 36.25 % of the traders possess primary education and 32.5% had secondary education, 12.5% had tertiary education and 18.8 % had Quranic/ Arabic form of education. The size of household varies among the traders but majority have between 2 to 10 people in their households.

The demand and supply survey of domestic and imported rice reveals that there are a lot of domestic and imported rice grades traded and consumed in the study area. Quality of processing and the grain organoleptic properties such as length, taste and swelling capacity are the main features used among consumers and traders in determining the value of domestic rice grain. Cleanliness and suitability to modern recipes are some of the important attributes used in valuing imported rice among consumers.

There are various grades or varieties of domestic rice traded in Kano area. SIPI rice variety was mentioned by majority of the traders other important rice grades mentioned include Dukusa Jallof, Santana, Maiadda, WITA, Yar Tudun Wada and Yar Garko. A significant number of the traders indicated that the suppliers of rice determine the type of grades traded in the market and their choice is therefore restricted to what their suppliers have in stock for sale. Some others indicated that the type of rice grades the procured and sale is largely influenced by the consumers' preference and choice. The supply of domestic rice is obtained from various sources but most important of these sources includes Tudun Wada, Kura and Garko areas

There were also various grades of imported rice traded in the markets. Caprice and Caprice Gold rice grades were indicated 31.25 % and 12.5% of the traders interviewed respectively. Tomato Brand, Novel White, Stallion, Indian rice, Thailand rice and Power Taurus grades of imported rice were variously mentioned by the traders. These grades of imported rice are obtained from various sources such as SINGER market which is located in Kano and serve as an urban distribution and wholesale market. Traders also indicated the source as the country from where the rice grades are imported such include; *Thailand, India, and America* mainly.

Value addition to milled domestic rice at trader's level is not a major practice. Only few of the traders indicated adding value in form of de-stoning, sorting, branding and

repackaging. Attracting better prices and meeting consumers demand were some of the reasons giving by traders for engaging in value addition.

Supply pattern of rice particularly domestic rice is influenced by seasonal nature of rice production. The peak and off-peak periods of its supply should therefore correspondent with off-season and season periods of rice production, but the influence of paddy storage at farmers and wholesalers levels especially at the production clusters level should provide a stabilization impact on the supply trend and pattern within a period. For imported rice the influence of production seasonality may not be significant since the rice is obtained from various sources across the globe and actors involved may have the capacity to store and procure large volume of the commodity.

Quality, market forces, source of the rice, seasonal variations in supply, packaging and influence of few wholesalers were the price determinants for domestic rice. For imported rice majority of traders mentioned quality as a factor that determined price and others mentioned market forces as another factor, influence of big traders and source were also mentioned by traders.

Prices paid by consumers vary depending on the quality of the rice grade. For best quality domestic rice such as well processed SIPI, Jamila, Yar-Tudun Wada and Yar-Garko the prices paid ranges between NGN8500 to NGN 14,000 per 100kg bag and for least quality domestic rice grades the price ranges between NGN5000 to NGN8000 per 100kg bag.. For best quality imported rice the price ranges between NGN5200 to NGN7000 per 50kg bag and for least quality imported rice the price ranges between NGN4000 to NGN5000 per 50kg bag .

With regard to traders general views on domestic and imported rice, 60 % of the traders mentioned that domestic rice have better taste than imported but only poorly processed, 27.5 % indicated that different grades of domestic rice exist but their quality cannot be compared with that of imported rice, 10% of traders indicated that availability of imported rice reduce consumption and demand for domestic rice and 35% of traders indicated that with better parboiling, de-stoning and sorting domestic rice can compete favorably with imported rice. For imported rice the views express by traders include; good aroma after cooking as , cleanliness and better processed, that availability of imported rice at all the times stabilize prices of the commodity , short cooking duration, other traders indicated that importation of imported rice should be ban completely to give room for domestic rice, some of the traders indicated that prices of imported rice are high and that expiry dates are not written on the bags of imported rice.

Consumers

The age distribution of these consumers cut across young (24.24%), middle aged (27.27%) and some old (11.11%) people. This ensured representation of opinions from all age categories of the consumers. Large proportion of the participants have educational qualifications ranging from secondary (29.40%), tertiary (30.40%) with few (3.90%) who have primary educational qualifications. The least number of household members were recorded from consumers whose household size ranges from 3 to 10 members (66.67%). Consumers with household size ranging from 11 to 20 were 22.55% while those with 21 to 30 members per household constitute 8.82%. Generally, consumers interviewed were not very willing to reveal there annual income (41.18%). However, 35.29% of the interviewed consumers earned between NGN100, 000 to

NGN200, 000 per annum. A few (2.94%) of them earned income that is up to or above NGN400, 001. The minimum and maximum annual income earned by the consumers was estimated at NGN 3600 and NGN 960,000 respectively.

Rice has become a stable food items for most households in both urban and rural areas and among different socio-economic categories of people as such the magnitude of its demand is expected to be high and steady throughout the year. However, the demand for rice could be influenced by socio-cultural factors with higher magnitude of rice demand expected during festivities, religious and or cultural periodic events such as SALLAH or MAULUD, CHRISTMAS period and so on.

The results of the study showed that generally, both imported and domestic rice are available to the consumers at the right place and time. There is evidence from this survey that consumers (56.86%) are not satisfied with the quality of domestic rice found in markets. Substantial proportion (52.94%) of these consumers suggested the use of appropriate rice processing equipment to achieve proper de-stoning, cleaning/dehulling and polishing of domestic rice in addition to improved packaging to meet consumer satisfaction. Other consumers suggested proper sorting of varieties (2.94%) and training of processor to acquire the right processing skills.

In terms of decision on rice purchase at household level, the results indicated that husbands (76.50%) in male headed households takes the lead on decisions associated to purchase of rice while 13.70% of consumers mentioned that women (wives) makes the decision. In female headed households the women takes such decisions. This scenario is not different even when the decision to be taken is on purchase of food items other than rice. Most households (44.12%) have consumers ranging from 2 to 10 with few of these household having consumers numbering from 11 to 20 members. The minimum and maximum number of consumers in these households were estimated at 2 and 37 respectively while the on the average nine consumers are found per household. Imported and domestic rice is purchased by 53.0% and 45.10% for cultural reason.

Results of this survey revealed the different units of measure, prices paid by consumers and the type of rice packaging available in markets/places where the consumers make their purchases. The quantities purchased by consumer determine the unit of measure and hence price paid. About thirty percent (31.40%) of consumers purchase imported rice in 50Kg bags at an average price of NGN5612.90. Smaller quantities of the imported rice purchased by consumers (29.40%) are measured in "Mudu (half-tiya)" at average price of NGN175.13. About thirty-five percent (35.30%) of consumers purchase domestic rice in smaller quantities measured in "Mudu (half-tiya)" at an average price of NGN174.48 per unit. Few consumers (5.90%) purchase large quantity of the domestic rice measure in 100Kg bag and purchased at an average price of NGN8391.67.

Consumers expressed willingness to pay specific prices for different qualities of imported and domestic rice measured in smaller and larger units. For best quality imported rice, consumers are willing to pay prices ranging from NGN165.14 per "Mudu (half-tiya)" to NGN5402.74 per 50Kg bag. The corresponding unit and prices proposed for best quality domestic rice are NGN185 per "Mudu (half-tiya)" and NGN5000 per 50Kg bag. On the other hand the consumers are willing to pay NGN142.43 and

NGN4555.88 per respective “Mudu (half-tiya)” and 50Kg bag of least quality imported rice. Prices offered for least quality domestic rice ranges from NGN122 per “Mudu (half-tiya)” to NGN 4250 per 50Kg bag. Generally, most consumers (88.20%) showed willingness to pay more for improved quality rice (such as well processed and de-stoned rice). Inadequate finance (1.96%) and satisfaction with present quality (3.92%) of rice were given as reasons for non willingness to pay more for improved quality rice.

In terms of packaging, most consumers showed preference for smaller packages such as 5Kg (31.40%) and 10Kg (35.30%) packages of imported rice. In addition the consumers are willing to purchase on the average 5packs of 5Kg or 3packs of 10Kg per month respectively. This scenario is similar to what was recorded for domestic rice during the survey. About eighteen percent (17.60%) and fifteen (14.70%) of the interviewed consumers preferred smaller packages of 5Kg and 10Kg respectively. The respective quantities that consumers are willing to purchase monthly were approximately 4 and 5 packs

Consumers revealed that many types/grades of domestic rice exist in the market with varying quality and prices thereby providing alternative to different income class of people in the society. Many of such types/grades are tasty but the satisfaction derived from consuming such rice is reduced due to poor quality output from processing enterprises. This in turn explains the lower prices of such rice compared to the imported type. Therefore, to processing of domestic rice needs a lot of improvement to meet quality and standard. There are markets where only domestic rice are sold due to reasons which include production and or processing of domestic rice in or around the location of the markets

With regard to health issue, consumers are generally not aware of any health implication associated with the consumption of both domestic and imported rice. However some consumers of domestic (40.20%) and imported (27.50%) revealed that consumption of the commodity could be associated with some diseases such as pile and complication of diabetes. Domestic rice is also associated with cases of appendicitis due to presence of stones in the rice. Except for this, rice consumption is generally perceived by consumers as safe.

1.0 Background

PropCom is a project aimed at facilitating functionality and efficiency of Nigerian commodity and service markets in such a way that these markets work for the poor. The goal is to improve livelihood of the poor by promoting their access and growth in commodity and service markets in line with the goals of poverty alleviation as envisaged in NEEDS and the attainment of the Millennium Development goals. During the first implementation of its catalytic activities, PrOpCom will focus on rice as the primary commodity.

Rice is brought into Kano from other states like Kaduna, Katsina and Jigawa, Bauchi etc. This is processed and sold in the Kano markets which serve a population of about 9.3 million. Large quantities of imported rice are also sold in Kano, specifically at the Singer market which is just adjacent to the Sabon Gari market. Despite the large volumes of imported rice handled by traders at the Singer market, one trader alone mentioned he could supply between 100 and 150 trailers, there is a huge market for local rice in the state. This is attributed to the low cost of local rice compared to imported rice and the fact that many people prefer local rice because it is more palatable, i.e. it tastes better than imported rice. Local as well as imported rice comes in different grades and standards, each with a different price, allowing people to purchase rice according to their means.

The main objectives of the study as contained in the TOR is to conduct demand and supply analysis of domestic and imported among consumers and traders in Kano areas.

1.1 Description of the Study area

Kano State is one of the most important rice producing areas of the country. This is largely due to the more than 22,000 ha of irrigated schemes of the Hadejia Jama'are River Basin Development Authority located in the state, the vast Fadama areas that were further developed under the erstwhile National Fadama Development Project and the upland production areas of Tudun Wada and Garko. Kano also has large processing clusters which are scattered in production centre areas like Kura, Karfi, Kwanar Dawaki, Tudun Wada, Bunkure, Garun Mallam, Chiromawa etc. The main markets for commodity trading where rice is sold in large volumes include: Dawanau, Sabon Gari, Rimi, Yankaba and Kurmi markets. Local rice is also traded as a major commodity in most of the 44 Local Government Areas of the State where both local traders and those from elsewhere go to buy rice.

Rice is brought into Kano from other states like Kaduna, Katsina and Jigawa, Bauchi, Taraba, Yobe etc. This is processed and sold in the Kano markets which serve a population of about 5,000,000 people.

The area for the demand and supply study covers the Kano Township areas with a sub-sample in Kura, Garko and Tudun Wada rice producing-processing clusters.

1.2 Sampling Methodology and Sample size

1.2.1 Sampling Methodology

For the sample to be well representative, it must cut across all socio-economic (rich, poor, male, female....) strata of the respondents particularly the consumers. This was achieved by

spreading the sample size across varying locations. For example locations within Kano city (Rimi and Kurmi) and also Brigade area, majority of the consumers are likely to be of low income status. Majority of consumers around Zoo road and Bompai areas are likely to be of higher income status in relation to other areas. In identifying the consumers for interviews, enumerators were stationed at retail points, eating points (restaurants and road side food vendors) and households. In order to ensure gender representation, female consumers were targeted for interviews using female enumerators in all the proposed locations.

The selected locations and strategy was used to take care of all the socio-economic strata of the consumers. In determining demand and supply situations and quality preference along the commodity chain, it is important to note that apart from consumers, other actors such as retailers, wholesalers and restaurant operators (including road side food vendors) are also important. As such the survey was also conducted among a cross-section of these categories as indicated in the sampling method. In interviewing restaurants the sellers are the targets for the in-depth interview; however customers at various restaurants and food selling points were randomly selected as respondents for questionnaire interview.

1.2.2 Sample size

Table: 1.2.2 Sample size for the consumer survey

Location	Respondents			
	Consumers**	Retailers**	Wholesalers*	Restaurants*
Kano Township				
Rimi market (Kano city)	10	5(2)	5(1)	
Kurmi market (Kano city)	10	5	5(1)	2
Dawanau market	10		5(2)	
Singer market	10		5(2)	
Sabon Gari	10	5(1)	5(1)	2
Yankaba	10	5		2
Zoo Road Area (Hausawa/Tudun Maliki, Gandu, Sheka)	10 (4)	5(1)		2
Bompai (Food selling points around industries,)	10			2
Brigade (Gama market, Kwanar Tudun Wada)	10 (3)	5(1)		2
Other Locations				
Kura	10(3)	3(2)	5(1)	2
Garko	5	3(1)	5(1)	2
Tudun Wada	5	4(2)	5(1)	2
Total for Enumerator Conducted Survey	100	40	40	-
Total for In-depth Interview	10	10	10	18

** Both enumerator conducted survey and in-depth were conducted. Figures in bracket in the case of consumers, retailers and wholesalers indicate sample size for the in-depth interview.

* Only in-depth interviews will be carried out.

1.3 Survey Instruments and Type of Data

Primary data was collected from a cross section of consumers and traders using structured questionnaires. Also qualitative data was collected using a checklist based on an in-depth interview discussion with selected consumers, retailers, wholesalers and restaurant operator's.

1.4 Data Collection Method

For conducting the questionnaire survey on consumers and traders enumerators were recruited and trained on how to administer the questionnaire. Pre-testing the questionnaire was part of the training. The training involved brainstorming and exercises to ensure proper understanding and ability to properly administer the questionnaire within the context of the survey. The research scientists overseeing the study were responsible for the conduct of the training and also for supervising the enumeration exercise.

The in-depth interviews were carried out by the research scientist. For these purpose two teams comprising of two scientists each were used. One scientist facilitated the interview process and the other was responsible for keeping records of the responses.

1.5 Data Analyses and Tools

Descriptive statistics (percentage, mean, frequency) will be used in analyzing primary data obtained from the enumerator conducted survey for consumers. Qualitative analysis for data obtained from the in-depth interviews was also conducted.

2.0 Results and Discussions

2.1. Socio-economic features of traders

The results of the survey indicated that 95% of the traders interviewed are male and only 5% are female. Thus rice trade is a male dominated business in Kano rice clusters.

In terms of age, the results in Table 2.1 indicated that majority of the traders represented by 56.25% fall within the age category of 41 to 50 years and thus in their middle age and active stage. 25% are within the age category of 31 to 40 years and only 1.3% is in the age category of 61 to 70 years. Thus rice trade is dominated by middle age and young people.

In terms of level of education 36.25 % of the traders possess primary education and 32.5% had secondary education, 12.5% had tertiary education and 18.8 % had Quranic/ Arabic form of education.

The size of household varies among the traders and majority represented by 65% have between 2 to 10 people in their households and 22.5% have household size in the range of 11 to 20 members and only 12.5 % have more than 20 members in their households.

In terms of years of experience in trading, majority have between 1 to 10 years of experience and 35% have between 11 to 20 years of experience, 6.25% have 21 to 30 years of experience. Only 1.3% has over 30 years of experience.

Trading was found to be the major occupation of 91.3% of the rice traders interviewed. 2.5 % mentioned farming as their major occupation and 1.3% each for government salaried work (civil servant) and rice processing as major occupations.

Income is a sensitive issue and thus 53.8% of the traders refused to provide information regarding their income. However, 6.25% fall within the income category of between NGN110,000 to 300,000, 5% fall within NGN510,000 to NGN1million and 2.5 % fall within NGN310,000 to NGN500,000. Only 3.75% had income of over 1million.

Table 2.1: Socio-economic features of traders

Variable	Freq	%
Sex		
Male	76	95
Female	4	5
Age category		
20-30	6	7.5
31-40	20	25
41-50	45	56.25
51-60	8	10
61-70	1	1.3
Level of education		
Primary	29	36.25
Secondary	26	32.5
Tertiary	10	12.5
Quranic	15	18.8
Household size		
2-10	52	65
11-20	18	22.5
More than 20	10	12.5
Years of experience in trading		
1-10	42	52.5
11-20	28	35
21-30	5	6.25
31-40	1	1.3
Major occupation		
Trading	73	91.3
Civil servant	1	1.3
Farming	2	2.5
Rice processing	1	1.3
Income(NGN) per annum		

40,000-100,000	2	2.5
110,000-300,000	5	6.25
310,000 -500,000	2	2.5
510,000-1million	4	5
More than 1million	3	3.75
No response	43	53.8

2.2 Socio-economic features of consumers

The socio-economic features of consumers that participated in this research showed that the opinions of both male (52.90%) and female (47.10%) were well represented. The age distribution of these consumers cut across young (24.24%), middle aged (27.27%) and some old (11.11%) people. This ensured representation of opinions from all age categories of the consumers. Large proportion of the participants have educational qualifications ranging from secondary (29.40%), tertiary (30.40%) with few (3.90%) who have primary educational qualifications. The least number of household members were recorded from consumers whose household size ranges from 3 to 10 members (66.67%). Consumers with household size ranging from 11 to 20 were 22.55% while those with 21 to 30 members per household constitute 8.82%. Generally, consumers interviewed were not very willing to reveal their annual income (41.18%). However, 35.29% of the interviewed consumers earned between NGN100, 000 to NGN200, 000 per annum. A few (2.94%) of them earned income that is up to or above NGN400, 001. The minimum and maximum annual income earned by the consumers was estimated at NGN 3600 and NGN 960,000 respectively. On the average these consumers live on NGN170, 426.67 annually. The incomes were mainly obtained from different sources which include trading (32.0%), salaries paid to civil servants (22.0%). It is worth noting that 30.0% of the consumers interviewed were housewives who do not have any other activity as a major activity and means of earning some income (Table 2.2).

Table 2.2: Socio-economic features of consumers

Variable	Freq.	%
Sex :		
Male	54	52.90
Female	48	47.10
Age:		
22 – 30	24	24.24
31 – 40	37	37.37
41 – 50	27	27.27
Greater or equals to 51	11	11.11
Educational Status:		
Primary	4	3.90
Secondary	30	29.40
Tertiary	31	30.40
Quranic	27	26.50
Others	10	9.80
Household size (Members):		

3 – 10	68	66.67
11 – 20	23	22.55
21 – 30	9	8.82
Greater or equals to 31	2	1.96
Income in naira:		
3600 – 100,000	5	4.90
100,001 – 200,000	36	35.29
200,001 – 300,000	14	13.73
300,001 – 400,000	2	1.96
Greater or equals to 400,001	3	2.94
No Response	42	41.18
Major Occupation:		
Housewife	30	30.0
Civil servant	22	22.0
Trader	32	32.0
Food Vendor	8	8.0
Private Service Provider (mechanics, etc)	8	8.0

2.2.1 Consumption of Rice and other Staples.

It is a well known fact that consumers of rice also consume other staples apart of rice. Such staples served as either complement or substitute rice. Staples such as cowpea are usually combined with rice in preparation of recipes. Results from this research revealed a number of staples consumed by in form of differently prepared recipes by rice consumers. Among these staples identified are maize, sorghum, millet, cowpea, sweet potato and yam which are important to consumers ranging from 72.50% to 96.10% (Table 3.1.2b for details). Other staples include wheat/flour, spaghetti, soybeans, semovita and Irish potato which are important to 8.82%, 28.43%, 8.82%, 0.98% and 18.63% of consumers respectively.

Generally, a significant proportion (49.0%) of rice consumers utilized both imported and domestic rice. About eighteen percent (18.63%) of consumers reasoned that imported and domestic rice has different taste for different recipes. Others (15.69%) based their reason for consuming both on affordability. Domestic rice is relatively cheaper that the imported type. Therefore consumers with low income bracket consumed both to reduce their expenditure. On the other hand, 23.50% of those interviewed consumed only imported rice because of reasons which include characteristics such as good taste, swelling capacity and availability. Those that consume only domestic rice constitutes 25.5% and their reasons include lower price and good taste of the rice.

Purchase of both imported and domestic rice varied among consumers in terms of periods and quantities purchased. Majority (34.31%), (31.37%) of consumers make irregular purchase of imported and domestic rice respectively. A good proportion (24.51%), (20.59%) make monthly purchased respectively. Other consumers make daily and weekly purchases (Table 2.2.1). There is no much variation in the quantities of purchased per period, for example 8.13Kg and 8.39Kg of imported and domestic rice were weekly purchased by consumers.

Table: 2.2.1: Consumption of Rice and other Staples

Variable	Freq.	%
Consumption of other staples:		
Maize	88	86.30
Sorghum	74	72.50

Millet	88	86.30
Cowpea	98	96.10
Sweet Potato	74	72.50
Yam	77	75.50
Wheat/Flour	9	8.82
Sphagetti	29	28.43
Soybeans	9	8.82
Semovita	1	0.98
Irish	19	18.63
Consume both local and imported rice:		
Yes	50	49.0
Reasons for consuming both:		
Imported and domestic rice have peculiar tastes for variety of recipes	19	18.63
Affordability (consumer may not afford imported rice all the time)	16	15.69
Domestic rice have higher nutritive value	1	0.98
Consume only imported rice:		
Yes	24	23.50
Reasons for consuming only imported rice:		
It is clean	8	7.84
Tasty	2	1.96
Swelling capacity	4	3.92
Availability	2	1.96
Consume only Domestic rice:		
Yes	26	25.50
Reasons for consuming only domestic rice:		
Cheaper than imported rice	14	13.73
Tasty	3	2.94
Periods for purchase of imported rice:		
Daily	5	4.90
Weekly	10	9.80
Monthly	25	24.51
Seasonal	-	-
Irregular	35	34.31
No Response	27	26.47
Average Quantities of imported rice purchased per period:		
Daily	5Kg	3.75*
Weekly	8.13Kg	7.50*
Monthly	38.5Kg	50.0*
Seasonal	-	-
Irregular	39.39Kg	50.0*
Periods for purchase of domestic rice:		
Daily	11	10.78
Weekly	12	11.76
Monthly	21	20.59
Seasonal	2	1.96
Irregular	32	31.37
No Response	24	23.53
Average Quantities of imported rice purchased per period:		
Daily	3.07Kg	2.50*
Weekly	8.39Kg	7.50*
Monthly	37.5Kg	50.0*

Seasonal	753.75Kg	100.0*
Irregular	34.38Kg	100.0*

* are modal values.

2.3 Supply and standardization traders' perspectives

The results of the study as contained in Table 2.3 indicated that there are various grades or varieties of domestic rice are traded in Kano area. SIPI rice variety was mentioned by majority of the traders (32.5%), other important rice grades mentioned include Dukusa by 11.25%, Jallof by 13.75%, Santana by 20%, Maiadda by 12.5%, WITA by 13.75%, Yar Tudun Wada and Yar Garko by 17.5% and 18.75% respectively. 37.5 % of the traders indicated that the suppliers of rice determine the type of grades traded in the market and their choice is therefore restricted to what their suppliers have in stock for sale. 35% of the traders indicated that the type of rice grades the procured and sale is largely influenced by the consumers' preference and choice. Only 3.75 % of traders decide on their own which grade to buy from suppliers and sell and such decision may not be unconnected to consumer's preference and thus marketability of the grades.

Important sources of obtaining domestic rice supply by the traders are listed in Table 2.3. Kura area was mentioned by 65% of the traders interviewed. This shows the importance of Kura rice cluster in terms of production, processing and source of milled rice to consumers. Tudun Wada rice cluster was the next source of domestic rice in terms of importance as indicated by 62.5% of the trader's interviewed. Garko area was mentioned by 13.75 % of the traders interviewed as a source of milled domestic rice. Suppliers of domestic rice to traders include mainly rural wholesalers as indicated by 68.75% of the traders interviewed, agents as mentioned by 22.5% of traders, processors as indicated by 5% of the trader's interviewed and urban wholesalers or distributors as indicated by 3.75% of traders.

In terms of availability and timeliness of domestic rice supply the results in Table 2.3 shows that 67.5% of the traders indicated that domestic rice supply is available and 65% of the traders indicated that the supply is also timely. Only 8.75% and 11.25% of the traders indicated that supply is not always available and not timely respectively.

There were also various grades of imported rice traded in the markets. Caprice and Caprice Gold rice grades were indicated 31.25 % and 12.5% of the traders interviewed respectively. Tomato Brand, Novel White, Stallion, Indian rice, Thailand rice and Power Taurus grades of imported rice were indicated by 20%, 11.25%, 11.25%, 8.75%, 5%, and 6.25% of the traders respectively. These grades of imported rice are obtained from various sources of which 18.75% indicated SINGER market which is located in Kano and serve as an urban distribution and wholesale market as their source of these various rice grades, other traders indicated the source as the country from where the rice grades are imported for instance 56.25%, 38.75 % and 7.5% of the traders mentioned *Thailand, India, and America* respectively as the source of the rice grades available in the markets. Grades of imported rice traded are determined by mainly consumers' preference and choice as indicated by 25% of the traders interviewed and by wholesalers and distributors or importers as indicated by 12.5% of the traders in each case.

Value addition to domestic rice after parboiling and milling among traders is not a widespread practice. Only 22.5 % of traders indicated adding value to milled domestic rice, while 47.5 % do not add value. The type of value addition include de-stoning as indicated by 17.5 % of traders, sorting as indicated by 15% of the traders and branding as indicated by 6.25% of the traders. Value additions were done for different reasons and such include; meeting consumers preference, attracting better prices and de-stoning to make the rice safer for consumers as indicated by 12.5%, 5% and another 12.5% respectively of the traders.

Supply pattern of rice particularly domestic rice is influenced by seasonal nature of rice production. The peak and off-peak periods of its supply should therefore correspondent with off-season and season periods of rice production, but the influence of paddy storage at farmers and wholesalers levels especially at the production clusters level should provide a stabilization impact on the supply trend and pattern within a period. For imported rice the influence of production seasonality may not be significant since the rice is obtained from various sources across the globe and actors involved have the capacity to store and procure large volume of the commodity.

Forty-seven and a half percent (47.5%) of traders indicated that October to March is the peak period of domestic rice supply, while 18.75 % of the traders indicated December to March as the peak period of domestic rice supply and 10% of the traders indicated January to March as the peak supply period. In terms of rice demand 23.8% of the traders indicated that October to January is the peak period of domestic rice demand, 17.5 % indicated October to November as the peak period of demand and 12.5% of the traders indicated September to November as the peak period of domestic rice demand.

For imported rice supply 43.75% of traders indicated that the peak of supply is all year round and thus no off-peak period and 5% indicated March to October as the peak of imported rice supply. In terms of demand for imported rice 40% of the traders indicated May to October as the peak period of demand and 15% indicated July to September as the peak period of demand for imported rice.

The best quality grades of domestic rice and sources as mentioned by traders include SIPI, Jallof, Jamila, Yar-Garko and Yar -Tudun Wada. Yar-Garko and Yar-Tudun Wada are names used by urban traders and they may refer to varieties such as SIPI, Jamila, Dukusa or Jallof. 27.5 % of the traders mentioned SIPI as the best grade of domestic rice, 18.75 % mentioned Jallof, 25% mentioned Yar-Tudun Wada and 12.5 % mentioned Yar-Garko and 10% mentioned Jamila as the best quality grades of domestic rice. The sources of these grades include Tudun Wada, Garko, Kura and Chiromawa. Rice from Tudun Wada and Garko are usually considered to be the best as a result of better processing techniques used in these clusters. Quality attributes of these grades include; whiteness, length, thickness, unbroken and dryness of the grain.

The quality of domestic rice is affected by the processing techniques and methods, the presence of stones, rice shaft, broken grain and high moisture content of grains are some of the poor quality attributes associated with domestic rice. Many consumers are not satisfied with the quality of domestic rice especially at the urban centres. Forty-one and a half percent (41.5%) of traders indicated that consumers are satisfied with the quality of domestic rice, while 22.5 % of the traders indicated that consumers are satisfied with the quality of domestic rice available in the market. Quality of domestic rice can be improved and some of the means by which such improvement could be achieved include; provision of good processing equipment as indicated by 10% of the traders, ensuring proper removal of stones and good polishing of rice during processing as mentioned by another 10% of traders interviewed, improving parboiling practices as mentioned by 8.75% of traders and provision of training to local processors to improve their skills and practices as indicated by 12.5% of the traders.

Table: 2.3 Supply and standardization variables for traders

Variables	Freq	%
Other staples traded in addition to rice		
Maize	23	28.8
Sorghum	18	22.5

Millet	16	20
Cowpea	17	21.3
Sweet potato	1	1.3
Yam	4	5
Others (Macaroni, Sugar, semovita..)	27	33.75
Traders selling both domestic and imported rice	22	27.5
Traders selling only domestic rice	39	48.8
Traders selling only imported rice	23	28.8
Reasons for selling both domestic and imported rice	Freq	%
Meet consumers demand	18	22.5
Maximize profit	22	27.5
Diversification	12	15
Reasons for selling only domestic rice	Freq	%
Buyers preference due to its lower price and good taste	30	37.5
More profitable	8	10
Produced rice by self	1	1.3
Reasons for selling only imported rice		
Reasons	Freq	%
Buyers preference	15	18.75
Easily obtained on credit supply	10	12.5
Supply does not vary with season	10	12.5
More profitable	5	6.25
Frequency of restocking supply(Domestic rice)		
Variable	Freq	%
Daily	2	2.5
Weekly	15	18.8
Monthly	3	3.8
Seasonal	2	2.5
Irregular	27	33.8
Average Quantity of domestic rice procured per restocking:		
Period	Average Quantity in 100kg bags	
Daily	283	
Weekly	213	
Monthly	430	
Seasonal	283	
Irregular	383	
Frequency of restocking supply(imported) rice)		
Variable	Freq	%
Daily	-	-
Weekly	23	28.8
Monthly	4	8.9
Seasonal	-	-
Irregular	22	48.9
Average Quantity of imported rice procured per restocking		
Period	Average quantity in 50 kg bags	
Daily	-	
Weekly	1499	
Monthly	4633	
Seasonal	-	

Irregular	2546		
Grades of domestic rice traded and source			
Grades	Freq	%	
SIPI	26	32.5	
Dukusa	9	11.25	
Jamila	12	15	
Jar-ruwa	1	1.3	
Jallof(1,2,3)	11	13.75	
Yar-Mahangi	7	8.75	
Maiadda	10	12.5	
Santana	16	20	
WITA	11	13.75	
Yar China	2	2.5	
Yar Garko	15	18.75	
Mai lalle	1	1.3	
Yar- Das	6	7.5	
Yar- tudun wada	14	17.5	
Yar-kera	3	3.75	
Yar-dakar	1	1.25	
Yar-mubi	3	3.75	
Kwandala	8	10	
Kurkura	3	3.75	
Kilaki	3	3.75	
Yar-dandume	5	6.25	
Who determine grades of domestic rice traded			
Participants	Freq	%	
Consumers	28	35	
Suppliers	30	37.5	
Traders	3	3.75	
Source of domestic rice supply			
Source	Freq	%	Type of market
Tudun wada	50	62.5	Rural
Garko	11	13.75	Rural
Dawanua	3	3.75	Urban
Kura	52	65	Rural
Dandume	5	6.25	Rural
Mubi	3	3.75	Rural
Gezawa	1	1.25	Rural
Singer market	5	6.25	Urban
Dal	5	6.25	Rural
Sumaila	1	1.25	Rural
Chiromawa	1	1.25	Rural
Yako	1	1.25	Rural
Danbatta	1	6.25	Rural
Gora	5	6.25	Rural
Ganye	1	1.25	Rural
Danja	1	1.25	Rural

Suppliers of domestic rice to traders			
Supplier		Freq	%
Rural-wholesalers		59	68.75
Distributors(urban-wholesalers)		3	3.75
Processors		4	5.0
Agents		18	22.5
Grades of imported rice traded			
Grades	Freq	%	
Caprice	25	31.25	
Caprice Gold	10	12.5	
American Brand	2	2.5	
Mama Africa	6	6.25	
Indian rice	7	8.75	
Power Taurus	5	6.25	
Stallion	9	11.25	
Tomato brand	16	20	
Mai-ganga	3	3.75	
Milan rice	4	5	
Novel white	9	11.25	
Thailand rice	4	5	
Tiger	2	2.5	
Champion	5	6.25	
Special	4	5	
Who determine grades of imported rice traded			
Wholesalers	10	12.5	
Importers/distri butors	10	12.5	
Consumers	25	25	
Source of imported rice supply			
Source	Freq	%	Type of market
Singer market	15	18.75	Urban –wholesale
America	6	7.5	Foreign
Cameroon	6	7.5	''
China	5	6.25	''
India	31	38.75	''
Italy	5	6.25	''
Thailand	45	56.25	''
Brazil	2	2.5	''
Availability and Timeliness of domestic rice supply			
Response	Freq	%	
Available	54	67.5	
Not available	7	8.75	
Timely	52	65	
Not timely	9	11.25	
Availability and Timeliness of imported rice supply			
Response	Freq	%	
Available	39	48.8	
Not available	6	7.5	
Timely	35	43.8	

Not timely	4	5		
Value addition to domestic rice				
Response	Freq	%		
Add value	18	22.5		
Do not add value	38	47.5		
Type of value added				
Type	Freq	%	Who does value addition	Freq (%)
Branding	5	6.25	Hired workers	6(7.5)
Repackaging	2	2.5	Self	8(10)
De-stoning	14	17.5	Wholesalers	3(3.75)
Sorting	12	15	Miller	1(1.3)
Others (winnowing)	4	5	Hired worker and self	1(1.3)
Why is value added				
Reasons	Freq	%		
Attract better prices	4	5		
Meet consumers preference	10	12.5		
Remove stones and shaft to make it more safe for consumption	10	12.5		
Peak period of domestic rice supply				
Period in months	Freq	%	Average quantity supplied per trader in 100kg bags at peak	
October to march	38	47.5	35.3 bags	
December to march	15	18.75		
January to march	8	10		
Off-peak period of domestic rice supply				
Period in months	Freq	%	Average quantity supplied per trader in 100kg bags at off-peak	
April to September	36	45	11bags	
May to November	15	18.75		
May to September	11	13.75		
Peak period of imported rice supply				
Period in months	Freq	%	Average quantity supplied per trader in 50kg bags at peak	
All year round	35	43.75		

March to October	4	5	60.7 bags	
Off-Peak period of imported rice supply				
Period in months	Freq	%	Average quantity supplied per trader in 50kg bags at off-peak	
None	35	43.75	46.8 bags	
Nov to February	5	6.3		
Best quality grades of domestic rice and sources				
Grades	Quality attributes	Freq	%	Source/location
SIPI	White and long and thick grain	22	27.5	Tudun Wada, Kura
Jallof	Long and thick grain	15	18.75	Tudun Wada , Kura, Chiromawa
Jamila	White , long and thin grain	8	10	Garko
Yar-Garko		10	12.5	Garko
Yar-Tudun wada		20	25	Tudun Wada
Consumers satisfaction with quality of domestic rice				
Response	Freq	%		
Satisfied	33	41.5		
Not satisfied	18	22.5		
Means of improving quality of domestic rice to meet consumers satisfaction				
Means	Freq	%		
Provide good processing equipment	08	10		
Ensure de-stoning and polishing of milled rice	8	10		
Improve parboiling practices	07	8.75		
Provide training to local processors	10	12.5		

2.4 Supply and Standardization Consumers' Perspectives

The supply of rice could be viewed from the point of view of the commodity's availability at the right place and time, markets where obtained. The standardization entails the issue of quality of the commodity in question.

The results of the study showed that generally, both imported and domestic rice are available to the consumers at the right place and time. Specifically, 68.60% and 62.70% of consumers revealed that imported rice is available and timely respectively. The corresponding results from similar assessment on domestic rice showed that 77.50% and 70.60% have similar opinion as

the one reported in case of imported rice. Majority (50%) of consumers sited urban markets as place where imported rice is obtained. Other places include nearby stores along major roads and close to their houses as well as many of the local markets around the consumers vicinities. The places where domestic rice is obtained are both rural (27.45%) and urban (24.51%) markets and nearby local markets (22.54%) and retail-shops (0.98%). There is evidence from this survey that consumers (56.86%) are not satisfied with the quality of domestic rice found in these places/markets. Substantial proportion (52.94%) of these consumers suggested the use of appropriate rice processing equipment to achieve proper de-stoning, cleaning/dehulling and polishing of domestic rice in addition to improved packaging to meet consumer satisfaction. Other consumers suggested proper sorting grains according to varieties (2.94%) and training of processor to acquire the right processing skills (Table 2.4).

Table 2.4: Supply and Standardization Variables for Consumers

Variable	Freq.	%
Availability of imported rice at right place and time:		
Available	70	68.60
Timely	64	62.70
Place/market obtained		
Nearby store	6	5.88
Urban market (large cities)	51	50.00
Nearly market (any)	4	3.92
No response	41	40.20
Availability of imported rice at right place and time:		
Available	79	77.50
Timely	72	70.60
Place/market obtained:		
Nearby local market	23	22.54
Rural market in production area	28	27.45
Urban market	25	24.51
Nearby store	1	0.98
No response	25	24.51
Satisfied with quality of domestic rice:		
Yes	33	32.40
Suggestions to improve quality to meet consumer satisfaction:		
Acquire and use appropriate equipment for de-stoning, cleaning/dehulling, polishing + good packaging	54	52.94
Proper sorting of varieties/grades	3	2.94
Training processors (parboilers and millers on quality of output)	1	0.98

2.5 Demand and Pricing traders' perspectives

Rice has become a stable food items for most households in both urban and rural areas and among different socio-economic categories of people as such the magnitude of its demand is expected to be high and steady throughout the year. However, the demand for rice could be influenced by socio-cultural factors with higher magnitude of rice demand expected during festivities, religious and or cultural periodic events such as SALLAH or MAULUD, CHRISTMAS period and so on.

The peak and off-peak periods of domestic rice supply were indicated by the traders. About twenty-four percent (23.8%) of traders indicated October to January as the peak period of domestic rice demand. 17.5% indicated October to November as the peak of domestic rice demand and 12.5% indicated September to November as the peak. Off peak periods were March to September, May to September and February to October as indicated by 11.25%, 35% and 12.5 % of traders respectively. For imported rice the peak periods of demand were May to October and July to September as indicated by 40% and 15 % of the traders respectively and off-peak periods were September to January and October to December as indicated by 18.75% and 15% respectively.

Prices for the different grades of domestic and imported rice traded are determined by various factors as indicated by the traders interviewed. Quality, market forces, source of the rice , seasonal variations in supply, packaging and influence of few wholesalers were the price determinants for domestic rice mentioned by 62.5%, 52.5%, 50%, 46.5%, 15% and 12.5% of the traders. For imported rice 46.3% of traders mentioned quality as a factor that determined price and another 46.3% mentioned market forces as another factor, influence of big traders was mentioned by 27.5% and source was mentioned by 30% of the traders.

Prices paid by consumers vary depending on the quality of the rice grade. For best quality domestic rice such as well processed SIPI, Jamila, Yar-Tudun Wada and Yar- Garko the prices paid ranges between NGN8500 to NGN 14,000 per 100kg bag as indicated by 33.75% of the traders and for least quality domestic rice grades the price ranges between NGN5000 to NGN8000 per 100kg bag as indicated by 58.75% of the traders. For best quality imported rice the price ranges between NGN5200 to NGN7000 per 50kg bag as indicated by 37.5% of the traders and for least quality imported rice the price ranges between NGN4000 to NGN5000 per 50kg bag as mentioned by 15% of the traders interviewed.

With improvement in quality such as de-stoning and polishing 75% of the traders indicated that consumers are willing to pay more per unit of domestic rice. Only 3.8% indicated that consumers may not be willing to pay more even with quality improvement of domestic rice.

In terms of packaging polythene bag of 100kg size are usually used in packaging domestic rice as indicated by 76.25% of the traders and in some cases 50kg size bag are also used. 10% mentioned small metal basins in form of Tiya or Mudu as another material used in Packaging rice by traders.

Consumers are demanding different types and sizes of packaging as mentioned by the traders. Four to ten (4 to 10) Tiyas package where demanded as indicated by 12.5% of traders, 18.75% of traders indicated that consumers are also demanding 10 to 15 Tiyas pack, 10 to 20kg pack are also demanded by consumers as indicated by 10% of the traders. Qualitative and attractive packaging similar to that of imported rice is also demanded by consumers as indicated by 20% of the traders, water proof bags and packs of various sizes that can meet consumers' instant choices and needs were also part of what consumers are demanding in terms of packaging as mentioned by 10% and 15% of the traders interviewed.

Table: 2.5: Demand and Pricing Variables for traders

Peak period of domestic rice demand		
Period in months	Freq	%
Oct to Jan	19	23.8
Oct to Nov	14	17.5
Sept to Nov	10	12.5
Off- Peak period of domestic rice demand		
Period in months	Freq	%

March to October	9	11.25	
May to Sept	28	35	
Feb to Oct	10	12.5	
Peak period of imported rice demand			
Period in months	Freq	%	
May to October	32	40	
July to Sept	12	15	
Off- Peak period of imported rice demand			
Period in months	Freq	%	
September to January	15	18.75	
October to Dec	12	15	
Determinant of market prices for various grades of domestic rice			
Factors	Freq	%	
Source	40	50	
Packaging	12	15	
Quality	50	62.5	
Few big traders	10	12.5	
Market forces	42	52.5	
Seasonal variations	37	46.3	
Dryness	1	1.3	
Transport	3	3.8	
Determinant of market prices for various grades of imported rice			
Factors	Freq	%	
Source	24	30	
Packaging	14	17.5	
Quality	37	46.3	
Few big traders	22	27.5	
Market forces	37	46.3	
Seasonal variations	11	13.8	
Exchange rate fluctuations	8	10	
Prices paid by consumers for best and least quality domestic rice			
Grades	Prices in naira per 100kg bag	Freq	%
Best quality	8,500 -14,000	27	33.75
Least quality	5000 to 8000	47	58.75
Prices paid by consumers for best and least quality imported rice			
Grades	Prices in naira per 50kg bag	Freq	%
Best quality	5200 - 7000	30	37.5
Least quality	4000 -5000	12	15
Are Consumers willing to pay more for quality improvement			
Response	Freq	%	
Willing	60	75	
Not willing	3	3.8	
What Consumers are demanding in terms of packaging and weight rice			
Demand	Freq	%	
4 -10 tiyas pack	10	12.5	
10-15 tiyas pack	15	18.75	
10 -20 kg pack	8	10	

25 -50kg pack	18	22.5	
80kg pack	4		
Qualitative and attractive packaging	16	20	
Water proof bags	8	10	
Different sizes to meet consumers needs	12	15	
Type of material used in packaging domestic rice			
Type	Freq	%	Unit cost of material
Polythene bag	61	76.25	NGN50 for 100kg bag and NGN 40 for 50kg bag
Fibre bags	-		-
Paper	-		-
Small basins (Tiya and Mudu)	8	10	-
Others	-		-
What type of material should be used in packaging domestic rice			
Polythene bag	54	67.5	Unit cost
Fibre bags	-		NGN50 for 100kg bag and NGN 40 for 50kg bag
Paper	-		
Small basin	-		
Others			

2.6 Demand and Pricing Consumers' Perspectives

2.6.1 Determinants for Preference and Choice for Domestic and Imported Rice

The consumers of rice exhibit preferences for imported and domestic rice. Results from this research revealed that imported rice is preferred by 72.50%, 47.10%, 45.10% and 41.20% for its cleanliness, colour, swelling capacity and suitability to recipes (jollof, white rice etc.) respectively. On the other hand, domestic rice is preferred among 71.60%, 66.70%, 34.30% and 33.30% for its price (cheaper), taste, aroma and suitability to particular local recipes - waina/masa, tuwo, sinasir, etc. (Table 2.6.1)

2.6.2 Decision on Purchase of Rice and other Staples by Household

The decision to purchase rice and types/grades to purchase by households as examined by this research revealed that husbands (76.50%) in male headed households takes the lead on decisions associated to purchase of rice while 13.70% of consumers mentioned that women (wives) makes the decision. In female headed households the women takes such decisions. This scenario is not different even when the decision to be taken is on purchase of food items other than rice. Most households (44.12%) have consumers ranging from 2 to 10 with few of these household having consumers numbering from 11 to 20 members. The minimum and maximum number of consumers in these households were estimated at 2 and 37 respectively while the on the average nine consumers are found per household. Imported and domestic rice is purchased by 53.0% and 45.10% for cultural reason. From this proportions 46.10% of the interviewed consumers purchased imported rice because of its suitability for specific recipes (jollof, white rice etc.) while 44.12% purchased domestic rice because of its suitability in

preparation of local dish (waina/masa, tuwo, etc) especially when prepared in large quantities such as usually done during ceremonies.

Eating habit is another important reason for purchase of imported and domestic rice among 60.78% and 53.90% of consumers respectively. Some consumers (60.78%) prefer modern recipes (Jallof, white rice, fried rice, etc) especially during ceremonies. These consumers found imported rice more suitable for preparation of such modern recipes. These consumers explained further, that less labour is required to prefer recipes because of its cleanliness and lack of stones. Similarly, other consumers (53.90%) prefer local recipes especially during the ceremonies (Sallah festivities, wedding and naming ceremonies, etc.) and these consumers found domestic rice as more suitable for such recipes (Table 2.6.2).

Table 2.6.1: Determinants of preference and choice for imported rice

Variable	Freq.	%
Determinants of preference and choice for imported rice:		
Price	11	10.80
Swelling capacity	46	45.10
Taste	24	23.50
Cleanliness	74	72.50
Duration of cooking	36	35.30
Colour	48	47.10
Aroma	25	24.50
Shape of grains	38	37.30
Suitability to particular recipes	42	41.20
Others	9	8.80
Determinants of preference and choice for imported rice:		
Price	73	71.60
Swelling capacity	35	34.30
Taste	68	66.70
Cleanliness	3	2.90
Duration of cooking	27	26.50
Colour	7	6.90
Aroma	35	34.30
Shape of grains	9	8.80
Suitability to particular recipes	34	33.30
Others	2	2.0

Table 2.6.2: Decision on Purchase of Rice and other Staples by Household

Variable	Freq.	%
Purchase of rice in male headed household:		
Husband	78	76.50
Wife	14	13.70
Purchase of rice in female headed household:		
Self	8	7.84
No response	94	92.16
Purchase of food other than rice in male headed household:		
Husband	70	68.63
Wife	22	21.57
No response	10	9.80
Purchase of food other than rice in female headed household:		
Self	8	7.84

No response	94	92.16
Number consumers per household:		
2 – 10	45	44.12
11 – 20	7	6.86
21 – 30	5	4.90
Greater or equal to 31	1	0.98
No response	44	43.14
Minimum	2	
Maximum	37	
Average	9 (SD=7.497)	
Purchase imported rice for cultural reason:		
Yes	53	52.0
Purchase domestic rice for cultural reason:		
Yes	46	45.10
Cultural reasons for purchase of imported rice:		
Suitable for preparation of modern recipes during ceremonies (Jallof, white rice, etc.) because of its cleanliness and good swelling capacity.	47	46.10
Cultural reasons for purchase of domestic rice:		
Suitable for preparation of local recipes during ceremonies (waina/masa, tuwo, sinasir, etc.) because of its taste, aroma and good swelling capacity.	45	44.13
Eating habit as reason for purchase of imported rice:		
Prefer modern recipes especially during ceremonies (Jallof, white rice, etc.)	62	60.78
Eating habit as reason for purchase of domestic rice:		
Prefer local recipes especially during ceremonies (waina/masa, tuwo, sinasir, etc.)	55	53.90

2.6.3 Units of Measurement, Prices and Packaging of Rice

Results of this survey revealed the different units of measure, prices paid by consumers and the type of rice packaging available in markets/places where the consumers make their purchases. The quantities purchased by consumer determine the unit of measure and hence price paid. About thirty percent (31.40%) of consumers purchase imported rice in 50Kg bags at an average price of NGN5612.90. Smaller quantities of the imported rice purchased by consumers (29.40%) are measured in “Mudu (half-tiya)” at average price of NGN175.13. About thirty-five percent (35.30%) of consumers purchase domestic rice in smaller quantities measured in “Mudu (half-tiya)” at an average price of NGN174.48 per unit. Few consumers (5.90%) purchase large quantity of the domestic rice measure in 100Kg bag at an average price of NGN8391.67.

The consumers interviewed expressed willingness to pay specific prices for different qualities of imported and domestic rice measured in smaller and larger units. For best quality imported rice, consumers are willing to pay prices ranging from NGN165.14 per “Mudu (half-tiya)” to NGN5402.74 per 50Kg bag. The corresponding unit and prices proposed for best quality domestic rice are NGN185 per “Mudu (half-tiya)” and NGN5000 per 50Kg bag. On the other hand the consumers are willing to pay NGN142.43 and NGN4555.88 per respective “Mudu (half-tiya)” and 50Kg bag of least quality imported rice. Prices offered for least quality domestic rice ranges from NGN122 per “Mudu (half-tiya)” to NGN 4250 per 50Kg bag. Generally, most consumers (88.20%) showed willingness to pay more for improved quality rice (such as well processed and de-stoned rice). Inadequate finance (1.96%) and satisfaction with present quality (3.92%) of rice were given as reasons for non willingness to pay more for improved quality rice.

The types of rice packaging available in the market vary with quantities of rice packed. Smaller quantities of rice are generally packed in small polythene bags where as larger quantities of 25Kg, 50Kg and 100Kg bags are packed in agro-polythene bags (see table 3.6.3). Most consumers showed more preference for smaller packages such as 5Kg (31.40%) and 10Kg (35.30%) packages of imported rice. In addition these consumers are willing to purchase approximately 5packs of 5Kg or 3packs of 10Kg per month respectively. This scenario is similar to what was recorded for domestic rice during the survey. About eighteen percent (17.60%) and fifteen (14.70%) of the interviewed consumers preferred smaller packages of 5Kg and 10Kg respectively. The respective quantities that consumers are willing to purchase monthly were approximately 4 and 5 packs (Table 2.6.3).

Table:2.6.3 Units of Measurement, Prices and Packaging of Rice

Variable	Freq.	%
Unit of measure for purchase of imported rice :		
Mudu "half-tiya"	30	29.40
Tiya (2.5Kg)	10	9.80
25Kg bag	3	2.90
50Kg bag	32	31.40
No response	27	26.50
Current prices per unit of imported rice purchased in the market		
Mudu "half-tiya"	NGN175.13	
Tiya (2.5Kg)	NGN350.25	
25Kg bag	NGN2806.45	
50Kg bag	NGN5612.90	
Unit of measure for purchase of domestic rice :		
Mudu "half-tiya"	36	35.30
Tiya (2.5Kg)	32	31.40
25Kg bag	6	5.90
50Kg bag	3	3.00
No response	25	24.50
Current prices per unit of domestic rice purchased in the market		
Mudu "half-tiya"	NGN174.48	
Tiya (2.5Kg)	NGN348.96	
50Kg bag	NGN4650.00	
100Kg bag	NGN8391.67	
Prices per unit willing to pay for best quality imported rice	All respondents	Female
Mudu "half-tiya"	NGN165.14	NGN142.00
Tiya (2.5Kg)	NGN330.29	NGN284.00
25Kg bag	NGN2701.35	NGN2750.00
50Kg bag	NGN5402.70	NGN5560.00
Prices per unit willing to pay for least quality imported rice	All respondents	Female
Mudu "half-tiya"	NGN142.43	NGN120.84
Tiya (2.5Kg)	NGN284.86	NGN241.67
25Kg bag	NGN2277.94	NGN2700.00
50Kg bag	NGN4555.88	NGN5157.14
Prices per unit willing to pay for best quality domestic rice	All respondents	Female

Mudu "half-tiya"	NGN185.00	NGN108.75
Tiya (2.5Kg)	NGN244.00	NGN217.50
25Kg bag	NGN2500.00	NGN1968.75
50Kg bag	NGN5000.00	NGN3975.00
100Kg bag	NGN10,000.00	NGN7875.00
Prices per unit willing to pay for least quality imported rice	All respondents	Female
Mudu "half-tiya"	NGN122.00	NGN87.00
Tiya (2.5Kg)	NGN215.60	NGN174.00.00
25Kg bag	NGN2125.00	NGN1640.00
50Kg bag	NGN4250.00	NGN3280.00
100Kg bag	NGN8500.00	NGN6560.00
Consumers willing to pay more for improved quality rice (such as well processed and de-stoned rice)		
Yes	90	88.20(37.42)
Reasons for lack of willingness to pay more		
Inadequate finance	2	1.96
Satisfied with present quality	4	3.92
Types of packaging (weight) available in the market		
Mudu "half-tiya"	59	57.80
Tiya (2.5Kg)	63	61.80
25Kg bag	81	79.40
50Kg bag	87	85.30
100Kg bag	65	63.70
Empty tomato-past-can	1	0.98
Cups	5	4.90
1 – 2 Kg Ofada rice in paper bags	2	1.96
Preferred packaging for selling imported rice		
1Kg	5	4.90
5Kg	32	31.40
10Kg	36	35.30
50Kg	1	0.98
100Kg	28	27.50
Average number of imported rice packages consumers are willing to buy in a month		
1Kg (Min=1,max=20), 12.38(SD=7.981)	20	
5Kg (Min=1,max=10), 4.62(SD=2.963)	5	
10Kg (Min=1,max=20), 3.40(SD=3.249)	2	
50Kg	-	
No response	94	92.20%
Preferred packaging for selling domestic rice		
1Kg	7	6.90
5Kg	18	17.60
10Kg	15	14.70
50Kg	2	2.00
No response	60	58.80
Average number of domestic rice packages consumers are willing to buy in a month		
1Kg (Min=1,max=30), 11.18(SD=12.319)	30	
5Kg (Min=1,max=15), 3.71(SD=3.459)	3	

10Kg (Min=1,max=30), 5.29(SD=33.941)	4	
50Kg (Max = 1)	-	

2.7 Traders' general views

Traders express numerous views with regard to domestic rice and such views revolve mainly around quality, taste, price and competition. 60 % of the traders mentioned that domestic rice has better taste than imported but only poorly processed, 27.5 % indicated that different grades of domestic rice exist but their quality cannot be compared with that of imported rice, 10% of traders indicated that availability of imported rice reduce consumption and demand for domestic rice and 35% of traders indicated that with better parboiling, de-stoning and sorting domestic rice can compete favorably with imported rice.

For imported rice the views express by traders include; good aroma after cooking as mentioned by 6.25% of the traders, cleanliness and better processed as mentioned by 27.5% of the traders, that availability of imported rice at all the times stabilize prices of the commodity as mentioned by 12.5 % of traders, short cooking duration as mentioned by 5% of the traders, 22.5% of traders indicated that importation of imported rice should be ban completely to give room for domestic rice, 18.75 % of the traders indicated that prices of imported rice are high and 25% of traders indicated that expiry dates are not written on the bags of imported rice.

Some markets exist where only domestic rice is sold across the country but particularly around the production clusters. 57.5% indicated knowing the existence of such markets, while 7.5 % are not aware of such markets (Table 2.7)

Grades of domestic rice mostly preferred by the consumers include; SIPI , WITA, Jallof, Jamila, Dukusa, Yar-Tudun Wada, Yar-Garko, Yar-Kura and Santana as mentioned by 28.75%, 26.25%, 15%, and another 15%, 10%, 25% , 28.75 , 31.25% and 15% of traders respectively. Yar-Tudun Wada, Yar-Garko and Yar-Kura were the ones with the highest proportion of buyers among the traders.

For imported rice Caprice and Caprice Gold were mentioned as the most preferred grades by 25% and 1.3 % of traders respectively, Champion and Mama Africa grades were mentioned by 2.5% each of the traders. Indian rice grade was mentioned by 5% of traders and Thailand by 3.8 % of traders.

In terms of health issue with regard to handling and sale of domestic rice 20 % of traders indicated the occurrence of health problem such as respiratory problem as a result of dust particles in domestic rice and risk on transit in going to markets for purchase of the commodity. In the case of imported rice only 7.5% indicated the occurrence of such problem such as expired stocks which are not purchase by customers and some consumers believed that consumption of imported rice complicate diabetics.

Table 2.7 General views variable for traders

Traders views with regard to domestic rice		
Views	Freq	%
Better taste but poorly processed	48	60
Different grades but quality not comparable to imported	22	27.5
Availability of imported rice reduce		

consumption and demand of domestic rice	8	10		
With better parboiling, de-stoning and sorting domestic rice can compete with imported rice	28	35		
Traders views with regard to imported rice				
Views	Freq	%		
Good aroma after cooking	5	6.25		
Cleanliness and better processed	22	27.5		
Availability of imported rice at all times stabilize prices	18	22.5		
Availability of imported rice will create basis for improving quality of domestic rice	10	12.5		
Short Duration of cooking	4	5		
Ban importation of imported rice to give way for domestic rice	18	22.5		
Price is high	15	18.75		
No expiry dates on bags	20	25		
Markets where only domestic rice is sold				
Response	Freq	%	Name of markets	Reason
Yes	46	57.5	Adamawa	Production area
No	6	7.5	Chiromawa	Production area
			Dal	Production area
			Dawanau	Prefer by most people in the area
			Garko	Production area
			Gora	Production area
			Karfi	Production area
			Gani	Production area
			Imawa	Production area
			Kwanar Dawaki	Production area
			Lungun Sumaila	Production area
			Tudun wada	Production area
			Gezawa	
			Danja	Production area
			Dambatta	
			Dandume	Production area
			Ganye	Production area
			Hadejia	Production area
			Makarfi	Production area
Most preferred varieties or grades of imported rice by consumes				
Grades	Freq	%	Approximate proportion of consumers purchasing the grade	

Caprice	20	25	20%	
Caprice gold	1	1.3	10%	
Champion	2	2.5	20%	
Indian	4	5	40%	
Mama Africa	2	2.5	30%	
Thailand	3	3.8	45%	
Stallion	3	3.8	30%	
Tiger	1	1.3	40%	
Unity	1	1.3	40%	
Most preferred varieties or grades of domestic rice by consumes				
Grades	Freq	%	Approximate proportion (%) of consumers purchasing the grade	
Santana	12	15	20	
Yar-garko	23	28.75	40	
Yar-tudun wada	20	25	40	
Dukusa	8	10	10	
Yar-kura	25	31.25	30	
Jamila	12	15	10	
SIPI	23	28.75	20	
WITA	21	26.25	20	
KILAKI	8	10	10	
JALLOF	12	15	15	
YAR MUBI	9	11.25	10	
Are there any perceived health issue with regard to handling and sale of domestic rice				
Response	Freq	%	Description of issue	
Yes	16	20	<ul style="list-style-type: none"> Respiratory problem due to dusty rice particles Risk on transit to markets Respiratory and sight problem due to shaft particles during winnowing 	
No	36	45		
Are there any perceived health issue with regard to handling and sale of imported rice				
Response	Freq	%	Description issue	
Yes	6	7.5	<ul style="list-style-type: none"> Expired stock not purchased by customers Complicate diabetics when consumed 	
No	37	46.5		

2.8 Consumers' general views

Consumers revealed that many types/grades of domestic rice exist in the market with varying quality and hence price thereby providing alternative to different income class of people in the

society. Many of such types/grades are tasty but the satisfaction derived from consuming such rice is reduced due to poor quality output from processing enterprises. This in turn explains the lower prices of such rice compared to the imported type. Therefore processing of domestic rice needs serious improvement. There are markets where only domestic rice are sold due to reasons which include production and or processing of domestic rice in or around the location of the markets (Table 2.8)

Similarly, many types/grades of imported rice are available in the market have higher prices than the domestic type but affordable to many people. The supply of imported rice into the markets generally lowered down the prices of domestic rice due to differences in quality. The good quality of imported rice eases preparation of recipes by consumers. However low income earners could not afford to consume the right quantity required due high prices of the types/grades in the markets.

Consumers generally are comfortable with rice in respect of health issues. However some consumers of domestic (40.20%) and imported (27.50%) revealed that consumption of the commodity could be associated with some diseases such as pile and complication of diabetes. Domestic rice is also associated with cases of appendicitis due to presence of stones in the rice. Except for this, rice consumption is generally perceived by consumers as safe.

Table 2.8: Consumers' general views

Variable	Freq.	%
Consumers General views on types and grades of domestic rice		
Many types/grades exist in the market and are affordable to low income people but quality is poor	5	4.90
Many types/grades are very tasty but poorly processed	20	19.61
Generally, processing of domestic rice needs to be improved	45	44.12
Some grades are of good quality and have more nutritive value than the imported types.	7	6.86
Large volume is produced but low quality leads to low prices	4	3.92
Consumers General views on types and grades of imported rice		
Many types/grades exist in the market and are affordable	1	9.80
Supply of imported rice determine the prices of domestic rice	4	3.92
Many types/grades are good and easy to cook because of cleanliness	23	22.55
Generally expensive and unaffordable to low income people	16	15.69
Some types have no expiry date label	2	1.96
Existence of markets where only domestic rice is sold:		
Yes	61	59.80
List of markets (rural/urban) where only domestic rice is sold with reasons.		
Market	Reason	
Chiromawa	Rice production and processing area	
Dakatsalle	Rice production and processing area	
Dawanau	Dominance of locally produced & processed food stuff	

Garko	Rice production and processing area	
Kadawa	Rice production and processing area	
Karfi	Rice production and processing area	
Kura	Important Rice production and processing area	
Kwanar Dawaki	Rice processing area.	
Tudun Wada	Very important Rice production and processing area	
Gubici	Rural area with some rice production	
Sara	Rural area with some rice production	
Larabar Sarki	Rice production and processing area located in Tudun Wada	
Garum Malam	Rice production and processing area	
Takai	Rural area with some rice production	
Existence of health issues with regards to consumption of imported rice:		
Yes	28	27.50
Description of the specific health issues:		
Cause pile	22	21.27
Complicates diabetes	13	12.75
Existence of health issues with regards to consumption of domestic rice:		
Yes	41	40.20
Description of the specific health issues:		
Cause pile	11	10.78
Causes appendicitis due to stones in the rice	38	37.26

2.9 Results of in-depth interviews

2.9.1 In-depth interviews results with restaurants

The results of the in-depth interviews with restaurants are presented in Table 2.9.1. The opinions of both local and modern restaurants were represented. In terms of type of rice used it can be noted that imported rice is preferred by modern restaurants because of its cleanliness and colour when cooked. Most local restaurants used only domestic rice and some others used both domestic and imported rice in preparing their recipes. Grades of domestic rice preferred by local restaurants operators include Jamila, Santana and SIPI and modern restaurants preferred imported rice such as Thailand Premium grades, Taurus, Caprice and American parboiled rice grades.

Table 2.9.1 In-depth Interview with Restaurants

ISSUE	RESPONSE	IMPLICATION
Type of rice used and reason	<ul style="list-style-type: none"> Modern restaurants use only imported rice because of its cleanliness and colour Some local restaurants use only local rice while others use both local and imported rice to satisfy various classes of customers. 	There is a high demand for imported rice from all the modern restaurants in Kano because of its quality. While only the local restaurants use the domestic rice because of the class of their customers.
Grades preferred(imported)	<ul style="list-style-type: none"> Thailand premium grade 	Different grades of imported

	<ul style="list-style-type: none"> • Taurus • 100 PCT premium grade • American parboiled rice. • Caprice. 	rice are used by the restaurants based on choice and preference. However these grades are among the best quality in the market.
Grades preferred(domestic)	<ul style="list-style-type: none"> • Jamila • Santana • SIPI 	Even the local restaurants use some the best quality domestic rice available.
Source of imported rice	<ul style="list-style-type: none"> • Singa market 	This market is the major source of imported rice where wholesale price is obtained.
Source of domestic rice	<ul style="list-style-type: none"> • Kura market • Dawanau market • Sabon Gari market 	There are more sources available for the domestic rice than the imported rice.
Attributes used in choosing the grade of rice.	<ul style="list-style-type: none"> • The modern restaurants choose rice that is white, polished, long grained as well as ability to swell during cooking. • While the local restaurants choose the local rice whose quality resembles that of the imported rice. 	Quality of rice is the major factor used by these restaurants to choose the type of rice used. Attributes such as size of grain, odour, taste, colour as well as volume determines the type of rice to purchase so as to meet customers expectations.
Type of rice consumers prefer.	<ul style="list-style-type: none"> • Customers of the modern restaurants prefer rice that is clean, white and free from stones. • Customers of the local restaurants prefer tasty rice 	Consumers prefer to eat quality rice with the attributes mentioned above
Major recipes of rice	<ul style="list-style-type: none"> • Major recipe for the modern restaurants are; white rice,Jallof rice and fried rice. • The major recipe for the local restaurants are; white rice and beans,Jallof rice as well as tuwo or waina. 	The major recipes used by all the modern restaurants are the same. This can be linked with what the customers prefer and demand for. This also goes for the local restaurants.
Type of packaging preferred	<ul style="list-style-type: none"> • All the restaurants prefer polythene packages. 	Polythene packages are preferred in all the restaurants.
Weight of package preferred	<ul style="list-style-type: none"> • The modern restaurants buy 25kg or 50kg packaged rice • While the local restaurants buy their rice in tiyas but would have preferred smaller packages. 	The popular packages preferred are the 25kg or the 50kg. The local restaurants that buy in tiyas would have preferred smaller packages of about 10kg.
Price	<ul style="list-style-type: none"> • The price of the 50kg imported rice used by the modern restaurants varies from N5000-N6000 	The modern restaurants purchase some of the expensive imported rice in the market which implies that the

	<p>depending on the grade.</p> <ul style="list-style-type: none"> The local restaurants buy in tiyas , the price varies from N240-N280 per tiya depending on the grade as well. 	higher the quality of rice, the higher the price. But the local restaurants purchase medium quality domestic rice whose price is on the average.
How often do you purchase the rice?	<ul style="list-style-type: none"> Some of the modern restaurants purchase their rice on a weekly basis while others purchase on a monthly basis. Most of the local restaurants purchase theirs on a daily basis. 	The modern restaurants do bulk purchase either weekly or monthly. This can make them enjoy economies of scale while the local restaurants make their purchase on a daily basis.
Quantity of rice purchased	<ul style="list-style-type: none"> The modern restaurants purchase 5-15 bags of rice either weekly or monthly. The local restaurants purchase 5-10 tiyas of rice daily. 	Restaurants play a significant role in the rice sector. There are many restaurants in kano and they purchase large quantities of rice from the market so as to meet the very high demand of rice recipes from their customers..
Peak period of rice demand	<ul style="list-style-type: none"> Rice is demanded through out the year in all restaurants. 	The demand for rice is through out the year
Off peak period of rice demand	<ul style="list-style-type: none"> The demand for rice decreases only during the Ramadan fast. 	This is the only period where the demand for rice falls because of the Ramadan fast.
Who decides what type of rice to buy?	<ul style="list-style-type: none"> The owner of the restaurants or the manager decides on what type of rice to buy in line with what the customer wants. 	The owner of the business is the decision maker who determines what and where to buy the rice. He also knows what his customer wants.
What qualities of domestic rice will you accept?	<ul style="list-style-type: none"> If they can get domestic rice that is white, long grained, tasty, nice odour, polished, stone free as well as swells during cooking of course they will go for it. 	The restaurants are looking for a domestic rice that has the same attributes with the imported rice. And unless they get that type of rice, they will continue to use the imported rice.

2.9.2 In-depth interviews results with traders

The description of the various rice grades available in the markets were obtained from the in-depth interviews with the traders and the results is presented in Table 2.9.2. The color, length and thickness of the grain were the most important physical features used in describing and distinguishing the various grades available in the markets.

Table 2.9.2 In-depth Interview with Traders

ISSUES	RESPONSE
Name and Description of grades	
CP	Bright and long grained
Dukusa	Brownish and thick grained
Jallof	Clean, bright and long grained
Kilaki	Dark and fragile
Mahangi	Dull colour and round grains
Mai Adda	Comes earlier than others
Mai lalle	Flat and fatty grained
Santana	Long and very tasty
WITA	Not as long as CP
Yar Adamawa	Long and fine grained
Yar Dakar	Long, reddish grains
Yar Dandume	Long and slim
Yar Das	Long and slim grains
Yar Garko	White and long grained
Yar Kera	Reddish grains
Yar Kura	Medium size and bright
Yar Kura 1	Not as slim as jamila
Yar Mahangi	Reddish fine grained
Yar T/wada	White and fine grained
Jaka	Dull and short grained
Jamila	Clean and long grained
Kurkura	Fine and whitish grains
Kwaddala	Short and dark grains
Kwaddala (123)	Very short grained
White rice	Short and white, used for tuwo
Yar kura 2	Medium size

3.0 Conclusion and recommendations

3.1 Summary and Conclusion

Majority of consumers have access to domestic and imported rice at the right place and time. But Consumers of domestic rice are not satisfied with the quality of rice available to them.

Consumer preference for domestic or imported rice is based on the suitability of each in preparation of modern recipes with imported rice and local recipes with the domestic rice.

Both male and female takes part in making decision for purchase of rice and other staples for household consumption. However, most of the decision for rice purchases is made by male household heads.

Different units of measure (small, large) and hence prices are used for sales of both imported and domestic rice. The prices vary from smaller to larger units and also the quality of rice on sale.

Consumers are willing to pay more for improved quality domestic and imported rice.

Various grades or varieties of domestic rice exist in the markets which could satisfy consumer requirements in preparation of various recipes and serve as alternatives for different income groups. However, the utility derivable from these grades are hampered by low quality due to poor processing.

Consumers prefer rice packaged in smaller quantities such as 5Kg and 10Kg. Both domestic and imported rice are mostly packaged in larger quantities such as 25Kg, 50Kg and 100Kg bags.

Generally, consumers are comfortable with rice in respect of health issues. However some consumers of domestic and imported rice revealed that consumption of the commodity could be associated with some diseases such as pile and complication of diabetes.

Value addition is low in domestic rice processing. Result of this survey shows that most traders are not engaged in value addition.

Rice trading and consumption is influenced by quality issues, prices and availability of grades from different sources. There is an establish standard for selling both domestic and imported rice which are not generally consistent with individual consumers demand especially in terms of packaging. With better processing, value addition and diversified standardization domestic rice can compete favorably with imported rice in meeting consumers demand and preference with regard to quality, taste and standard.

3.2 Recommendations

The followings are recommended based on findings of the study.

- Consumers are demanding smaller packs of rice at retail level. Therefore smaller packs of between 2.5 to 20 Kg by weight should be developed and promoted through processors and traders associations in the study area to satisfy consumer requirements.
- Traders and processors should be sensitized on the importance of proper grading and standardization of domestic rice as well as avoidance of adulteration of the commodity.
- Taste of domestic rice is one of the quality attributes preferred by consumers. There is the need to carry out detailed scientific or quality control tests to determine the exact contents and palatability of the domestic rice grain in relation to imported rice
- Traders and processors should be sensitized to add value (de-stoning, sorting and packaging) to domestic rice in order to satisfy consumers needs and to compete favorably with imported rice.