

The Need for ICT Based Services in Wholesale & Retail Sector ©

An Assessment in Nigeria



Produced by

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1 Introduction, Objective & Methodology

1.1 Background

Coffey International Development is managing a five year project in Nigeria to facilitate improvements in the performance and inclusiveness of the wholesale and retail sector. The Growth and Employment in States (GEMS) program, an initiative between DFID, and the Federal Government of Nigeria is targeted at four states of Nigeria: Kano, Kaduna, Lagos and Cross River. The work in the wholesale and retail sector will expand beyond these states subsequently into the trading centres of Aba and Onitsha (in Abia and Anambra states, respectively).

The GEMS 4 project aims to improve income and employment opportunities within Nigeria's wholesale and retail sector, particularly for the poorest and most vulnerable. While Nigeria's wholesale and retail sector is growing rapidly, inefficiencies within the value chain have resulted in lower prices for producers, lower wages for employees, lower profits for businesses and a higher cost of consumption for consumers.

GEMS 4 uses a Making Markets Work for the Poor (or M4P) approach to diagnose the problems and inefficiencies within the sector and design interventions that facilitate systemic change. The project will work to build local capacities and change market incentives so that the sector better meets the long-term needs of the poor, including women across Lagos, Kano, Kaduna, Cross river states.

Issues

The wholesale and retail sector is a key component and driver of Nigerian GDP growth, currently growing at a rate of 11.5% per annum. This can be attributed to high population growth, urbanization and increased incomes. The sector is dominated by food and beverages, which account for 65% of the country's overall consumption basket. The retail sector comprises of

1. Traditional/ informal format,
2. Small formal format and;
3. Large formal format.

Women have been key operators in the retail and wholesale systems existing in the country and are recognized to have contributed to the growth and expansion of the distribution channels and retailing. Therefore there are large implications in terms of gender-focused empowerment and poverty reduction to change in these sectors.

1.2 Objectives

The project purpose is to support favourable systemic change in markets which the poor presently use to produce pro-poor opportunities such as

1. Enhanced incomes for the poor, especially women
2. Jobs creation;
3. Improved access to markets;
4. More options and choices; and
5. Reduced risks.

Outcomes Envisaged

GEMS4 is mandated by DFID to facilitate and not implement change. The program facilitates change with collaboration and participation of local business entities, firms, and individuals. GEMS4 is therefore a catalytic agent triggering market efficiency through the intended beneficiaries (local market actors) such that they become the architect of their own development. GEMS4 would drive to develop market efficiency by creating market linkages between different market actors to work together and serve each other on a sustainable basis. The program is working to facilitate changes in the functioning of markets so as to encourage systemic changes leading

to greater governing access by the poor. GEMS4 also addresses issues of major concern such as: gender, conflict and the environment. Therefore all activities attempt to ensure that these concern areas are adequately identified where they exist in the economic or social structure being targeted and addressed by all service providers and facilitators.

The primary objectives of the assignment is to understand

1. The needs for information technology enabled services (ITES) among Wholesale and Retail market actors;
2. Identify the preferred mediums for delivery for these services given the current socio-economic conditions and the existing technological infrastructure.

The secondary objective of the assignment is to

1. Develop an understanding of the potential service providers (ICT based service providers/Value Added Services (VAS) providers and others);
2. The types of services in demand; service modality and
3. The potential market size for such services

The scope of the study is as follows

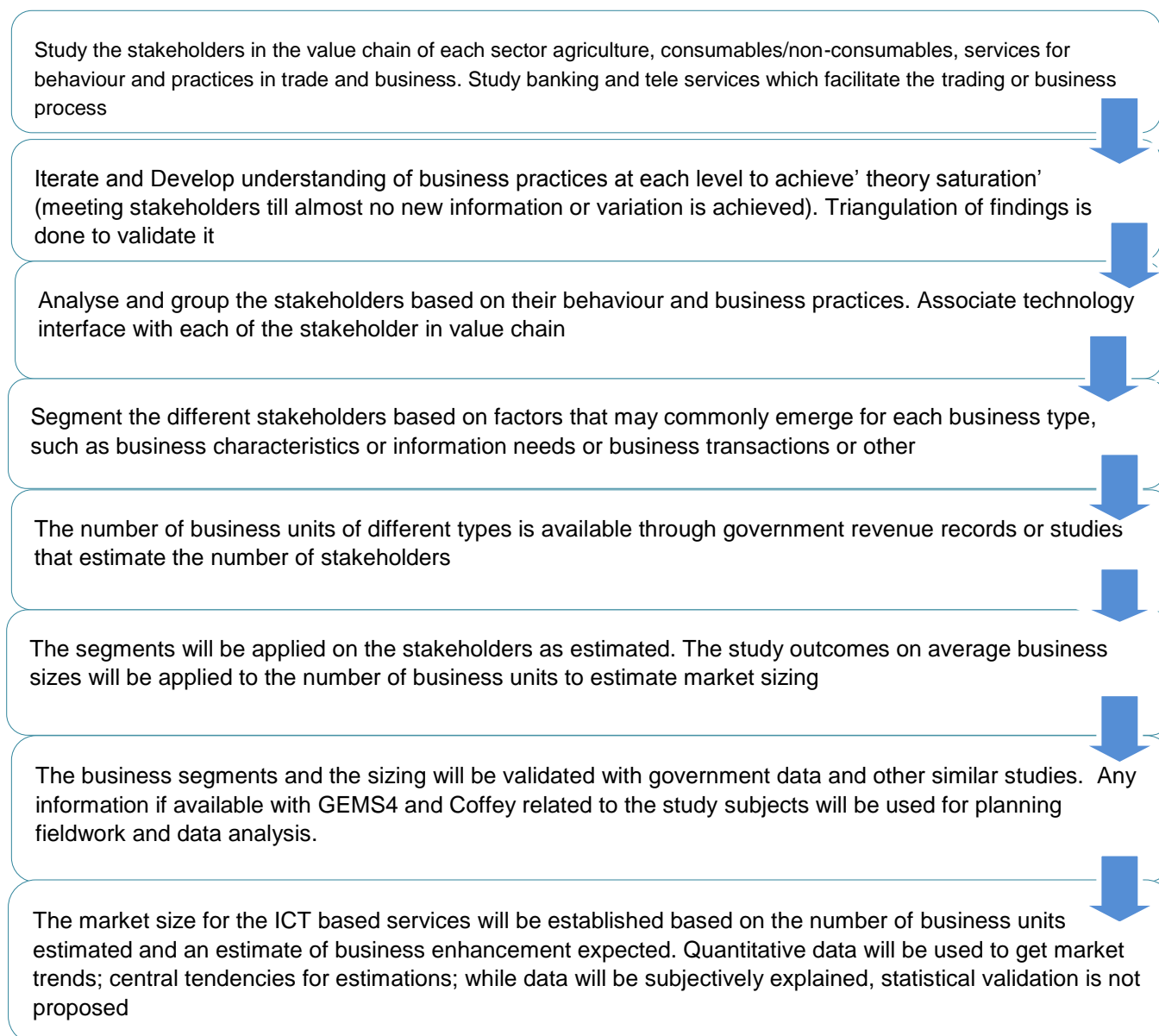
- To assess the information and advisory needs of different types of actors along the trading value chain (starting from post production/farm gate to retailers/end consumers) of selected sectors in urban, peri-urban and rural areas within the reach of mobile coverage of different telecom operators. To segment the actors/groups as per their information needs
- Identify their sources of information and advisory services
- Evaluate the options of information services and assess the preferred modes for their advantages and disadvantages.
- Assess the felt need for such services among the enterprises and therefore their willingness to pay.
- To evaluate issues and concerns of those interested to use such information and advisory services through new medium.
- Assess the size of the Potential market for such service(s).

1.3 Actors in the Chain

The study is focused on dealers, wholesalers and retailers for the following agri produce and the manufactured products. The service providers like telecom and packaging are the value creators at different centres of aggregation and distribution. Rice and Tomatoes are the most consumed food in Nigerian homes across the country.

Agriculture	Manufactured Products	Services	Others
Rice	Food	Telecommunication	Warehousing
Sorghum	Beverage	Packaging	Local Freight Forwarding
Tomato	Toiletries	Branding of produce	

1.4 Process of Assessment



A qualitative research approach was adopted to understand the wholesale and retail business engaged in agri-produce and manufactured products. While the manufacturing organizations are based in the major cities and towns, the agri-production is in the villages. Therefore the stakeholders involved in the agri produce are located in smaller towns which are closer to the villages.

MART developed three discussion guides to interact with the

1. Channel partners in the value chain for agri-produce and manufactured products
2. Institutions involved in developing VAS and ICT services
3. Banks which are actively involved in MSME and inclusive business

1.5 Geographical Coverage

MART team visited different locations in Nigeria and interacted with the channel partners for different produce in different markets of Nigeria. The locations visited were

4. Mile 12 market of Lagos
5. Corporate offices in Lagos of
6. Mile 2 and Mile 3 market at Port Harcourt
7. ICT training centre in Port Harcourt
8. Zaria agriculture market in Kaduna
9. Wholesale market in Kaduna
10. Beverage production site in Kaduna

1.6 Respondents

MART team accompanied with GEMS4 team met the following channel partners, service providers and stakeholders

1. Lagos
 - a. Mile 12 market of Lagos
 - i. Dealers/Distributors of Tomato
 - b. Senior management professionals in corporate offices in Lagos
 - i. VConnect : VAS producer
 - ii. CelPlas Industries : Plastic container manufacturer
 - iii. MTN
 - iv. Diamond Bank
 - v. Co-creation Hub : VAS service innovator
 - vi. iDea (Innovation Hub) : Business model innovator
2. Port Harcourt
 - a. Mile 3 market at Port Harcourt
 - i. Dealer/Distributor of Tomato
 - ii. Retailer & wholesaler of Sorghum
 - b. NIIT centre in Port Harcourt
3. Kaduna
 - a. Zaria agriculture market in Kaduna
 - i. Wholesalers of tomato
 - ii. Dealer of tomato
 - iii. Transporter of tomato
 - b. Wholesale market in Kaduna
 - i. Imported rice wholesaler
 - ii. Food and beverages wholesaler
 - iii. 7 UP production site in Kaduna

1.7 Quantitative Study

The objective of the quantitative part of the study is to assess the ICT opportunities among most of the wholesale and retail market stakeholders. The quantitative part of the study was designed to majorly include the traders/businessmen in the wholesale and retail market. These included traders/businessmen engaged in trading of agro-produce and manufactured goods in the value chain from farm/factory to end consumer. While several support services were studied in qualitative part, the transport service was found to be crucial to the business process of trading. The cost of transport significantly adds to the cost of the produce/products. Therefore transporters were included in the quantitative part of the study.

Therefore it was discussed and agreed upon that the quantitative part will include the following stakeholders

- | | |
|------------------------|--------------------------------|
| 1. Agri Agent | : Tomato, Rice, Sorghum |
| 2. Distributor/Dealers | : Tomato, Rice, Sorghum |
| 3. Commission Agent | : Tomato, Rice, Sorghum |
| 4. Wholesaler | : Tomato, Rice, Sorghum |
| 5. Retailer | : Tomato, Rice, Sorghum |
| 6. Distributor/Dealer | : Food & beverages, toiletries |
| 7. Wholesaler | : Food & beverages, toiletries |
| 8. Retailer | : Food & beverages, toiletries |
| 9. Transporter | |

Face to face interviews were planned across all the three locations, Lagos, Port Harcourt and Kaduna, with the stakeholders listed above.

Research Instruments

Two questionnaires were developed for conducting the face to face interviews, one for the distribution channel partners and second for the transporters. The questionnaires were shared with the GEMS4 team for feedback and suggestions. The feedback from the senior management was incorporated into the questionnaire before initiation of de-briefing and fieldwork.

1.8 Field Plan & Preparation

Three teams of three members each were deployed in Lagos, Kaduna and Port Harcourt to conduct the face to face interviews with the identified stakeholders. The team of field researchers necessarily had past experience of at least 3 years in conducting face to face interviews and data collection.

Training the Field Researchers

Considering the different types of respondents to be covered in the study, it was important that field researchers are de-briefed and trained for conducting the fieldwork. MART team planned interactions and de-briefing separately with the field researchers.

The interaction session was planned to share briefly about the GEMS4 project objectives and a description of the markets. Part of the discussions covered some of the learning from qualitative part of the study; this interaction helped the researchers to understand the features of the wholesale and retail markets. The orientation process helped them to understand the roles of the different stakeholders included in the quantitative part of this study. Half a day was assigned to this session.

The questionnaire debriefing sessions was designed to focus on the objective of the study and discussing the questionnaire. Each question was read, the context discussed and the meaning elaborated. The researchers were encouraged to share their knowledge and understanding about the question being discussed. On completion of discussion of the questionnaire, each researcher was asked to go through the questionnaire once again on their own. They were encouraged to raise queries to which clarification was given. The researchers were then asked to conduct a mock interview. One researcher was motivated to become the interviewer and the others were the respondents. The mock interview was conducted in supervision of the MART consultant. Errors in the process of

conducting interview and responses were corrected through a process of discussion. Half a day was assigned to this session.

Both the sessions were conducted in office of Coffey International in Lagos and Kaduna while in Port Harcourt, the hotel space was used.

The day next to the debriefing day, the field researchers conducted a pilot with support of MART consultants. The field researchers were trained to randomly select the respondents in the different types of market. MART consultant accompanied the field researchers to ensure that they are able ask the questions contextually and are able to relate to variations in responses of respondents. After conducting the first interview, all the field researchers came back for a feedback session with MART consultant. The interviews were scrutinized and information gaps if any were discussed. The field researchers resumed conducting the interviews after the discussion.

Sample Distribution

Respondent Type	Produce / Products	Number of Respondents
Agri Agent	Tomato, Rice, Sorghum	7
Distributor /Dealers	Tomato, Rice, Sorghum	19
Commission Agent	Tomato, Rice, Sorghum	6
Wholesaler	Tomato, Rice, Sorghum	10
Retailer	Tomato, Rice, Sorghum	8
Distributor/ Dealers	Food , Beverages & Toiletries	8
Wholesaler	Food , Beverages & Toiletries	9
Retailer	Food , Beverages & Toiletries	6
Transporter	Tomato, Rice, Sorghum , Food , Beverages & Toiletries	9
	Total	82

Fieldwork Challenges

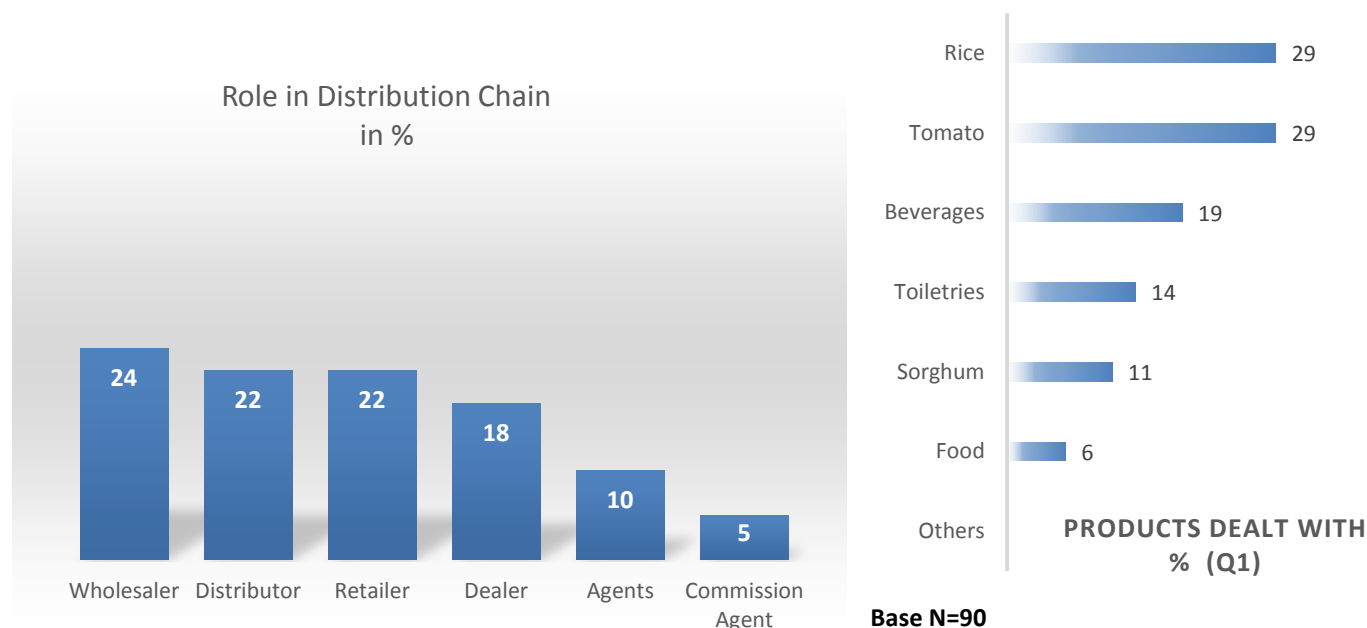
The typical challenges faced in conducting the fieldwork was

1. Potential respondents were not able to associate with the subject of ICT
2. They were suspicious and not willing to share their business processes, investments and margins
3. Often the respondents were busy with their business dealings and not willing to give time for conducting a detailed interview
4. Most respondents were not exposed to market research and therefore reluctant to share information

2 Behaviour & Practices of Trade Channel

2.1 Profile of Respondents

The respondents in the study were purposively selected from the value chain of Agri-produce and manufactured products to understand their trade practices and identify market challenges in their business which could be minimized through ICT based solutions.



Tomatoes and rice are the two most consumed food produce in Nigerian homes. Therefore nearly 60% respondents were represented in the sample.

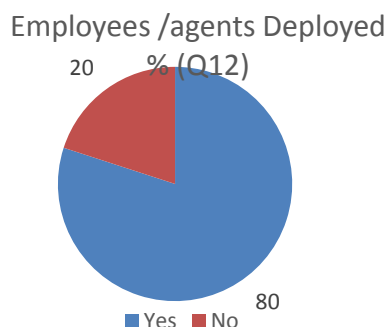
Years in Business

More than 50% of the respondents have been in the business for more than 10 years. It was learnt through in-depth interviews that the businessmen learn the trade through an apprenticeship with the established traders. They work on a no-salary basis for 7-8 years, during which basic living cost like food, clothes and other consumables are provided for. In their apprenticeship, they learn to conduct trading and take initiatives to contribute to the growth of the business of their employers. One completion of apprenticeship, the employer makes a onetime payment for the goods and other amenities, worth Naira 1 million to 5 million or more to help the apprentice set up his own business. These are social commitments of the established traders to their families and community.

Employees/Agents

The established businessmen have a practice of employing young employees to conduct business for them while they are involved in seeking more business opportunities. Some of the more experienced of the employees subsequently become agents for procurement of agro produce or commission agents in vegetable markets.

Number of Years in the Business (Q3)	
Base :All Respondent	90
	%
<5	15
5-10	33
10-15	24
>15	28



N =90

Number of Employees /Agents Working

Base :All respondent having employees /agents	72
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%

< 5	62
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6 – 10	22
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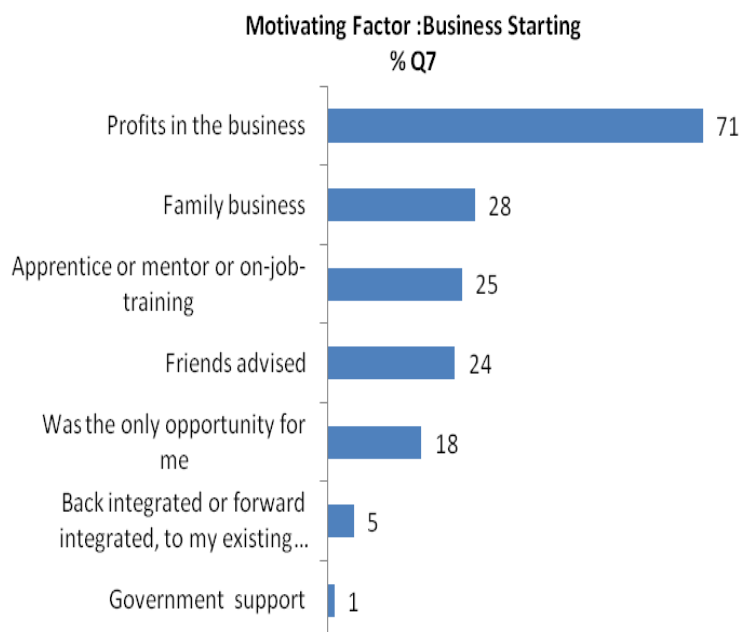
10 – 20	10
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>20	5
-----	---

Mostly the younger businessmen do not have employees as they try to establish their business. One fifth of the businessmen did not employ anyone.

2.2 Motivation to Initiate Business

The community or family based businesses have motivated the younger generation to join business in most cases. The profits in business are the key motivating factor for these businessmen.

**(Q8) Information Needs for Initiating Business**

Base :All Respondent	90
----------------------	----

%

Information regarding markets in different locations	57
--	----

Information about manufacturers / traders	51
---	----

Information about customers	45
-----------------------------	----

Information of transporters and their services	32
--	----

Information on appropriate packaging materials	19
--	----

Information related to registration of business	8
---	---

The information on different markets and the traders in these markets located across cities/towns within the country was considered one of the most important information among more than half of the respondents. Those involved in re-distribution of products/ agro produce, were interested to access information about customers, i.e. retailers, wholesalers in different markets.

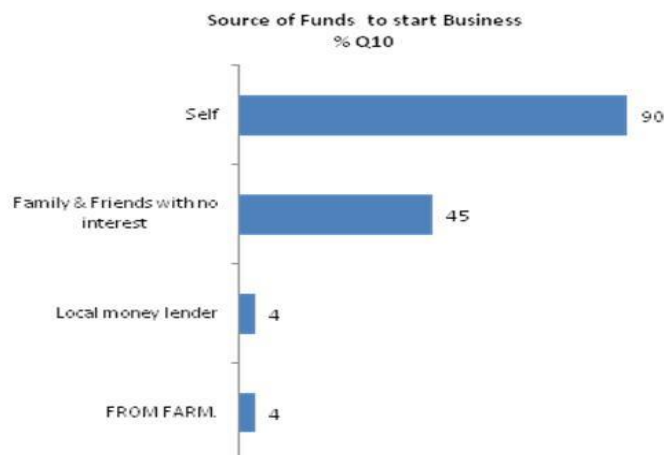
A significant one third of the respondents felt it important to know the availability of transport and transporters in different regions of the country. Only about one-fifth of them sought information about packaging materials for the

food crops which probably can be associated to their lack of knowledge about role of packaging in reducing post-harvest losses in farm produce especially perishable agro-produce.

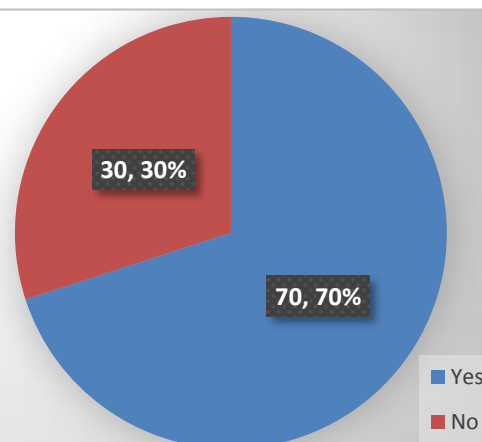
2.3 Source of Funds for Business

Almost all businessmen self-financed their business and about half of them received family support. None of the businesses with which interviews were conducted received institutional finance.

70% of the businesses felt the need for more funds to expand their businesses.



Felt Need for More Funds % Q13



N =90

Institution Approached for Financing Business expansion

Base :All Respondent felt need for more funds 63

%

Yes 32

No 68

Applied For Loan/Credit From Bank

Base : All Respondent approaching a bank 63

%

Yes 21

No 79

Only 32% of those who wanted funds for expansion approached an institution for funds and bank was an option considered by only 21%. This may indicate a low dependence on institutional finance for business loans.

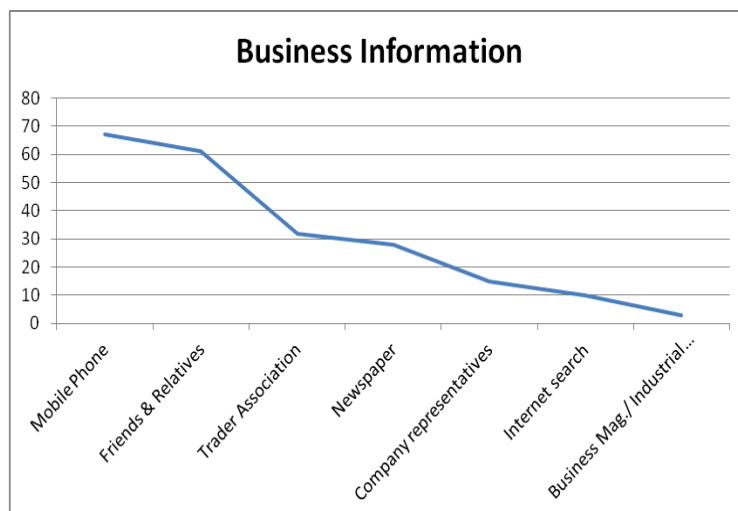
Only 17 % of those planning expansion of their business could access bank loan which required approval of documentation including necessarily having a current account, securing the loan amount with equivalent value of collaterals and a physical assessment of the business by the banker. Recommendation of the Trader's union is not as much important for accessing bank loans.

Bank loan was denied to applicants because they did not have a current account with the bank or they did not secure the loan with equivalent value of collaterals.

2.4 Source of Business Information

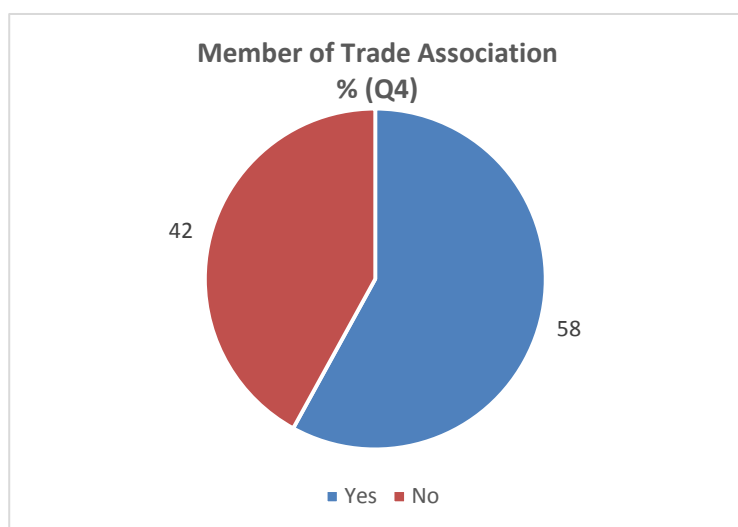
The emergence of some of the technologies and media options seems to be impacting the method of conducting business, especially mobile phone and internet, which are becoming convenient methods of networking and communication.

N =90



3.8 Trade Association

All dealers, wholesalers and agents are necessarily members of trader association in the agri-produce markets. The trade association largely works in the interest of the traders and supports collaboration among the trading community.



N = 90

Q4a

Base :All those respondent who are member of some Trade Association

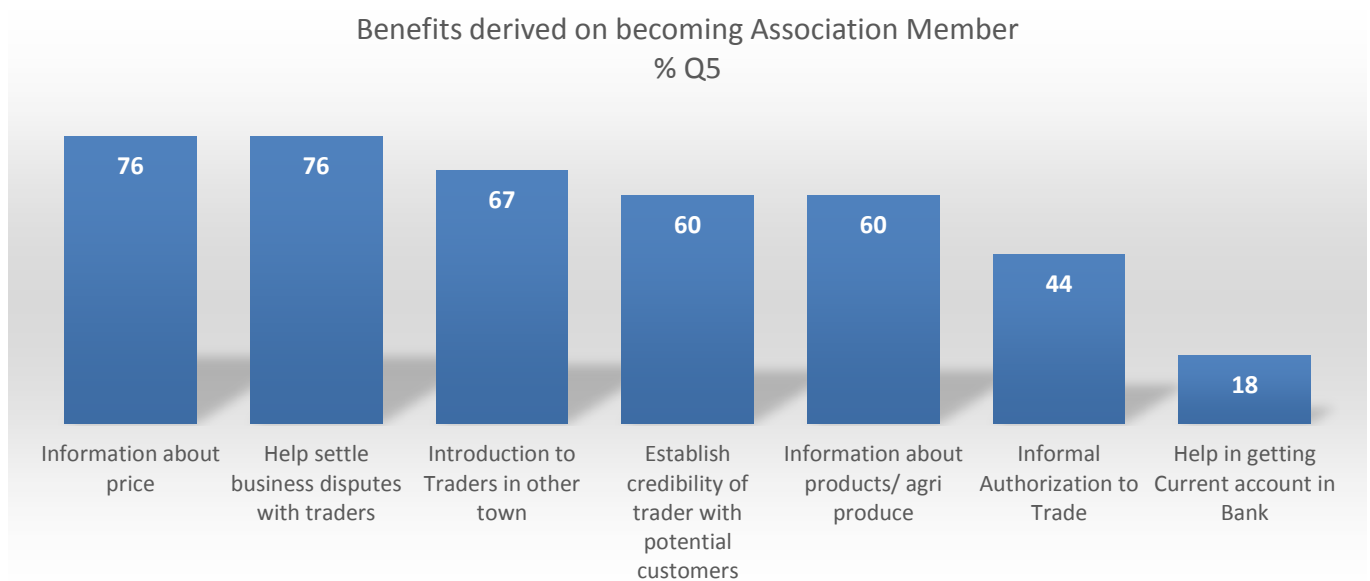
%

Tomato	31
Rice	22
Sorghum	11
City Traders	13
Others	22

Company distributors are mostly not associated to any association.

Similarly wholesalers and retailers dealing with manufactured products in the city are usually not members of any formal trade association.

The agro-produce trader's association in the form of a Trader's Union, controls its membership and retains its community characteristics. The trade associations located in different states, co-ordinate between themselves to develop marketing systems and processes. Members of the trade association claim to have benefitted from the association in several ways.



The dealers and wholesalers claim that they have access to information on price and information about agri produce through the trade association. However informal discussions led to the understanding that the information available is not transparent to all traders in the market. Therefore the agri markets seem to operate on limited information access and a non-transparent pricing.

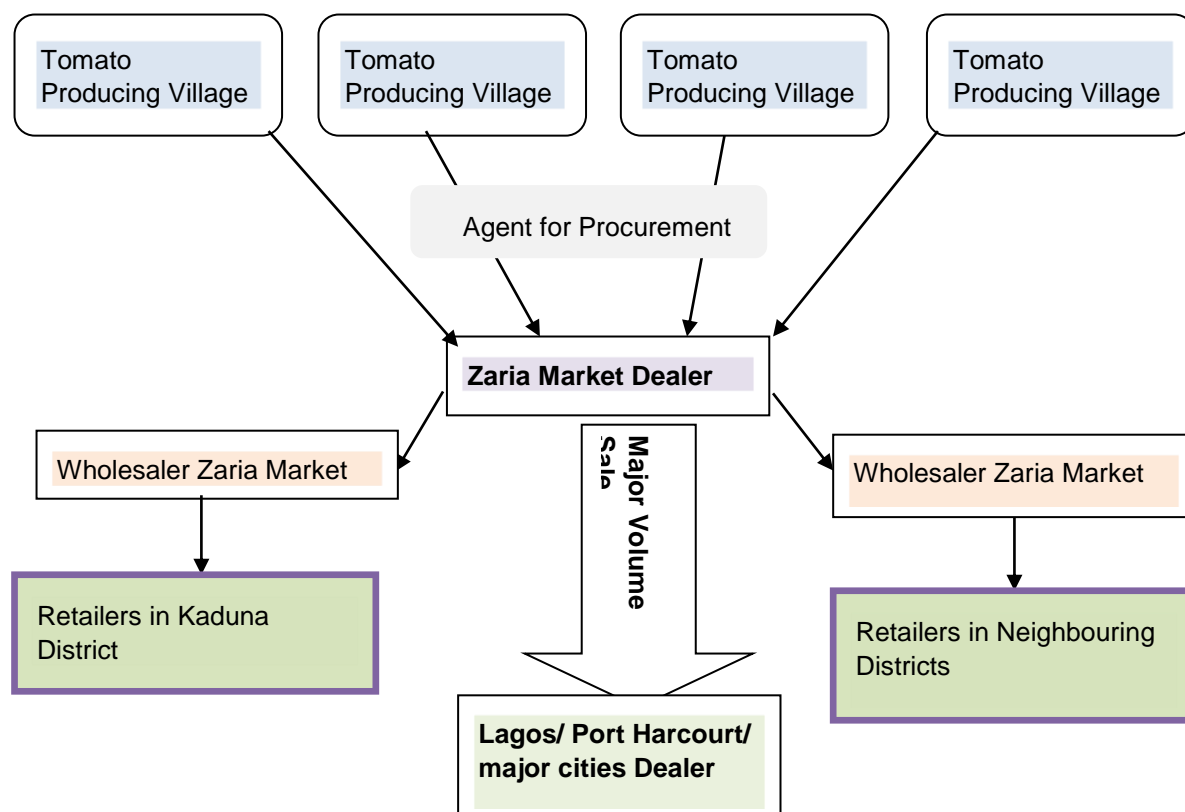
3 Understanding Trade Practices for Products & Services

3.1 Tomato

Tomato is an important part of the food palate in the Nigerian households. It was estimated that a family of 5 members may consume 1-2 Kilograms of tomatoes per day, spending about 200 Naira. It is estimated that 2.3 million metric tonnes of tomatoes are consumed annually. There is a high consumption of unprocessed tomatoes compared to processed ones. The volume of tomato consumption itself has created a massive and intense value chain originating in areas of production and reaching the major markets of consumption.

Dealers and distributors of tomatoes referred to the northern states of Kaduna, Kano, Katsina, Zamfara and Gombe as major production centres. Secondary information on tomato producing areas reveal that states like Sokoto, Jigawa, Taraba also produce significant tomatoes, there was no mention of these states by the dealers/distributors. Often the general reference of source market is limited to Zaria, Kaduna and Kano. More than half the dealers (57%) agreed that there is a gap in market information available about the different production areas and the potential supply sources. There is also a significant gap in access to information about traders operating in the different states. The gap in information about quantities of tomatoes procured its market price at different markets and the flow of goods to different terminal markets is large. It was found that information about tomato production areas and its centres of aggregation is not common understanding among the dealers/distributors at Lagos and Port Harcourt. Each dealer, at cities like Lagos/Port Harcourt, has a sourcing area and hires the services of a set of 5-10 dealers for sourcing. Most of them have little awareness about the dealers who operate from other locations or other states.

The structure of the Zaria market which can be categorized as a major aggregation centre for tomatoes is as follows



The dealers in Lagos, Port Harcourt and Enugu have business relationships with dealers in Zaria market. These are developed over time through personal reference or community based relationships. The city dealers visit their source suppliers in Zaria once or twice in a year in person or sometimes send their employee, to build the business relationship and retain person.

The agents working for the Zaria market dealers, are the connect between the dealer and the tomato farmers. The agents work for the dealers for a commission against each basket of tomato procured. The agents visit a set of farmers in their villages of influence, every season to track the farm produce. As the dealers receive orders, these agents procure the tomatoes from the farmers and bring them to the Zaria market where the tomatoes are packed appropriately and transported to respective destinations. The agent earns N50 per basket of tomato in peak season to N100 per basket in lean season.

The dealers at Zaria market are the investors in the business and make payments to the farmers on receipt of the produce at the market. The assessment of the quality of tomato is visual. There is no practice of weighing the produce. All tomatoes are procured in traditional baskets weaved from palm leaves. The size of the baskets was reported to vary but the stakeholders in the entire value chain accept the quantity measure as 'One Basket'. It was also reported that the baskets available some of the markets like Jos in Plateau, use smaller baskets to procure from farmers. Dealers from Port Harcourt, carry their own larger baskets to transfer the tomatoes from the smaller baskets at the Jos market before transporting them to Port Harcourt.

The wholesalers in Zaria market purchase baskets of tomatoes from the Zaria dealers and sell to retailers within the district of neighbouring districts. They buy the baskets as these arrive in the market through 'spot price dealing' and then transport the goods to the retailers using small transport vehicles like 'Tricycle' (3 wheelers), 'bus' (vans with carrying capacity of about 1-2 tons).

The pricing of the tomatoes varies significantly between the peak and lean seasons. It was also found that production areas for tomatoes are different in different periods of the year. For almost 8 months, between July and February, the northern states are the primary producers and suppliers of tomatoes. In the months of February to June, some of the central northern states like Plateau become the key production centre for tomatoes. In the peak season in Zaria market, the price of tomatoes procured from farmers is as low as N400 per basket. The price increases in the leaner months to about N2500 per basket for the farmers.

The tomatoes are perishable and therefore require a fast transport system to the consumption market. Trucks with '16 wheels', about 25-30 tons capacity is used to transport tomatoes to the markets like Lagos, Port Harcourt or Enugu. These trucks carry nearly 500 baskets and it is estimated that each basket is at least 50 Kgs though some assume that it is 40 Kilograms. The cost of transport between Zaria and Lagos varies between N180000 to N300000, during the lean and peak season respectively. The cost of transport is a factor of availability of trucks and the variation in cost of diesel due to poor availability.

The payment systems used in the market varies with the volume of business and the convenience of conducting business in cash. Most of the business of tomato in the wholesale market is conducted between 4am and 10am. The agents carry cash from the dealers to pay the farmers on purchase. The payments may however be delayed during the peak season when tomatoes arrive in abundance in the market. The farmers lose their bargaining capacity due to the high volumes of market arrivals. The dealers have to push the produce through their network of dealers and receiving full or part payment in advance does not remain a strict practice.

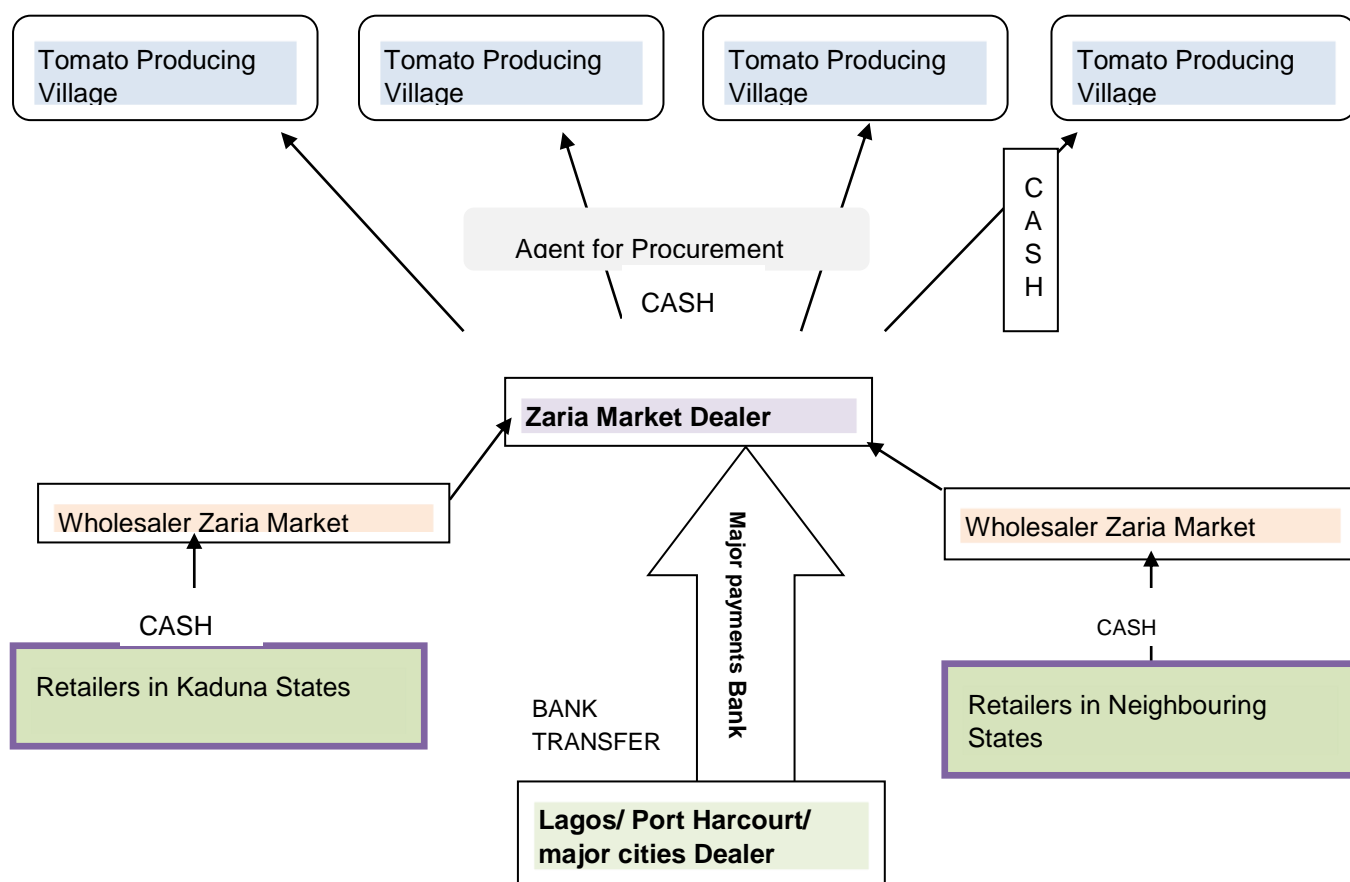
It was encouraging to find use of banking services by the dealers for transferring funds to make payments to their supplier dealer. Such transactions are confirmed through phone calls and a check with the bank about receipt of payments. The process may take up to three days due to less reliable network. The other stakeholders like the wholesalers, retailers and some of the farmers do have bank accounts but do not find it convenient to transact through the bank. They need to make immediate payments in cash and their work starts early in the morning when the banks are still to start business in the day. In this context the ATMs are quite relevant and facilitate the business. However, it was also understood that there is a limit to amount of cash that can be withdrawn from ATMs which is presently N100000. Therefore to close the business dealings beyond the value that could be withdrawn from ATM in a day requires cash-in-hand.

However, they were limitations to the electronic banking

1. The poor electricity conditions often disrupt the banking transactions in ATMs. People queue up for cash withdrawals.
2. The internet connectivity is also poor at some ATMs leading to difficulty in accessing cash at ATMs.
3. Need for more cash than N100000 requires that the dealer has to wait for the bank to open for its business at 9am or 10am. The business at Zaria market is almost over by that time.
4. Many of the dealers are less literate or less exposed to technology. They do not find the banking processes easy to manage and therefore restrict their banking transactions to minimum.

The following forms of financial transactions were done in the tomato market

3.1.1 Financial Transactions

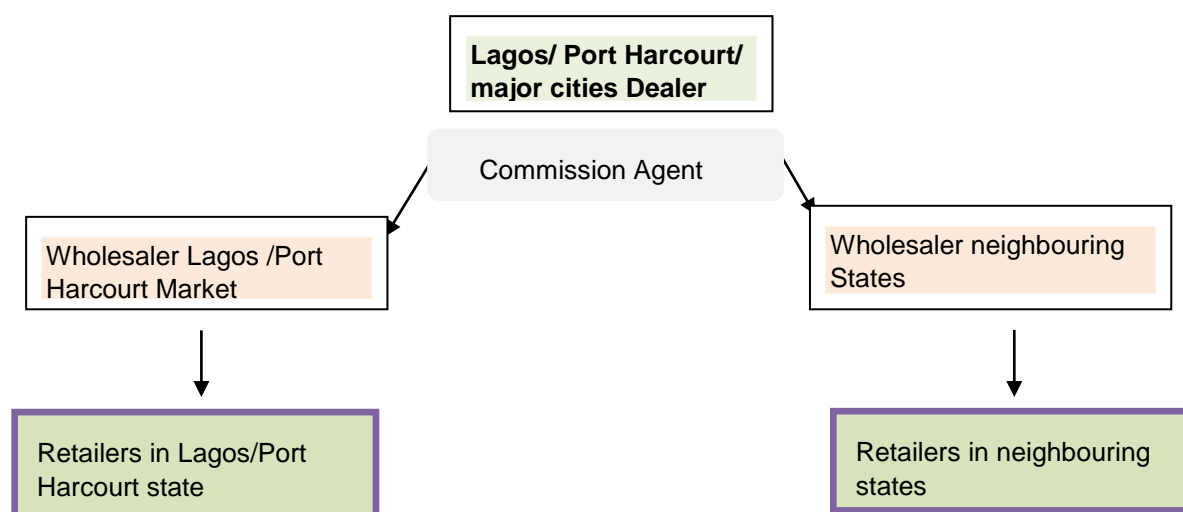


The communication between the stakeholders is through voice calls over mobile. A few of them own smartphones which they use for instant messaging like Whatsapp, access social website like Facebook and twitter, and download ringtones onto their mobiles. Some of them are aware of mobile money but few have used the services. There is limited use of SMS on mobile phones due to low capability and some felt that it was expensive.

3.1.2 Consumption Market for Tomatoes

The cities like Lagos, Port Harcourt and others are the centres for consumption of agro-produce and are therefore the largest re-distribution centres for tomatoes. Mile 12 in Lagos, Mile 1 and Mile 3 in Port Harcourt are the well established markets for re-distribution of agro-produce to the city markets and markets in neighbouring states.

The Lagos market can be represented as follows



The dealers in these big cities are majorly re-distributors of tomatoes in the respective states and neighbouring states. The dealers have association with several commission agents who conduct the deals for them, with wholesalers who are the buyers in these markets. The wholesalers purchase baskets of tomato which are then transported in taxi or bus (vans) to different markets within the state and neighbouring states.

The commission agents, working on behalf of a dealer, tracks the arrival of trucks, tracks the wholesalers present in the market, assesses the demand in the market for that period and bargains for the best price with the wholesalers. For his efforts he earns about N200 per basket of tomato in the peak season and N500 per basket of tomato in the lean season.

The wholesalers arrive in the market early in the morning to purchase their required agro-produce stocks; they may be from the state itself or from neighbouring states. They hire 'bus' (van) or taxi to carry they stocks to their markets. They connect with the commission agents for different produce and bargain for the best prices. In most cases the price is driven by the commission agents as there is little information about the total number of truckloads of tomato that are to arrive in the market. It was understood that in absence of information about quantity of tomato arriving in the market on the day, there is intense speculation and the price of tomatoes could vary up to N2000 per basket during the day.

During the fieldwork in the month of June, a lean season for tomatoes, the prices in the wholesale markets were quite high at both Lagos and Port Harcourt. The supplies of from Kaduna had reduced and the supplies were largely from Plateau state.

The Best Tomato	Kaduna (Aggregation Point)	Lagos (Consumption Point)	Port Harcourt (consumption point)
Price in Wholesale For One basket	3000 - 5000 Naira	14000 -16000 Naira	10000 -12000 Naira

While markets in major cities can vary, the price differential between the production area and consumption area is very steep. The price differential is often hinted to be result of speculation, as dealers and wholesalers do not have any information about the impending supplies. There is little or no information related to number of trucks /trailers of tomatoes that would arrive in the market on a particular day. Therefore there is a sense of scarcity early in the morning when trucks are yet to arrive and the prices rise based on speculation. But the speculation drops with

arrival of more trucks with tomatoes. The wastage of tomato was also stated as one of the reasons for the steep wholesale prices at Lagos/Port Harcourt.

Physical observation of the business of tomatoes till the retail point revealed that the tomatoes in good condition are sold in retail to individual consumers. Those which get pressed but are intact attract a lower price. However there are about 30-40% of the tomatoes which open up and the juice is spilled. These tomatoes are washed and sold to the small road side eateries.

Discussions with the tomato dealers and wholesalers in different locations highlighted nearly 50% wastage of tomatoes during transit. However, it was difficult to locate any particular area near the market where the damaged tomatoes are disposed. Instead, it was observed that the damaged tomatoes were separately sold at lower price to poorer consumers. It is outside the scope of this study to be able to assess the quantity or proportion of tomatoes that are completely damaged and not sellable.

The transactions in the market are majorly cash and the transactions are 'cash and carry'. The wholesalers pay the dealer in cash. So also the dealer pays the commission agent in cash. The dealers usually deposit part of the cash in their banks before 4.30pm every day. Banks close deposit services for customers at 4.30pm. The dealers claimed that they pay the dealer in supply source through fund transfer services of bank.

The dealers use mobile phones extensively for communicating with the different stakeholders like dealers in supply source centres, commission agents, wholesalers, transporters and others. While many of them are educated up to secondary school, some are higher secondary or graduates. The lesser educated, which is a major part of the trading population, use phone for voice calls and are also less oriented to use the electronic banking or internet banking. Though a small population of them realize the ease of internet banking transaction, there is inertia to adopt technology solutions. A few of the younger and better educated dealers are tech savvy and use smartphones to access information. Other than utilizing internet based banking services, these young traders are also active on Facebook and whatsapp. However, this segment is small with limited influence.

The business of tomatoes is impacted by the following challenges which are related both to production and trading

- a. Production of tomato varieties which are more perishable.
 - a. Poor quality seeds: Nigeria produces four varieties of tomatoes, UTC, Indian, Roman and Derika. UTC has the highest shelf life of about 7 days while Derika has a shelf life of 3-4 days. The UTC is the best quality of tomato which is fleshy and is most preferred, followed by the Indian variety in terms of quality. Roman variety is not as fleshy and has a lower shelf life. Derika has less fleshy, is small and is a low yield variety. The agents who procure the tomatoes from villages felt that the reason for growing Roman or Derika was low awareness among farmers and poor availability of seeds. (The scope of the study did not include farmers as respondents and therefore the understanding is based on Agents engaged in sourcing farm produce from farmers)
 - b. Poor crop management: It was also understood that farmers are less aware of modern farming methods and were wary of using fertilizer, insecticides/pesticides, etc. The belief is often to produce the Derika variety of tomatoes which is believed to resistant to insects and pests. The crop management practices are weak which leads to low crop yield.
 - c. Poor awareness among Agents: The sourcing agents develop a relationship of inter-dependence over time. Often the agents are the source information related to species of tomato, plant disease, disease control, quality of produce, demand for tomatoes and price in the different markets. However the agents are themselves not technically informed about the farm practices, crop protection and crop management. They have expressed their interest to support farmers in providing them access to information and support
 - d. Poor awareness about internet based information on cropping: The agents had little knowledge about availability of information related to growing better quality tomatoes and other crops on the internet. Only one young dealer at Mile 12 market did mention about his ability to access information on internet. He was however unsure of the relevance of the information as the cropping practices were mostly examples from other countries.

b. Challenges related to Trading of Tomatoes

- a. Poor access to information on new production centres: Dealers at terminal markets like Lagos and Port Harcourt are greatly dependent for the supplies from northern and central states of Kano, Kaduna and Plateau. While these supply points have evolved as major source markets, there are other states which also have been producing tomatoes. However for the dealers, the access to information about these production centres is low and dependence on their existing procurement centres is immense. More than half the dealers (57%) agreed that there is a gap in market information available about the production centres in different states and the dealers operating in these potential supply centres.
- b. Gap in market information on production, procurement and supplies: The market does not have a mechanism to assess the total tomato production in different states of the country. The market information on production is equally poor for the seasonal variations in production volumes. Such information gaps leads to speculative prices in the terminal markets like Lagos/Port Harcourt.
- c. Poor bargaining power of wholesalers/retailers in terminal markets: Poor access to information about production volume in different states leads to high speculation and low bargaining capacity of city wholesalers/retailers while purchasing their stocks at Mile 12 market of Lagos or Mile 3 market of Port Harcourt. The difference of tomato price between Zaria market and Lagos was N 9000-11000, while that between Zaria and Port Harcourt was N 6000-7500. Such real time market information was not found in any media and need for such information was expressed by almost all (95%) commodity dealers, wholesalers and retailers.
- d. Poor packing of Tomatoes: The market has been using traditional palm leaf baskets for packing and transporting tomatoes from source markets to terminal markets. These baskets are mostly produced in an eastern state of Nigeria. These baskets are non-standard in size and are unable to protect the tomatoes from getting damaged while in transit. The filled baskets of tomatoes are laden one above the other on the trucks which result in tomatoes getting damaged.

Recently GEMS 4 program initiated a project on introducing plastic crate based packaging material for tomatoes. In its pilot stage, the idea has been accepted by the dealers and the agents who have been important catalysers in introducing the change in the packaging process.

- e. Conservative and Non-transparent Trading Community: The tomato market is dominated by individual dealers who have developed their own network of distributors and wholesalers. While these dealers have formed the association/union of traders, the practices of such establishments is conservative, non-transparent, secretive and therefore do not trigger growth. Often they prefer to protect their business interest by controlling the entry of traders into the market. A traditional practice of nurturing a young family member (maybe extended family) to work as an apprentice and later evolve as a wholesaler or dealer, prevails in the system. The market is not an open system and therefore undergoes organic growth with the investments from the limited number of traders. In the unorganized structure, survival of an independent trader depends on the trade association/union accepting his membership.

3.2 Rice

The Nigerian food palate has converted from its traditional food of Cassava and Yam to rice in the last few decades. Rice is grown in Nigeria in the states of Kebbi, Sokoto, Zamfara, Katsina, Kano, Jigawa, Bauchi, Gombe, Niger and Kogi. . While the country produces a variety of rice itself, the quality of rice is considered to be poor by the consumers. They prefer long, slender and white rice over the locally grown rice which is small grain. There is a preference for the long grain, par boiled rice imported from Thailand, India and other countries.

The Nigerian rice is largely produced in the north eastern part of the country and most of the rice processing mills are also located in the same geography. There is little awareness among the trading community about the various rice mills and their machinery quality. Also it was observed during the study that awareness about rice qualities among traders is limited, probably because it is recent adoption in the country.

The locally grown rice is perceived to be of poor quality not only for the smaller grain but also because of the poor processing in the local rice mills. It was observed that the rice grains were less white, had dark particles and lot of sandy particles. The local rice is therefore consumed as 'Swallow', a local preparation or by the poor families.

The local rice is available in Mile 12 market of Lagos, Mile 3 market of Port Harcourt and in Kaduna which may mean that the local rice is traded and distributed in the country. The local rice in the wholesale is priced at N7000 - 8500 for a bag of 100 Kilograms. It was understood that these plastic bags are not marked for the weights and the people are generally unaware of the weight of rice they purchase in the bags.

The value chain for local rice suffers from the disadvantage of being perceived to be of poor quality and therefore poor response of trade and lower price realization. The business therefore suffers from low intent to improve and grow.

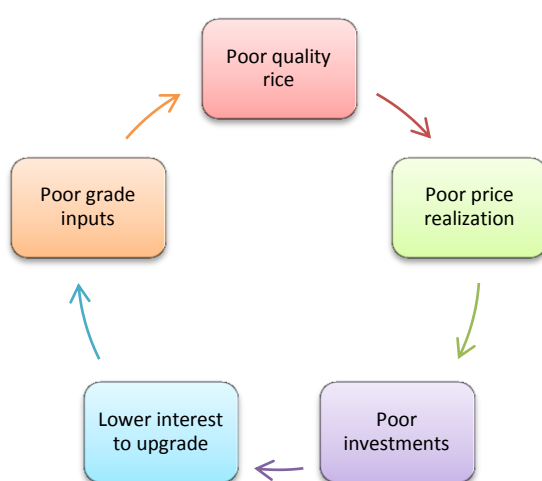


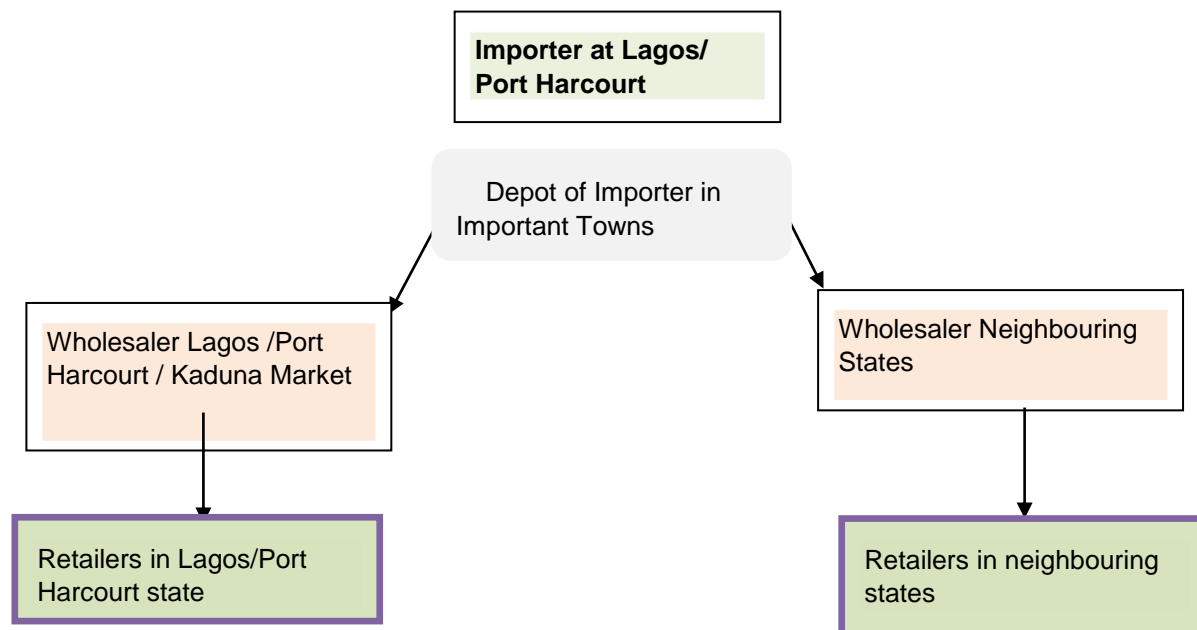
Fig : Economic cycle of Product

Nigerian rice production and processing may need a technology intervention to improve on the value chain. The quality improvement of rice processing, packaging and trading mechanism can significantly impact the value chain which will have a snowballing effect on improving the quality of rice grown in the country.

Nigeria currently is grossly dependent on imported rice from Thailand, Malaysia, India and other rice producing countries. The importing companies are located at Lagos or Port Harcourt. The distribution of imported rice is dependent on the wholesalers located in different cities across Nigeria. These companies have set up depots in the cities and supply to the wholesalers who re-sell to the sub-wholesalers or retailers.

The rice importing companies have however not invested into developing distribution network for their brand. The 50 kilogram packaged rice is marketed like a commodity with little market development for the brands. The cash

and carry model adopted by these companies is basic to distribution. The importing companies may need to set up a robust market information system for creating efficiencies and servicing the market.



The wholesalers located in the major cities in different states, place order with the importing company and pay in advance through bank. Once the bank confirms transfer of fund to importing company, the stocks are released to the wholesaler. The wholesaler pays for the transport of rice bags.

Imported rice bags are available for 50Kgs, 25Kgs and 10Kgs. The wholesale price of a 50 Kgs rice bag is between N7500 to N8500 depending on the origin of the rice. The Nigerian rice is available for N7000 to N7500.

The wholesalers operate from their outlets and do not necessarily have a captive customer base of retailers. They also sell to individual customers who visit their shop. The wholesalers use services like helping the retailer load the stock on to their 'bus' (van) or local transport to the 'bus stand' to attract retailers. A regular customer maybe offered a better price by the wholesaler.

The payments are all in cash at the point of purchase. Credit sales are not a practice because of poor debt management. Only very reliable customers are offered partial payment in case the customer falls short of cash for the purchases made. The wholesalers have bank accounts and use it to deposit the cash collected during the day. They have to send an employee to bank before 4pm to ensure deposit of cash collected. One of the wholesalers in Kaduna reported transactions up to N8 million per day.

Challenges in the Rice Value Chain

1. Nigeria produces small grain rice which is less preferred in the households and is therefore low in demand. It is mostly consumed in form of 'Swallow', a local format of cooking and consuming rice. This rice fetches a lower market price and therefore attracts lower interest of trade to promote and market it.
2. The rice mills processing the Nigerian rice seem to be using outdated technology which is resulting in the par boiled processed rice containing broken grains, sand particles and pebbles. These rice mills may be examined by the GEMS4 technical team to assess the modernization requirements.
3. The rice mills are presently using non-standard packaging materials for packing rice. The packing does not mention the name and address of the rice mill, nor does it carry any information on the weight of the rice bag. The price of the bag is also not printed.

4. The emerging demand for long, slender and white grained rice is not naturally found in Nigeria. Also, no trader was aware of any laboratory research for such rice in the Nigerian Agriculture Universities. Considering the spiralling demand for imported rice, Nigerian government may initiate facilitation of Agriculture Universities to test rice seeds produced in countries like India, Thailand, Malaysia and others. These seeds may be tested for their appropriateness to Nigerian soil and weather conditions. A value chain can be facilitated to market the high grade rice seed in Nigerian market which can change the rice production in the country.
5. The price of Nigerian rice is presently about half of the imported rice. The improvement in processing of Nigerian rice and a good packaging can be expected to raise the value of the local rice by at least 25-30%, accordingly to the local retailers.

3.3 Sorghum (Millets)

Sorghum is a produce from the northern states of Nigeria and is consumed in different forms. It is consumed in a semi-liquid format as a morning breakfast in the households in these states. Some believe that a more watery format is good when it is warm climate. This produce is however not consumed in households of southern states. It is available in retail in Lagos and Port Harcourt but is largely consumed by the migrant community from northern states.

Sorghum is packed in 100 kilograms plastic bags in the source markets in northern states and distributed to different terminal markets including Lagos and Port Harcourt. Each bag of sorghum is priced at N 7000-8000 at retail market in Port Harcourt.

The bulk buyers for sorghum are the breweries and they largely purchase from the source markets.

Sorghum is referred to as millets in the market and is available in three forms. The white millet as it is commonly called is available in two colours, red and yellow. There is another millet called the minor millet which is greyish green in colour. There is little information about sorghum procurement by that breweries among traders randomly included in the study. It is possible that breweries have hired the services of specialized traders who organize the procurement of Sorghum as raw material for production of alcoholic drinks. A more open procurement process if adopted by these breweries can release the market potential for growth of this agri-commodity.

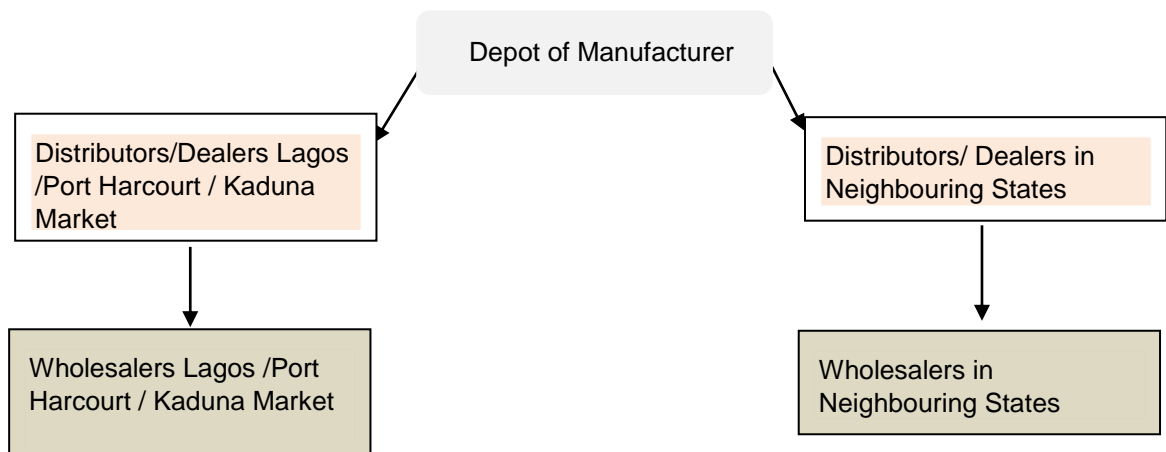
3.4 Food & Beverages

Almost 40% of the traders studied were in the business of processed food, beverages and toiletries. They stocked products from companies like De United Foods, Nestle, Cadburys, Unilever, Proctor & Gamble, Pepsi and Coca Cola, etc. There were brands of processed food products from Nigeria and other West African countries. Some of the processing and production units are located in the industrial areas in proximity to cities/towns. However, there was a belief that most food products sold in the country are not necessarily processed/produced in Nigeria. Even the multinational companies have so far preferred to only import and distribute their products and not manufacture in Nigeria.

These companies have appointed distributors/dealers in each state of Nigeria to redistribute the brands in the geographical area assigned to them. Within an assigned area, a distributor identifies sub-dealers or wholesalers in each town. The distributors and the wholesalers cover the market to supply to the large and small retailers, mostly in the towns. The villagers are yet to be under the distribution coverage plan of the company. A product if available in the villages is incidental because of the demand and not because of the plan of the company. It is estimated that there are 500,000 convenience stores selling food and beverages. (7Up team estimated the number of their beverage outlets to be 65000)

Some of the companies like 7Up bottling company have nine bottling plants in Nigeria, each supplying to states in its proximity. As part of their distribution channel, the companies have depots from which they supply directly to appointed distributors or dealers. These distributors /dealers are large businesses with their own warehouse, sales teams and a network of wholesalers and retailers to whom they sell.

Manufacturer



Discussion with manufacturer of beverages revealed that company has developed distribution channels across states, having depots for stocking and re-distributing. The distributors / dealers are serviced by the company sales persons. The company sales team led by a senior executive, plan market coverage, distribution expansion and market consolidation. The company has been distributing to about 60 cities and towns in Nigeria. But they are yet to develop inroads into the villages of Nigeria.

The sales team from company book orders physically or over phone or internet, and the distributor /dealer makes payment to the company through the bank. On receipt of the payment, company releases stocks from its factory or depot, as is convenient. This primary sale of the company is against a requirement of advance payment to the company

The order booked by distributor is shared with the finance and IT department of the company to make the necessary entries for sales tracking. However the internal documentation process, banking systems and order delivery systems presently have a turnaround time of 3-5 days.

Pepsi have a market track system which monitors sales and supply to distributors, which are primary sales. There is no track system for tracking secondary sales (sale to wholesaler) or tertiary sales (retailer or last mile). While these companies have set up such track systems in other countries with IT infrastructure, they are yet to implement such systems in Nigeria.

For the secondary sales, the distributors appoint sales representatives who promote and book orders from wholesalers and large retailers. These representatives visit the market 2-3 times in a week to book orders and ensure supplies. These sales and deliveries are completed on the same day or the following day. The transaction volumes are relatively small and a payment made to the distributor/dealer is in cash. Often there is limited or no physical billing done for the sale. Therefore the company has little or no information about the channel partners associated with the distributor/dealer.

Similarly, the breweries have developed their own re-distribution model for their finished products. They have appointed distributors in the states who in turn re-distribute to wholesalers and retailers. However, the redistribution of the products is the responsibility of the distributor and his salesmen. The company is presently less involved in the development of the distribution network as is the case with the FMCG companies. These breweries could improve on their market information management by using a secondary market track in addition to the primary market track. One of the distributors for brewery products had an establishment with IT infrastructure for billing and payments. However, they are less trained to use market information system to monitor the market demand and growth.

Distribution system requires a chain of well-trained channel partners who follow the company's business processes to optimize costs and maximize revenues. Such training programs were initiated by the company for its sales team

and the distributors /dealers of the company. However, due to rising costs and business prioritization, the company has reduced its engagement in training processes.

The company has adopted IT based systems to monitor its distribution network and track sales. However the distributors have not necessarily adopted IT systems or ICT based solutions. All distributors/dealers were reported to be connected on mobile phones using voice calls. The company has not explored the idea of using VAS services to enhance its engagement with its channel partners operating under the distributor.

The wholesale market at Kaduna and other cities revealed poor optimization of resources and low operational efficiencies.

- The Distributor
 - Distributor has a team of sales men and women who move into the wholesale market in branded uniform (easy to identify) moving from one wholesaler to another seeking orders. The route plan for the sales team is not necessarily fixed and so is the outlet coverage plan. Therefore the wholesaler waits for the sales person to arrive and then places an order. In some cases the wholesaler may place an order on phone. However the need visit the wholesaler is a necessity in order to write down an order and create a billing, which is essential for delivery of goods and also for receiving payments. Therefore distributor sales team visits/connects with the wholesalers for the different activities of order placement, billing and payment follow up , though cyclical for the distributor
 - The wholesalers are not planning their inventory and sales for the products, brands and stock keeping units (SKUs), which is resulting in abrupt demands and instant supplies from distributor. While a sales team visit plan is two times a week, it often requires more number of visits. This leads to high cost of operations for the distributor as low volumes of goods are supplied in greater frequency.
 - The distributors do not have a plan for their customers for each season in terms of volume of business, investment in stocks, inventory and stock replenishment.
 - The stock out situations results in customer dissatisfaction and opportunity losses. Often the channel responds with a substitute product or brand. This is a problem which is more often in smaller distant markets than the cities where distributors are themselves located.
 - The distributors also do not manage their customer billing records for future reference and market planning.
 - There is no record of business with the retail outlets which procure stocks from the wholesaler. The retailer usually orders on phone and makes payment on cash. There is no practice of billing.
- The Company
 - The companies do not have access to information about their channel beyond the distributor. The potential of the channel is not realized as companies have not been able to optimize the efficiency of re-distribution.
 - The companies are also loosing market opportunities as there is little control on stock out situations in the markets specially the smaller towns and villages
 - The companies are unable to plan the growth of market without the data and information about secondary sale
 - With little focus on smaller towns and villages which is the new market growth opportunity, the channels are also not extending their distribution reach.

The companies have been conventional in their planning regards investments into IT infrastructure in channel development and capacity building of channel partners. Most feel that a computer based IT infrastructure and internet connectivity is the least requirement for further developing the channel which is a significant investment and companies tend to defer the decisions. Also for a new system introduction, there is a need to capacitate the channel which is an also an additional investment.

The distribution channels of the companies are well connected on mobile phones and use voice calls for most communication. There has been a very low usage of data by the members of the channel so far, probably because of inertia to initiate into technology usage. The opportunity lies in the homogeneity of the population in terms of speaking English though there are different tribes and communities.

The educated younger population (34% of all respondents) working in the distribution system as a businessman or a sales person were found to be comfortable using data on their mobile phones. There is a growing usage of smartphones among them (38% of all respondents) which gives them access to internet usage but largely usage of Apps. There are specialized mobile Apps which work on basic phones. There are no Apps which helps them for the business in particular except the banking services.

The increasing penetration of mobile phone, rise in data usage by youth, increasing demand for information and homogeneity in prevalence of English in the population has created an enabling environment for marketing companies to use the mobile technology for channel development.

1.5 Transporter & Transportation

1.5.1 Transporter

The study included the transporters as respondents, to understand the transport business and their challenges in serving the wholesale and retail sector in Nigeria. It was also important to understand the structure of the business and the reasons for variation in cost of transport in different seasons and same locations.

The traders use trucks, trailers, vans, cars to transport farm produce and manufactured products from the source of procurement to the point of sale. The trucks and trailers ply between major towns/cities like Kaduna to Lagos, Port Harcourt, Enugu, etc. The vans (called buses locally) are used to transport goods between shorter distances like neighbouring states and sometimes within the state. The cars are hired by wholesalers or retailers to carry goods from wholesale markets like Mile 12 of Lagos or Mile 3 of Port Harcourt to locations within the state.

Ownership of Trucks

The study included transporters who owned and operated trucks and trailers and also those who operate vans or cars. It was interesting to note that local transport vehicles like vans and cars are often owned by a different person and are hired on lease for transporting goods.

The research team met nine transporters in the three towns/cities and only four of them owned and operated the trucks themselves. The remaining five transporters hired vans/cars from their owners for a fixed period and conduct the business.

Most of them were initiated into the business early in their life as a self-employment opportunity with the support of the family. Most of the vehicles purchased are self-financed. Only one of the transporters acknowledged getting access to bank loan for purchasing a truck. Getting bank finance for purchase of a truck or a smaller transport vehicle is not considered by the transporters because of the documentation processes and also the need for matching value collateral. Therefore transporters with 3-5 trucks or trailers are considered to be very important stakeholder in the transporters community.

3.5.2 Trader Experience of Transportation

Goods transportation in Nigeria is largely a business dependent on heavy (12 to 16 wheeled) trucks and trailers. Smaller vehicles used for goods transportation are the vans, often referred to bus, having loading capacity of about 2-3 tons. The local transportation of goods is mostly done on three or four wheeled vehicles with capacity of 0.5-1.0 tons.

The large trucks and trailers run by individuals, who operate from their respective locations of residence, which may be referred to as base town/city. The transportation business is unorganized and is significantly dependent on the individual's network in different parts of the country. Often the transport plies between fixed locations.

Traders often complain of the quality of transport vehicles because of reported frequent breakdown. It was also felt that poor quality of packaging and improper loading of the truck leads to damaging the goods, especially tomatoes.

Q21c Capacity of Transport Vehicles Hired

Base :All Respondent	90
	fig in %
Less than 1 ton vehicle (bus, van, 3 wheel, etc.)	53
1 – 2.5 ton carrying capacity	28
2.6 – 5 tons carrying capacity	16
5.1 – 10 tons carrying capacity	11
10.1 – 15 tons carrying capacity	4
More than 15 tons carrying capacity	5

Q21b Transport

Base :All Respondent	90
	%
Transporters do not take care of the produce / products carried	38
Transport is too expensive	37
Poor quality trucks	34
Difficult to get a transport when required	32
Transporters take their own time to reach destination	26
Do not have trucks of different sizes	13

The market is still to adopt refrigerated vehicles for transporting fruits and vegetables.

Q21d Quality of Trucks

Base :All Respondent	90
	%
Poor loading of truck leads to high damage of goods on trucks	68
Frequent Breakdown	41

Goods unprotected from nature (winds, sunshine, rain, etc.)	22
No refrigerated or frozen vehicles for transporting fresh fruits and vegetables	10

Challenges: For Transporters

The transporters often cited the poor road infrastructure as the reason for limited reach to different markets across the country. Most of the transporters prefer to ply trucks /trailers along the North-South Highway and the West-East Highway.

It was observed during interactions that most transporters in the three locations had little understanding about transporters in other distant states. E.g. it is believed that local transporters from states like Zamfara, Katsina, etc. use vans/cars to transport tomatoes and other farm produce to aggregation centres like Zaria, Kano or Kaduna. The aggregated produce at Zaria, Kano or Kaduna is transported through large trucks /trailers to major consumption locations like Lagos, Port Harcourt and Enugu.

The data in the table describes the trend to the business challenges, since only nine transporters were covered in the study. Two factors which were highlighted by the transporter related to seasonality of the business and poor realization from return trips probably indicate that the transporters have little information about the traders in the destination towns / cities.

Q23a Transport		Q23b Transport Maintenance	
Base All Respondent	9	Base All Respondent	9
	%		%
Do not get full truck load every time	20	Difficult to get spare parts for the trucks	43
Transporting Perishable goods like tomatoes or fruits, are risky	20	No good mechanics for truck maintenance	29
Have to pay the highway police on every trip	35	Dealers selling trucks do not consider after sales service to be important	43
No reliable agents in different parts of the country to conduct business	10	Servicing at the dealer service point is very expensive	43
Road accidents are a major risk	15		

The transporters find it cost effective to transport a full truck load of goods but often they have to identify multiple dealers to get the truck fully loaded e.g. agri produce like tomatoes cannot be retained once packed and therefore transporters mentioned challenges of half truck load. Some of them realize that their network is limited to certain location which is limiting their business.

The factors discussed above highlight the gap in the information available about the transportation needs of the traders and the transport services available.

The traders and the transporters both felt that the trucks suffer regular breakdown because of poor road conditions and maintenance of a truck is a constant challenge. This is further aggravated by the poor availability of spare parts. Also the repair and maintenance services for the trucks are run by individual businesses who are themselves

not networked. Therefore transporters also suffer from non-availability of appropriate repair and service centres while transporting goods to different destinations.

Challenges: Transportation of Goods (Experience of Traders)

The dealers of agro produce and distributors of manufactured products often feel challenged because of poor transportation and logistic support systems existing in the country.

The transport system has a differentiated cost of transport for onward and return trip. The onward trip costs almost twice the return trip. This is largely because the transport system is privately managed and the owner tries to get the cost of the entire trip from the dealer from the town. The return trip from destination location of onward trip is assumed to be without load.

The cost of transport for a 16 wheeled truck from Kaduna to Port Harcourt is Naira 300,000 in peak season for onward transport. The return of the same truck from Port Harcourt to Kaduna would cost Naira 140,000. This is because the agent at Port Harcourt books the truck to carry back goods for Kaduna. The owner of the truck at Kaduna trusts the agent to have made the best deal for him.

Q21e Cost of Transport

Base :All Respondent	90
	%
Fluctuates significantly from season to season	58
No standard costs from one location to other	50
Few transporters control the cost of transport and charge high	38

The dealers and distributors have highlighted the non-standardization of cost of transport and significant seasonal variation in the cost of transport. Often the transporter cites the fluctuating cost of Diesel and non-availability of Diesel as the reason for rise in transport costs.

Most traders mentioned the steep cost of transport as a reason for increase in prices of agro-produce in wholesale and retail markets. While most traders had not calculated cost of transport as a proportion of cost of product, 44% of them estimated transport cost to be less than 10%. 15% of them could not estimate the contribution of cost of transport to cost of product.

Q21f Contribution of Transport to Cost of Product

Base :All Respondent	90
	%
Less than 10%	44
11% - 20%	28
21% - 30%	13

3.5.3 Packaging

Associated to safe delivery of goods is the aspect of appropriate packaging. Tomatoes which constitutes a major part of the vegetable trade across the country, suffers from use of poor packaging material, traditional palm leaf baskets. The baskets are loaded one atop the other which crushes the tomatoes inside. However, the traders are quite accustomed to using the traditional baskets for tomatoes

Plastic bags (locally called Nylon bags) are used to pack rice and sorghum in 50 kilograms and 100 kilograms respectively. These bags are often re-used by farmers and traders to pack vegetables and transport them. Some of these bags are of poor quality and tear off.

Manufactured products are mostly packed in carton boxes for transport and are relatively well protected.

Q21h Packaging

Base :All Respondent	90
	%
No appropriate packaging material available to reduce loss in transit	38
Nylon bags are not good quality and tear off	29
Nylon bags are not good for vegetables, fruits and tomatoes (locally plastic is referred to as Nylon)	27
Carton packaging materials is not readily available	16
Carton packaging materials are very expensive	16
Packaging material not designed for labour to handle Plastic Crates	13
Traditional baskets are inappropriate to transport tomato	8

There seems to be a felt need for improved packaging materials to reduce the damage while in transport but there are not many options available. The value chain partners are also not very aware of packaging options available in the world and therefore would depend largely on major corporate entities to introduce the same.

The wholesalers involved in re-distributing manufactured products and the retailers having outlets within the town are much less sensitive to the packaging because the products are removed from bulk packing for the purpose of retailing. Though they want products in good condition for retailing, their sensitivity to packaging itself is low.

3.5.4 Warehousing

The agri producers and agri traders do not seem to have exposure to the concept of warehousing. Most of them prefer an instant sale of agri-produce over storing or warehousing.

Warehousing is often conceptualized as a private space of a distributor or a dealer for stocking his own stocks.

Some of the tomato and vegetable dealers felt that the warehouse space would be appropriate for sorting, grading and packing. The Zaria market does not have any such space and there was a felt need for the purpose.

Mostly the retailers did not feel the need for warehousing.

Distributors and wholesalers of food, beverages and toiletries use self-owned/rented spaces to stock their goods in proximity to their outlets.

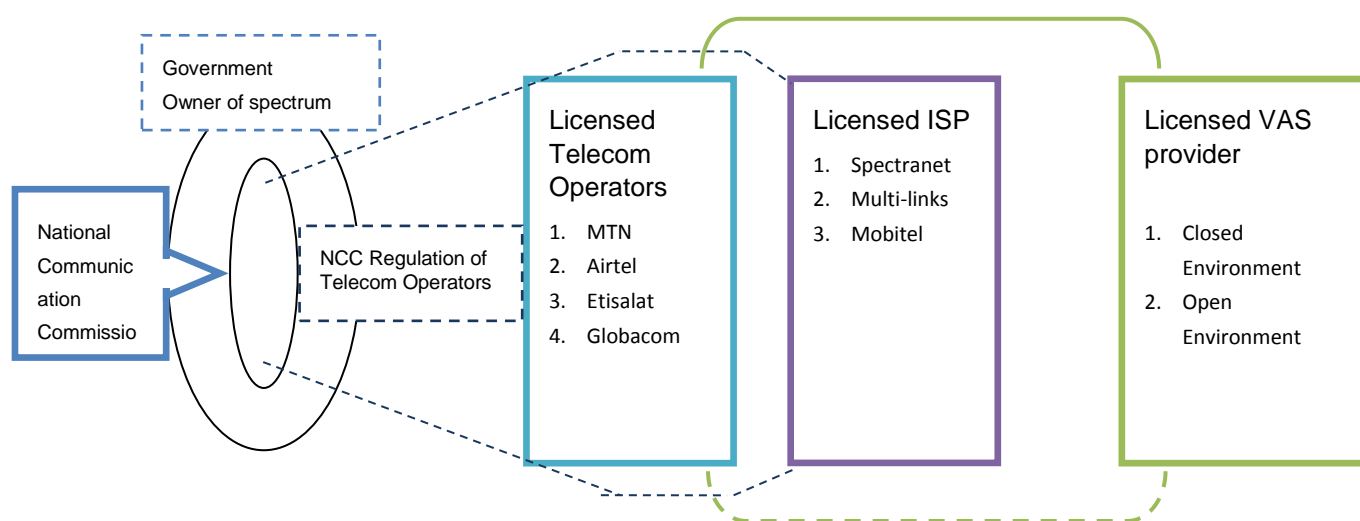
Q21i Warehouse	
Base :All Respondent	90
	%
Warehouse needed to store excess procurement / stocks	34
Do not need a warehouse	28
Space required to sort, grade and package	24
Take rooms on rent or own spaces, to store goods / agri produce	17
Do not know what is a warehouse	8
Rats eats our rice packed in the warehouse	1

4 Supply Side Assessments of ICT Services

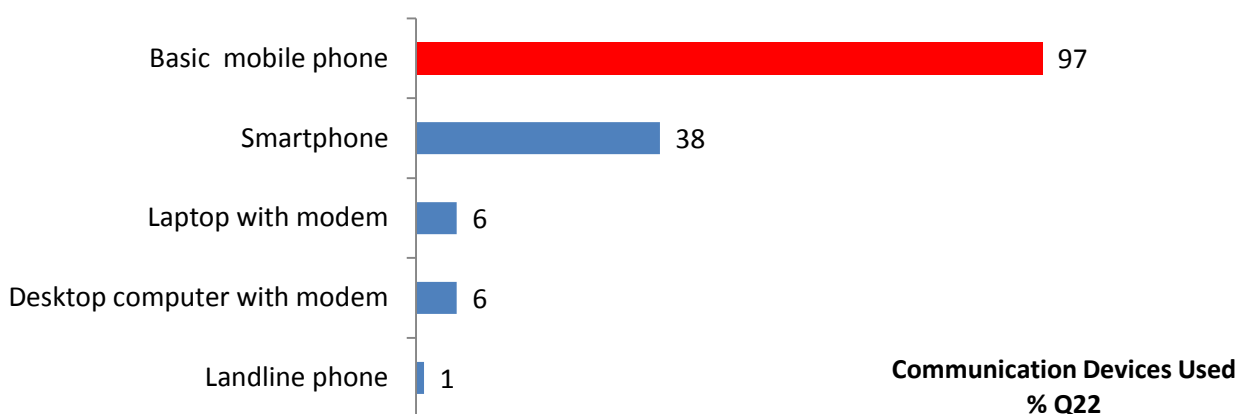
4.1 Introduction

Telecom sector is growing at a rapid pace with adoption of mobile phone services by the different socio-economic segments of the population. The total active mobile phone connections are about 129 million in Nigeria. Mobile phone has become the lifeline for the traders and their support service providers. Nigerian telecom companies are also awakening to the rising consumption of VAS and Apps by telecom consumers. Companies like MTN are setting up of technical teams to develop VAS or engage with other companies to introduce specialized VAS and Apps.

The ICT ecosystem of Nigeria is as under



Companies like VConnect develop VAS products and use the network of the telecom partner to activate their services. They get a direct access to the subscribers of the telecom company and therefore an immediate business



model. The VAS provider and the telecommunications company share the revenues. However, the VAS provider may get only part of the mobile phone subscriber base as it may not be able to conduct business with the other telecommunications operators.

Organizations like Co-creation Hub provide a space with physical amenities to idea generators and innovators to develop Apps for different ecosystems like Android, Blackberry and others. These innovators develop Apps for specific applications like health, finance, banking, etc. and can be used through an open environment. Such an application overcomes the challenge of single telecom service provider offering the service.

Telecommunication among Wholesale and Retail Industry

Telecommunications has been a boon to the wholesale and retail industry as it has eased the opportunities mode of communication. In the age on online and 24x7 access, business can open itself to the opportunities to compete and improve income and also build efficiencies in the system.

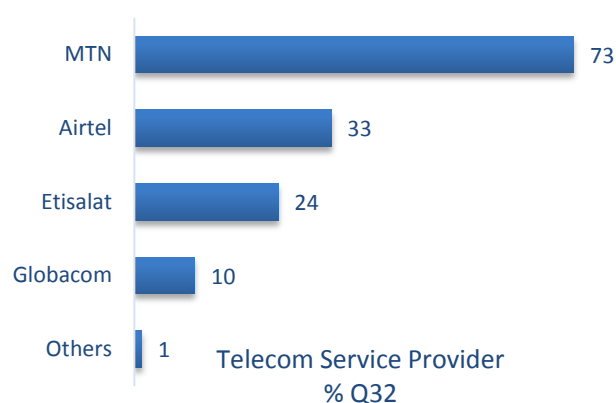
N = 90

It is interesting to note that all dealers, wholesalers, agents own at least one mobile phone. They also own desktops or laptops. While many of them are not comfortable using a computer or laptop, they take help of their children or a young assistant to use them. The younger traders are very comfortable with Smartphone and use them for not only voice but data sharing.

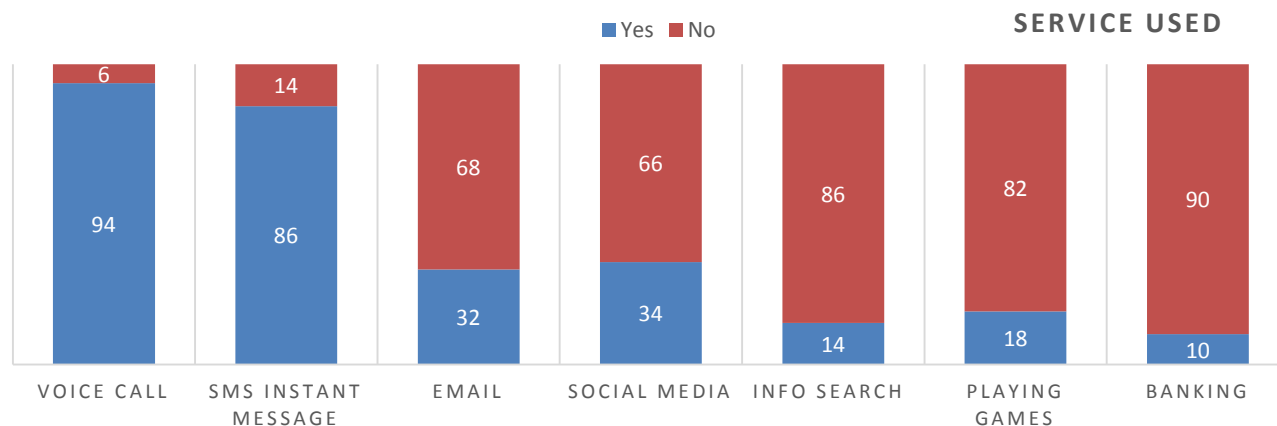
Number of Each Type of Communication Device Owned (Q24)	Mean Score
Basic Mobile Phone	1.34
Smartphone	1.03
Laptop with modem	1.60
Desktop computer with modem	1.40
Landline	1

4.2 Telecom Service Provider

MTN is the most popular mobile service provider followed by Airtel.



4.3 Use of Telecom Services



N = 90

The traders are using voice call and SMS significantly for their business. It may however be noticed that there is very low usage for Information search and banking services. The low usage of email services on internet can be interpreted as poor understanding of information search and use for business.

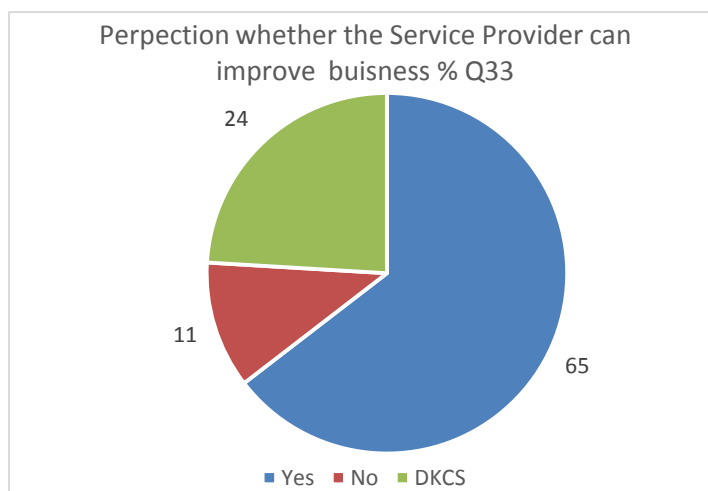
Preferred Device For Telecom Services							
Q24	Voice Call	SMS Instant Message	E Mail	Social Media	Info Search	Playing Games	Banking
Answering Base All Respondent	74	69	24*	28*	11*	15*	8*
	%	%	%	%	%	%	%
Desktop computer with modem	3	1	17	14	18	7	38
Laptop with modem	-	-	21	14	46	7	38
Landline	1	-	-	-	-	-	-
Basic mobile phone	97	94	17	25	-	67	38
Smartphone	34	39	83	82	64	33	75

Use of Smartphone is largely for social media, emailing and information search through Apps.

4.4 Perception of Service Provider

The telecom providers have developed into reliable service providers in Nigeria which had been trying to develop reliable infrastructure for itself. The trust and acceptance of the services has been high and they are believed to be quality technology providers. The wholesale and retail traders have also experienced the benefit of reliable network.

Q35	Reason
Base: All those coding '2' in Q33	10*
	%
Do not believe mobile companies have any business with local farmers	20
I have friends to call or the drivers can gave me information	10
I don't think they have information about my business	10
Always call my sales person for market information	10

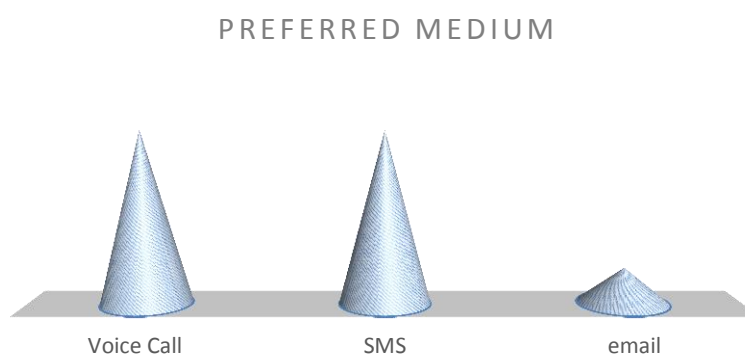


Q34	Reason
Base: All those coding '1' in Q33	58
	%
They have understanding of the business	14
They have reliable information from their network	8
They are in communication business	8
Information on products cheaper	8

Base All Respondent N = 90

4.5 Preferred Medium for Receiving Information

More than 80% of the traders were comfortable to receive information from telecom providers though a voice call or sms. Emailing information may not gain popularity as it requires access to internet. The ease of using a mobile phone makes phone based application more popular with the young traders.

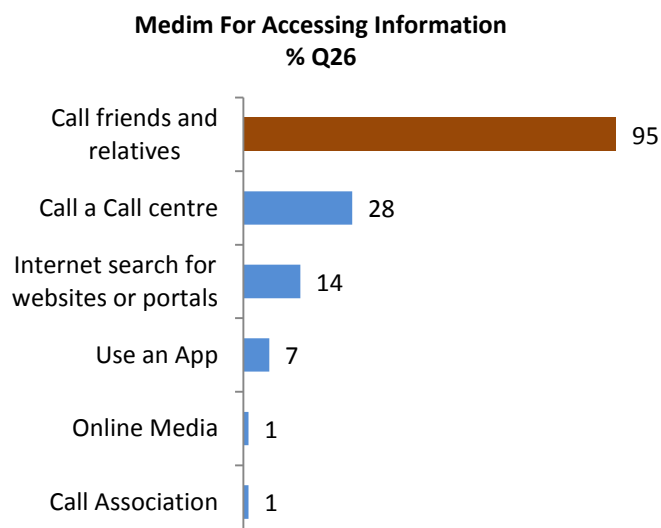


4.6 Preferred Medium to Access Information

The traditional form of seeking information from friends and relatives continues to be the most reliable and trusted source. In recent years mobile phone has been the medium to connect with friends and relatives for seeking information.

Traders are switching to new technology and accessing call centres for information. Some of them are conversant with internet based information search and access process.

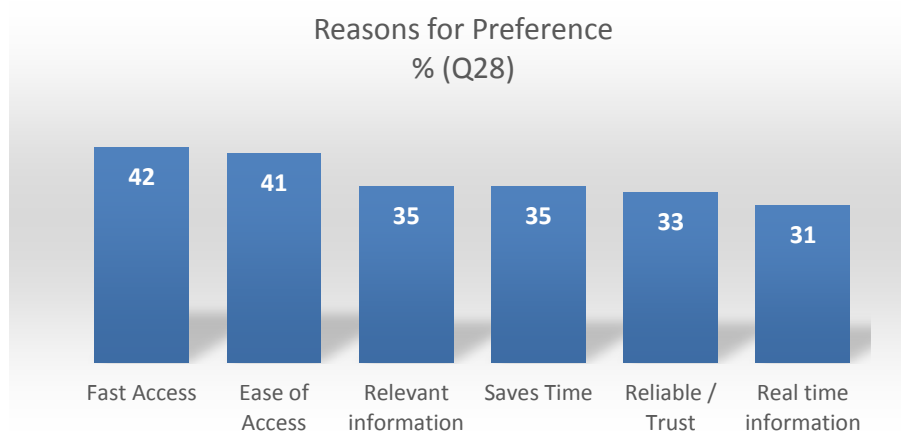
Though presently, an App is being used by <10% traders, it may be concluded that this medium is new to telecom sector and available only on Smartphones. It can be assumed that an appropriate trade centric application can draw more traders into using App



4.7 Reasons for Belief in Telecom Service Provider

Traders have experienced the benefits of telecom services in the past years and are now accessing data either through Apps or internet.

The ease and speed of accessing information has impressed most of them. Also there is an appreciation for the availability of relevant information and is trust worthy.



N = 90

4.8 Estimated Expense on Telecommunications

As discussed, the trading community is learning to use both voice and data on their mobile or computer for communication. More than 50% of them use data and have a monthly spend on it

Q29	Amount Spent on Voice call per month
Base All Respondent N=	90
	%
<500	6
501 – 1500	31
1501 – 3000	22
3001 – 5000	18
5001 – 10000	12
>10000	8
20,000 AND ABOVE	1

Q30	Amount Spent on data per month
Answering Base Respondent N	90
	%
<500	7
501 – 1500	12
1501 – 3000	5
5001 – 10000	2
Did not respond	74

Nearly 40% of the traders spend more than Naira 3000 for voice calls per month. The majority spend between Naira 500 and Naira 3000 per month. One fourth of all the traders use data and spend less than Naira 1500 per month

5 Media Behaviour

5.1 Media Options

Television and radio have a significant reach into the homes of trading community. Though mobile is considered a communication device, it has also emerged as an important media for business information. Print media was considered important for learning about government information.



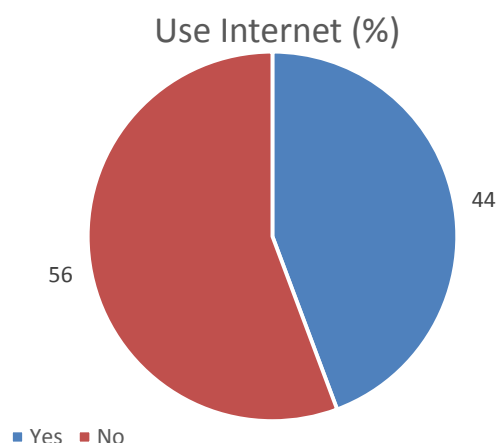
Q43	Most Preferred Medium
Base: All Respondent	90
	%
Regular TV Channel	37
Radio Channel	29
Mobile Phone	29
Internet	4
News Paper	1

N =90

Television channel is considered the most preferred source for business information in general. It is encouraging to observe that nearly 30% of them considered mobile phone as the preferred device for business information.

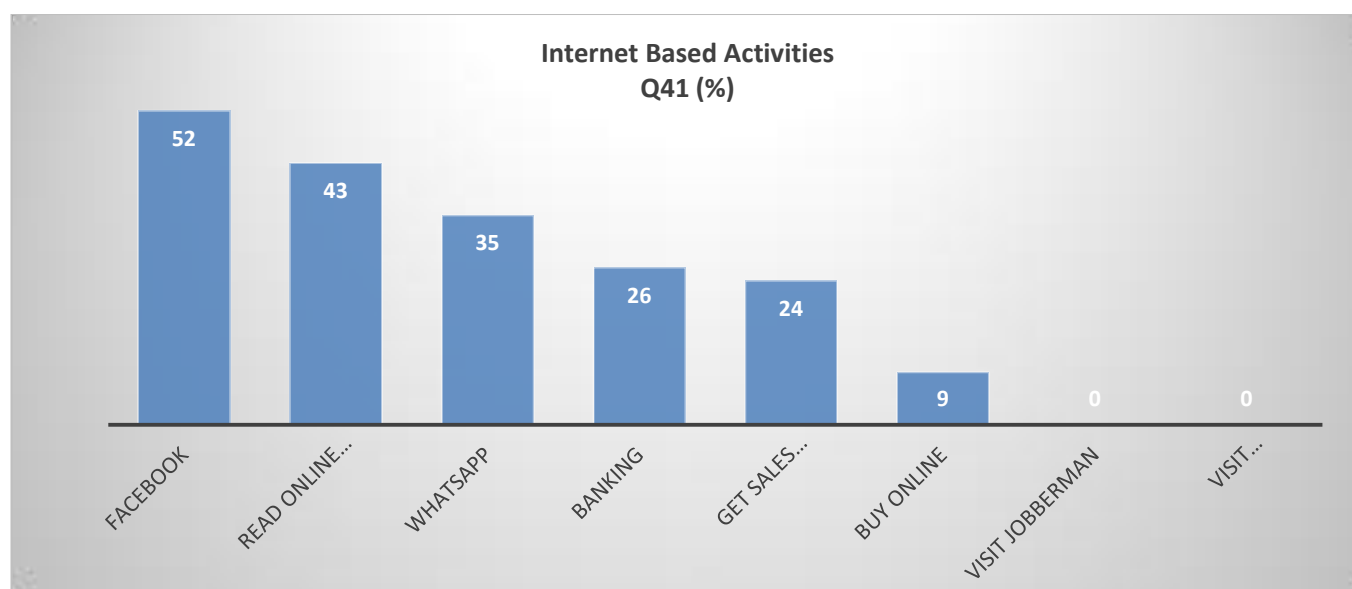
Internet Usage

Though only one fourth of the traders had internet access on their phone or computer, they access internet at 'Internet Cafe', which is a multi-user centre on pay for use. An additional 20% of them use the Internet Cafe.



Q43	Subscribed Services
Base: All Respondent	90%
Bank Transactions alert	17
Weekly bundle	11
BBC House news	9
Monthly internet	9
Email	9
Blackberry service	6

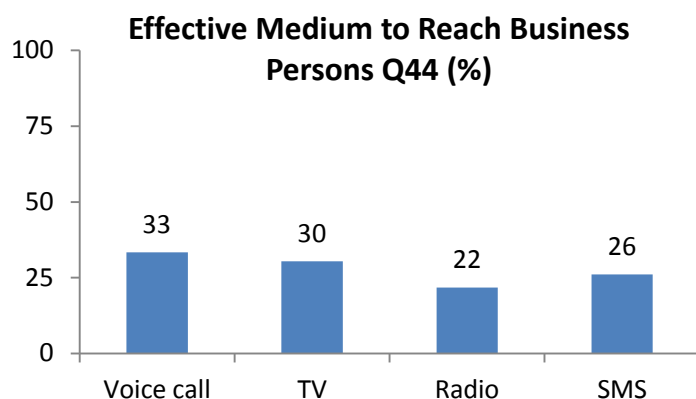
The other internet based activities includes social networking through Facebook and Whatsapp.



It is interesting to note that some of the distributors of companies are using some format of sales reporting on internet. This use of internet by organized companies and their channel partners can be an opportunity to introduce mobile applications which can improve the quality of reporting and back integration into the company IT structure. The training of frontline sales teams to report on mobile Apps can help in creating database of wholesalers and retailers as part of secondary sales by consumer goods companies.

Effective Medium to Reach Traders

Traders had little understanding of how telecom companies can help develop their business interests across the country. However there was an acceptance that technology can become an important medium to access information and explore business opportunities.



The traders preferred to access business information mostly on their mobile phones through voice or SMS.

Some of them suggested television or radio considering that many of the elder traders are not comfortable in using the mobile phone for anything other than voice calls.

N = 79

However interactions with the traders, especially those who are dealers, distributors, wholesalers and agents, do find methods to adopt technology though they might find themselves technology challenged. Some of the older traders are seeking help from trusted young traders in the market to use ATMs for withdrawal of funds, fund transfer on mobile or access bank account on mobile.

6 Recommendations

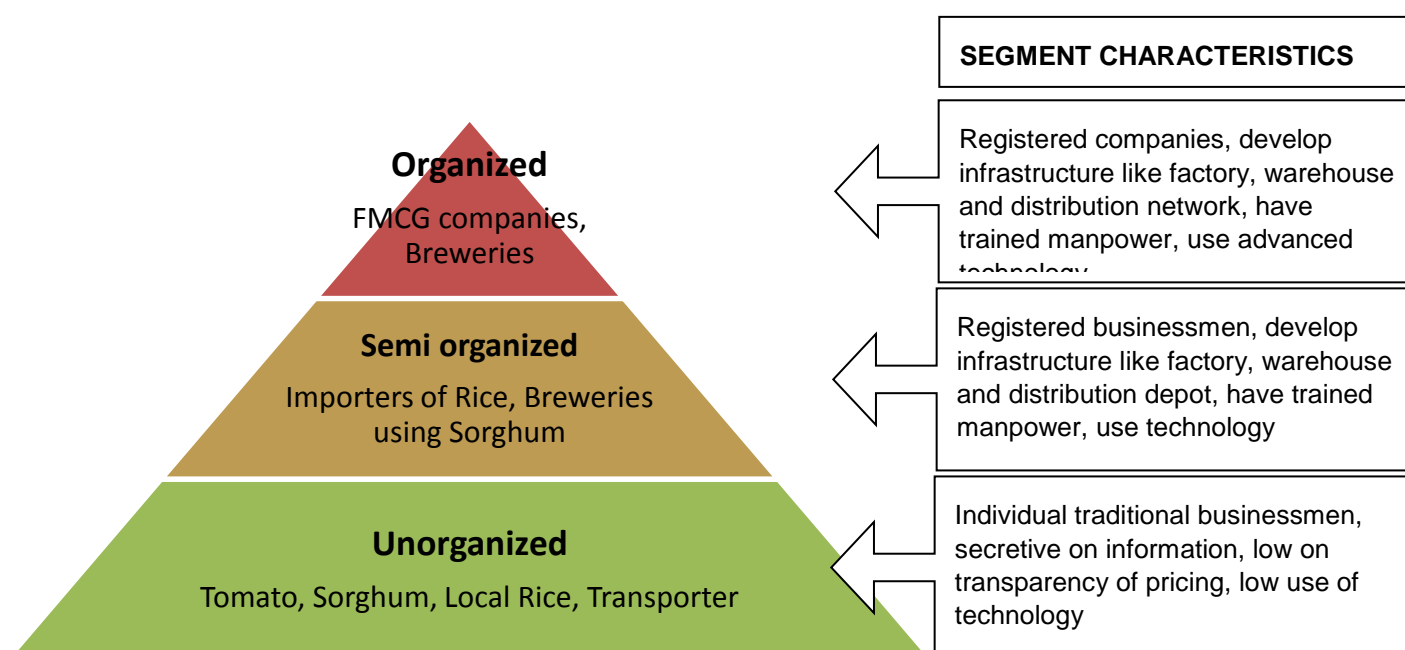
Nigeria has developed a telecom infrastructure in the past decade which has helped to enable technology intervention in several new industries like banking, airport, ports, healthcare, etc. Some of these sectors have been prioritized by the telecom companies because of Government of Nigeria policy directions to set up dedicated network for the services. Similar policy does not exist for agriculture as part of food security and telecom sector has therefore not focused on the sector.

It was also discussed and understood that there is limited intervention of government in improving the agriculture sector in the country. According to the agents working in the procurement of tomatoes and other farm commodities, the intervention of the agriculture universities in agri-extension services is limited.

The agriculture source markets and the terminal markets as discussed for the different commodities are not well networked for information and enabling transactions. The problems become acute for perishable agri-commodities which have low shelf life. Improving information flow from across the different production areas to the different consumption markets is essential to develop the market towards pure competition. Known market behaviour indicates that market information leads to creation of new services like standardization, certification, appropriate weighing of goods, which facilitate the market processes like bargaining capacity of the buyer and lowering the risk to investments made in the procured stocks. The buyers' gains access to market information about the volume of stocks available and therefore offer an appropriate price for the produce (tomatoes). A well programmed market can manage the flow of farm produce to different parts of the country, thereby reducing the possibility of excess supply in one market over scarce supply in other markets. Such market efficiency in the agri-produce marketing is essential to reduce wastage and manage costs.

The FMCG companies are the most organized sector with companies setting up dedicated distribution channels and working with the channel partners to improve distribution reach and market penetration.

Based on the different types of business related to the food categories and farm produce, the business can be segmented into three major grouping based on their market evolution.



These companies are the most evolved in their businesses and have developed market infrastructure for distribution of their products and brands. They invest into developing the market infrastructure for their business which is often exclusive to them.

The companies have been using IT infrastructure for the company operations and now have also been using the telecommunications to access information. Some of the companies are directly and indirectly reaching to more than 60000 retail outlets across the country.

These companies have established market information systems to manage the order and supply requirements of their distributors. However over the years, the companies are yet to expand their network by developing systems to monitor and manage secondary sales. The rate of selling products has a direct implication on the cost of inventory both for raw materials and finished goods for a company. The spurt of demand from different markets force the company and its distributors to stock at least two times of the stocks required to meet the demand. This volume is higher in case the stock movement monitoring is poor. Or else the company experiences stock out situations with their distributors. The wholesalers instead of investing in stocks prefer to follow a daily ordering cycle which is operationally cost ineffective for the distributor. A monitoring process of secondary sale to existing network of wholesalers can optimize the frequency of ordering and supply which has the potential to save at least 5-10% of the investment of distributors from the present operations. This fund can be invested into stocks to feed the growing needs of the small town and village markets. This is an important process for extending reach of the quality products into the small towns and village markets.

Companies today are reluctant to invest into IT infrastructure to enhance their capacity in managing secondary sales markets. They are yet to realize the potential of using mobile phones as technology interface and integrating the outcomes to the existing infrastructure. Also the companies are not earmarking budgets for training the distributor sales teams.

The sales teams of companies and their distributors have been using mobile phones for communicating and conducting business. These young personnel are the early learners of technology and are found to be using different functions in mobile phones including SMS and internet.

GEMS 4 program can target these evolved businesses for its ICT intervention. Companies with established distribution network in cities can be invited to participate in the distribution and retail network development. These companies with existing IT network can invest into the development of the technology required for network expansion.

GEMS 4 can develop content for each participating company based on the existing distribution structure and the intended market coverage plans. Presently the distributor sales teams are not necessary using invoices and receipts for conducting business with the wholesalers or retailers.

These billings can become digitized as salesmen can use mobile phone applications for the purpose.

- Develop a mobile application which can work on both basic and Smartphone
- The App should help the salesman to create a unique customer ID for the wholesaler customer
- All the products should be listed on the App along with the dealer price
- The salesman is required to enter the customer code and create a billing on the mobile
- Once the bill is prepared it is sent to the customer mobile and the distributor's logistic system for processing of the order
- The bill can also be sent to the team which may be separately deployed for collecting the payments
- All these transactions can be saved in the IT network of the company automatically (if internet activated)
- The company's MIS team can aggregate the billings to study the stock availability at the distributor point and ensure replenishment of stocks
- The company can study the sales data of different customers of distributor to identify potential wholesalers whom they might decide to promote

- Company can also track the distributors venturing into small towns and village markets and incentivize them for their efforts on market expansion

It is realized by companies that distribution of manufactured products is affected by the stocking of large inventory by the channel which involves significant investment. The investments may be made by a company which extends credit to its distributors for the stocks procured, or the distributors invest into the stocks through an advance payment process. The investment into stocks gets blocked if the stocks are not liquidated in a planned business cycle.

The limited access to secondary sale information affects the ability of the company and the trade to assess demand in the different markets. Also with low control on re-distribution to wholesalers and retailers, the frequency of order placement is high, which raises the cost of distribution.

An ICT based solution related to secondary sale will support in understanding the demand cycles, order frequencies and the volume sales per order. A fixed ordering cycle with a planned inventory can reduce the unnecessary investments in stocks. The funds released from inventory can be used for expanding the market reach and inducing penetration of products.

Such a mobile based IT intervention can immensely benefit the Nigerian companies and their distribution channels.

GEMS 4 can also help the companies to capacitate their channel partners by training the salesmen in utilizing technology which help in driving efficiency. The training of the sales team can be for all the distributor salesmen on technology adoption and using market information for micro-sales planning. Learning to use the App will be a major outcome of the training program.

The Semi-Organized

Companies like rice importers have developed a network of depot locations in the country from where they distribute their product. They have a cash and carry model for their wholesalers. The managers at the depot have the phone numbers of the wholesalers with whom they retain business contact over phone. Also wholesalers call the depot of the importer to place an order, and follow it up with a payment of cash at the depot through an employee. The stocks of rice are delivered to the wholesaler.

Presently the rice importers are using manual systems to record their stocks, sale and cash flows at the depots. Most sales from depot are on cash and not proper billing processes are not followed. While some wholesalers claimed that the depot use IT infrastructure for billing, they were unable to show bills for their purchases, which may indicate that they do not follow the process of billing and record keeping appropriately..

Marketing of commodities are differently strategized than consumables. Packaged rice is yet to develop into a brand. Mostly consumers recognize the features of the rice grain but do not associate it to any particular brand or specific to any location, i.e. Basmati rice from India. The importing companies will need to create unique selling proposition for their brand of rice. A well-recognized brand can be used to develop a sustainable channel for distribution.

GEMS 4 programs can work with the importing companies to help establish their basic IT network for efficient warehousing and logistics. The companies can reduce their risk of losses because of stock out in depots. They can further use the IT infrastructure to initiate the rice wholesalers into their customer base and use the information systems for market planning.

Risk to Rice Importers

The business of importing rice may be affected in future as the Government is legislating to restrict import of rice into the country. This can lead to shortage of the 'long, slender and white, par-boiled rice in the country.]

GEMS 4 program can provide technical support to the existing rice mills to improve their rice milling processes which can probably improve the quality of Nigerian rice, in terms of being clean and free of sandy particulates. The program can also promote standardization of packaging of rice, weight and other quality indicators. This can by itself drive a change in the demand for Nigerian rice and facilitate the emergence of new distribution channels.

Breweries in Nigeria procure sorghum for distillation. The procurement of sorghum is largely through dealers located in the northern states. It was observed that dealers in Zaria and Kaduna were not aware of breweries and their procurement processes.

GEMS 4 can work towards triggering competition in marketing of quality sorghum to breweries. A mobile phone based business solution can help connect the breweries with all sorghum traders across the country. A mobile App can be designed with the following information

- Details of the Breweries located in different parts of the country
- Information related to volumes of sorghum procured per annum by each of the breweries
- Quality of sorghum procured
- Procurement price of sorghum can be a dynamic feature on the App, updated daily or weekly
- Volume of sorghum to be procured can also be a dynamic feature updated weekly
- Breweries can also encourage sorghum dealers to register through the App

GEMS 4 can design a capacity building program for all breweries in the country to introduce IT infrastructure into procurement of sorghum. These breweries can be encouraged to invest in IT infrastructure which will be both for procuring farm produce like Sorghum and also monitoring and tracking finished product sales in the market.

Procurement of Sorghum as discussed above has been a relatively less engaging with traders in general. It is possible that the process could be over-dependent on a few traders which can be less competitive and monopolistic. The IT mechanism for procurement can have the following benefits

a. Trader :

- i. Registration of traders by the breweries opens up the procurement system of a company and a new way to conduct business in the country. Such a process will set the traders to seek similar opportunities with other companies procuring farm produce for processing and production.
- ii. The association between a company and traders is expected to have more commercial intent of business rather than community/brotherhood interests.
- iii. The traders are expected to learn the business processes of the company which are advanced and progressive. Adoption of quality standards for Sorghum, weighing systems, appropriate packaging, etc. can become the norm of the market.
- iv. The traders would become aware of the demand for Sorghum from the breweries and would be able to plan the supplies. A stable business is often less speculative as it is low on uncertainties. The risk of losses is lowered in such a process and profits are stable.
- v. The traders would respond to the needs of the breweries to find quality Sorghum. They could help farmers to produce better quality Sorghum as they understand the requirements of breweries.

b. Farmers :

- i. Farmers are unaware of the requirements of breweries and mostly produce Sorghum as is traditionally grown. It is expected that as traders evolve with their experience of working with breweries, they could promote farmers to grow high yield white/pearl Sorghum.
- ii. Farmers are expected to earn from consistency in market prices as the demand from breweries are consistent.

c. Breweries :

- i. The companies are likely to adopt professional practices in their business as IT systems improve their efficiencies and impact their profits.

- ii. The group of suppliers registered with the breweries could ensure steady supplies of quality produce from different parts of the country at a competitive price. Such processes are considered to reduce production cost by up to 5%.

The Unorganized

The farm produce markets, both source markets and the terminal markets are highly unorganized. The individual dealers and distributors drive the market with their influence. The market has a stifling effect as dealers and wholesalers, who try to retain their own captive customers and do not encourage competitive environment to emerge. Considering the highly conservative behaviour of the market stakeholders, it may be important to associate with the sensitivity. Therefore intervention related to tomato may be considered to be 'hostile' by the traders. A broader inclusion of farm produce may defocus the trader from a tomato centric intervention.

As discussed earlier, the farm produce, especially vegetables (okra, tomato, aubergine, cauliflower, etc.) are highly speculative markets as there is little information about the production areas, the total land under cultivation for a crop, the species being grown by the farmers and effect of any disease or losses due to climatic conditions. Farmers seem to be less aware of the modern farming practices, especially with low reach of quality seeds and fertilizers. In areas like Jos and Kano, where vegetables are grown in mass quantities, there seems to be better adoption of high yield varieties of seeds. However the sourcing agents from the farms reported that crops were affected by disease and/or pests and there is little awareness about crop protection and crop management. The study team also did not observe the presence of advertisements for crop protection and crop management products.

Working in the Unorganized Segment has to be long term as the stakeholders operate on very low efficiencies because of poor knowledge, low exposure and basic business structures. GEMS 4 can work with the Unorganized Segment on three thematic areas but these initiatives have to be supported for at least 5-10 years because social/community based changes in the traditional trade practices take longer period to adopt.

- a. **Easy Access to Market Information** : Develop systems for market information to be generated and shared with all stakeholders to promote transparency
 - i. States which produce different types of crops, especially tomatoes and the variety(ies) of tomato
 - ii. Geographic locations within the state where each type of crop is produced
 - iii. Total cultivated area for each crop, especially tomato
 - iv. Total production of tomato in each of the state during different months of the year
 - v. Micro markets within the state where the farm produce is aggregated
 - vi. List of Dealers and distributors of tomato and key farm produce in different markets
 - vii. Real time market price of tomato and key farm produce , lowest price and highest price for each day

GEMS 4 can develop a mobile based App which can be used in normal phones as well as Smartphones. The program can popularize the Apps with the dealers/distributors, commission agents, wholesalers and bulk buyers through the Union/Trader's association. Easy availability of Apps and its convenience of use can facilitate ease of access to information among buyers and sellers in different markets.

The information flow among different stakeholders will facilitate growth of competition which could drive market efficiency. It is also expected that the market information will help in reducing speculation as traders are able to plan their procurement and distribution of farm produce in a relatively organized process. Also market prices for farm produce are expected to be rational and not speculative.

- b. **ICT based centres to promote modern farming technology and best practices**: Information and communication technology should be used to build the awareness and exposure of farmers and traders for high yield and quality food crops. It is a global experience that production of good quality food crops has supported evolution of agri-produce value chain through each of the involved stakeholder in the chain.

GEMS 4 can use ICT to introduce content on best practices for production of different vegetables in Nigeria. The information can include knowledge about different stages of cropping, like

- i. Soil quality
- ii. Soil preparation with fertilizer
- iii. Choice of seeds and seed treatment
- iv. Application of insecticides, weedicides and pesticides for crop protection
- v. Crop management with appropriate fertilizer application, irrigation and production
- vi. Harvesting and reducing post-harvest losses

These information can be disseminated through automated information kiosks like touch screen computers. These systems can be supported with audio systems so that voice over can be provided to those who are less literate. These information kiosks can be installed at the Trader's association or the Union offices across the different markets. Partnerships can be initiated with banks that have branches or ATM centres in small town and village locations, close to important market areas.

The awareness of best practices of growing and managing each crop is a slow learning process and the adoption will depend on sufficient market triggers. It is a fact that dealers/distributors of farm produce are the key influencer groups for the farmers because of their business relationship. The trade channel which has been marketing the farm produce is the most potential 'agents of change'. It is expected that exposure to farming methods at the Information kiosks, will help them to understand the benefits, which is likely to be shared with farmers.

GEMS 4 can develop mobile Apps also for specific crops which can be shared during the season. Such Apps have the potential of reaching the progressive farmers also in addition to the trade channel. The GEMS program will need to create opportunities of exposure through interactions and/or training programs for dealers/distributors for this purpose. The dealers/distributors will need to understand the economic advantage of developing the new value chain and the benefits of engaging with the farmers for better quality farm produce. Therefore a capacity building process with the major dealers /distributors followed by a handholding process can catalyse change in the market practices.

It has been studied in agriculturally dependent countries like Thailand, Indonesia and others that adoption of advanced farming methods has led to increase in crop productivity, lowering of risk of disease and even attack of pests. Timely application of fertilizer, crop protection products and irrigation has helped in doubling productivity in many countries.

- c. **Create Access to quality agri-inputs:** Often the business of agri-produce trading is assessed for the farm produce, but the trading of products which facilitate agriculture production is equally important. It was observed that there is little effort in the direction to improve the quality of agri-inputs used by farmers, with respect to, Introducing and promoting high yield seeds, soil nutrients and crop protection.

During the field visits to Kaduna and Zaira markets, which is predominantly agriculture based economies; there was very low media visibility for agri-inputs. Also there were very few retail outlets for agri-inputs. This could be the reason for poor adoption of new farm technologies by farmers.

The Nigerian rice market is a typical case of changing food palate which is deviant from the food produce grown in the country. This has resulted in import of rice and no improvement in the quality of rice produced in the country. Farmers and traders, both are unaware of the variety of rice seed which has the features liked by the Nigerian households and can be grown in the country.

GEMS 4 can map the different technological products which can be introduced to the country for each crop. This can be an intense process as each crop can need different forms of farm inputs and implements. The program can handhold the dealers and distributors to initiate into a new value chain related to accessing and distributing quality seeds, fertilizers and other farm inputs. These farm inputs may be imported in the short-term and produced in the long-term as the farm policies evolve in the country. New

business value chains are likely to get created as more of the dealers/distributors make efforts to influence the farmers to produce better quality products and also adopt practices to reduce losses during production and post-harvest.

GEMS 4 can develop a program to introduce quality paddy seeds in Nigeria which can be grown by farmers in the high production areas of Nigeria. The rice produced should improve the imagery of the local rice and fetch a higher price in the market. This economic infusion from better prices will further trigger the market into growing the new variants of rice.

The strategy is a backward integration process for dealers and agents operating in the source markets. They already work to procure farm produce grown in their captive geographies and manage a close personal relationship with farmers. The introduction of agri-inputs can become new business growth opportunity for the dealers and agents. The business of each of the agri-input like fertilizer, pesticides and seeds, by themselves has the potential of becoming a full-fledged business.

Similarly, it has become essential for farmers to evolve from traditional practices as the market demands good quality farm produce. The UTC and Indian variety of tomatoes are most preferred and fetch a better market price over the Derika variety. The Nigerian rice yields in less than 1000 kilograms per acre as compared to some the high yield varieties which produce more than 3000 kilograms per acre. Therefore farmers gain both from the high yield and better price realization.

- d. **Introduce relevant technology for processing or semi Processing:** Nigeria produces a range of food crops and vegetables. It was often quoted by traders that the country is among the few African countries which produce such a range. However the processing of farm produce is an industry which is yet to evolve.

It was described earlier that the Nigerian rice has not been acceptable in Nigerian homes because of poor quality of grain quality. Often they complain of sandy particles and broken rice grains.

Tomatoes get damaged and are a commercial loss, because of poor packaging materials used. The high use of tomatoes in Nigeria has still to attract companies to invest into processing of tomatoes to improve shelf life and minimize damage and wastage.

The processing or semi-processing of some of the farm produce, like rice and tomato, can trigger a major growth in retail value chains, as both are high volume consumables.

GEMS 4 should also explore the possibility of introducing technology to the rice millers who are presently producing and packaging low grade par boiled rice which fetches low economic returns. The new technology and the processes of rice milling can improve the efficiency of rice production and the quality of rice grains which are packed. An evolved production base of rice can develop a new set of distribution and re-distribution systems in the country with greater economic returns.

GEMS 4 can introduce low cost technology to process tomato for the Nigerian homes. Since Nigerians like to consume fresh tomatoes, an appropriate technology for processing tomatoes can be a new business opportunity. Since tomatoes are perishable, processing units can be potentially located close to the production areas to minimize post-harvest losses and transit losses.

It is assumed that both Nigerian rice and processed tomato, with a good packaging, standard weights and meeting quality standards can create a new value chain for these products. Better and consistent profits for trade channel can translate into lowering of risks for the trader. This often leads to traders offering better prices to farmers, sometimes as high as 10-20% more.