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OPTIMIZING CHANNEL STRUCTURE FOR EFFECTIVE DISTRIBUTION OF PETROLEUM PRODUCTS IN NIGERIA

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ABSTRACT: *The research probed the effectiveness of indirect distribution of petroleum products in Nigeria by the Nigeria National Petroleum Cooperation (NNPC). The study adopted the survey research approach. The method of data collection used was the questionnaire. The Taro Yamane (1967) formula was used in determining the sample size. Benue State was used as the case study. A total of 400 questionnaires were distributed to both motorists who are resident in Benue State and those who drive through the state. Despite spirited efforts, only 359 questionnaires were properly filled, returned and used in the data analysis. Findings revealed that indirect channel structure was effective in the distribution of petroleum products in Nigeria. The result from cross tabulation further showed that indirect distribution of petroleum product was effective in the opinion of both participants who reside in Benue State and those who drive through the state. The research thus recommends that NNPC should sustain the indirect distribution of petroleum products in Nigeria.*

KEYWORDS: Channel structure, effective distribution, premium motor spirit.

INTRODUCTION

It has become abundantly clear everything has a structure. Loudon and Della Bitta (2002.424) insist that even attitudes have structure. The structures of human attitude are the individual's important values and self concept. Adding that even roles have structure since the society is structured of roles that are occupied or played by its members.

In designing channel structure for a petroleum product such as premium motor spirit (PMS), commonly referred to as fuel, one would like to assume that Nigerian National petroleum (NNPC) is the manufacturer or producer. NNPC distributes these products through major marketers such as Mobile, Texaco, Total, Forte Oil, Oando who own filling stations across Nigeria through which they sell to final consumers (motorists). This is a one level channel.

Diagrammatically, this channel arrangement can be depicted thus:

Manufacturer	→	Retailer	→	Consumers
NNPC		Major Marketers		Motorist

However, one wish to state that in some cases NNPC sell to major marketers who in turn sell to dealers who act as retailers and owners of petrol stations before the products get to the final user. Where this happens, the dealers or independent marketers who also own petrol stations act as retailers. In such a case, our diagram is modified to look as follows:

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Manufacturer → Wholesaler → Retailer → consumer

NNPC Major Marketers Dealers/independent Marketers

One would like to point out however that in Nigeria, we have a situation where NNPC has integrated forward to own filling stations which are popularly referred to as mega stations through which they dispense fuel directly to motorists or fuel consumers. This is direct channel arrangement. Alabar (2007:228) refers to this direct channel involving no middleman as "the shortest, simplest distribution channel for consumers goods". A direct channel arrangement can be depicted diagrammatically thus:

Manufacturer → Consumer

There are observable evidences that end users prefer to patronize NNPC Mega stations directly because they are sure of the quality and quantity of the product. At NNPC Mega stations, they also buy at the government approved official price currently fixed at ₦145 (one hundred and forty five naira only).

In Nigeria, NNPC has a hybrid arrangement whereby they use both indirect and direct channels of distribution. It uses indirect when it sells through major marketers thereby using intermediaries and direct it sells through its own Mega stations.

Objectives of the Study

The research set out to achieve the following objective

1. To determine if indirect channel structure is effective in the distribution of petroleum products in Nigeria.

Research Question

The research intended to provide answer to following question

1. Is indirect channel structure effective in the distribution of petroleum products in Nigeria?

Research Hypothesis

The researcher has formulated the following null hypothesis to be tested in the course of the investigation

Indirect channel structure is not effective in the distribution of petroleum products in Nigeria.

The Oxford Advanced Learner's Dictionary of Current English (2000: 1190) define the word structure as to arrange or organize something into a system or pattern. Rosenbloom (1983:19) in Chukwu (2004:46) define channel structure as the group of channel members to which a set of distribution tasks have been allocated. In a similar manner, Howard (1983:2080) as quoted by Chukwu (2004:46) is of the view that a channel distribution structure consists of all the

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middlemen that are in use by a given producer at any given time. Chukwu discerned the main features of distribution channel structure to include the following:

- ❖ The flow of goods between economic units located at different levels.
- ❖ The competition among units located at any given level, and
- ❖ The bargaining between economic units located at different levels.

The structure of channels indicates the way and manner the channel manager allocates tasks or responsibilities to achieve the distribution objectives of the organization. The channel structure could be designed in such a way that the channel manager allocates responsibilities to his company, that is, the producer or manufacturer through the wholesaler down to the retailer and finally end user or consumer. This is the M-W-R-C structure.

It is however pertinent to mention that, a lot of marketers do confuse the role of ancillary service providers with that of active channel members. To put this issue in clear and unambiguous perspective, one would like to emphasize that a distribution channel includes only those participants who perform negotiatory functions such as buying, selling and transferring titles. These are the active members of the channel. The non active members of the channel refers to some group of institutions such as insurance, financial service providers like bank e.t.c who do not perform these functions but assist channel members in performing distribution responsibilities.

Critical issues that must be taken into due cognizance in designing distribution channel structure include but not limited to market coverage, competitor’s action as well as the firm’s facilities on ground that can actually support the structure so designed. One would like to stress that where issues are not properly considered, the whole exercise of channel structure design becomes fruitless or futile.

In the design of channel structure, key interests of the parties concerned including that of the producer, wholesaler and the retailer must be taken into account. The only way to do this without serious conflict will be to involve all of them.

This is because they depend on one another to survive in the chain. The retailer will cooperate fully if his supplies from the manufacturer is uninterrupted. The producer expects that his market comes through the channel members while the wholesaler is stuck in between.

In today’s fiercely competitive business world, a carefully designed channel structure no doubt gives some competitive edge over and above competitors. To access this advantage, management must at the same time ensure that there is quality of staff on ground, production facilities are superb as well as sufficient funds to run the business.

Stern and sturdivant (1991:58) advise that one should think of the ideal distribution system then introduce the reality.

Moorthy (1988:335), argues that the central issues in designing a channel of distribution is the question of vertical integration. Should the manufacturer do the distribution himself or should he use independent retailers? In our example above, NNPC uses both, by engaging in forward integration by way of establishing and running mega stations where they sell directly to customers and also sell through major marketers.

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Channel structure is influenced by a number of variables. These variables according to Chukwu (2004:228) include market variables, product variables, company variables, middlemen variables, environmental variables and behavioural variables.

Market variables influencing channel structure is sub categorized into four, including, market geography, market size, market density and market behaviour. Market geography includes the geographical size of the market as well as the physical location, market size refers to the number of customers making up a market whether consumer or industrial, market density consists of the number of buying units while market behaviour refers to how, when, where customers buy as well as who does the buying.

Chukwu (2004:232) mentions product variables to include bulk and weight, perishability, unit value and degree of standardization. The most important company variables affecting channel design are size, financial capacity, management expertise and objectives and policies of the organisation.

Issues to be considered under middlemen variables „ include availability of middlemen, cost of using middlemen and the service they offer. Environmental variables such as technology, economic, cultural, legal etc must not be overlooked in designing a distribution structure of a firm. Equally important is the fact that since a channel system is a social set up, it might be affected by such behavioural variables like power conflict, communication process and the roles played by each participant or player.

In choosing the best channel, Chukwu (2004:239) contends that the channel manager should choose a channel structure that offers him the desired level of effectiveness in performing the distribution task at the lowest possible cost. He insists that an optimal channel structure is always desired for by a firm that intends to maximize its long term profit.

Experts are unanimous on the fact that before choosing a channel structure, a visionary manager must weigh their pay offs before settling down with the one that best fits his criterion such as profit maximization.

The last step in channel design strategy is the choice of the channel members that will become members of the channel structure. In doing so, it is advisable to apply a selection criterion such as the reputation of the distributor, whether he is well established, his financial position, size of his plant, how many employees he has, whether the salesmen are trained, whether he believes in active cooperation, whether he maintains a stable price etc.

Ohiweri (2007:3) as quoted by Uduji and Nnabuko (2008:47) states that in appraising Nigerian Breweries limited (NBL) distributors, factors considered include buying power, location and warehousing space for stocking both products and empties. The location was important in the sense that the company had to be satisfied, that the distributor's warehouse could be easily reached by prospective customers.

Bucklin (1972:18-20) in Chukwu (2004:265) propounded a model when he states that 'other things being equal, the greater the distance between a producer (manufacturer) and the market, the higher the probability that a channel structure using intermediaries will be less expensive. It is an undisputable realism that the channel manager is saddled with the responsibility of ensuring that a channel structure so designed is able to serve the market efficiently and effectively. However, if there is the need to modify the channel structure occasioned by change in market location, expansion or setting up of new market, the manager should not hesitate to do so.

Also, of paramount importance is the fact that the manager must consider the size of the market in designing market structure. Market density or congestion in population promotes the market performance. If a sales person were to call on several prospects, it will cost less in time, energy and even cost moving around a congested population (Chukwu 2004:267). The probability of using a shorter channel structure is greater when buyers are highly concentrated.

The type of outlet chosen by customers and their locations ultimately determines the actual geographical location of the market the firm desires to serve. According to Loudon and Della Bitta (2002:540), location has an obvious impact on store patronage. Generally, the closer customers are to a store, the greater their likelihood to purchase from that store.

Dunne et al (1992:165) report that historically many retailers were located in the central business district (CBD) usually an uplanned shopping area around the geographic point at which all public transportation system converge.

Brown (1992:8) states that it is through location that goods and services are made available to potential customers. Good location allows ready access, attract large members of customers and increase the potential sales of retail outlets. To butress our focus on petroleum product, oil firms locate their fueling stations close to the road where the customers (motorists) are or pass often.

Adirika, Ebue and Nnolim (1996:356) state emphatically that service firms are located where clients are. Customers (motorists) are on the road, therefore fueling stations are located close to the road.

It is therefore important for each manufacturer to weigh each of his concerns and then opt for a particular method of reaching his product to those whom they are made the customers. It is obvious that manufacturers are facing severe competition in practically all products, and the manufacturer who can place his products within easy reach of the buyers definitely gains advantage over other competitors.

The nature of the market structure concerns the geographical dispersion and the size of the potential customers. That is where they are, who they are and how many they are. Nwaizugbo (2004:156) counsel that, direct channel be used only where there is concentration of potential customers in a particular area. He added that in selecting a channel, factors such as the nature of the customers, nature of the product and the degree of market exposure desired should be considered. Who the customer is and how much and where he will buy are important considerations.

The nature of the product is also of extreme importance because of its value, technical assistance needed and the perishable nature of the product.

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Degrees of market exposure are recognised as intensive exposure, selective exposure and extensive exposure. According to Nwaizugbo (2004:56-57), intensive exposure through distribution channels refers to the sale of a product through many responsible and suitable wholesalers and retailers in order to get a wide exposure of the product to as many customers as possible.

Selective distribution refers to the choice of only those wholesalers and retailers who will do the best job of distributing the product. Shopping goods are characterized by selective distribution. Exclusive market exposure refers to the distribution through only one wholesaler or retailer in a given area. The auto industry uses this sort of distribution exposure.

Tracing the developments in distribution structure, Onah (1993:364) looks at the issue from a' completely different perspective. He states that the structure of distribution in developing countries has passed through various stages of development. He named the major stages as open periodic markets, closed periodic rural market and urban or town daily market.

The open periodic market was the earliest stage of channel development. Generally, distribution began from the retail end due to the simple fact that the market environment itself was dominated by the need for self preservation. Local producers were the participants in these markets exchanging commodities such as foodstuff, clothing and home crafts. According to Onah (1993:364) 'open periodic markets meet at interval of 2, 3, 4, 5, 7, and 8 days, but most of them had a four-day periodicity.

With advancement in the economy, people enhanced from the production of goods to that of tools, weapons and implements. Specialization emerged among communities. The markets too advanced from primitive markets to closed periodic markets. The same source observed that as both individual and communities were specialized, markets became known for what was sold in them. This in fact became the origin of market movement or rotation amongst nearby villages or towns. 'The structure of distribution was in the form of a ring' Onah (1993:365). In a community with a 4 day market structure, a market ring was composed of four villages with markets sitting on different days. Distribution structure at this level was still on a retail basis due to the fact that direct marketing operated under the traditional periodic market structure.

The last stage according to Onah (1993) was the urban or town daily markets or merchant trader market. During this stage, village traders would go to the big towns to buy their wares and bring them back to villages for resale thereby becoming wholesalers to other village traders. The town market literally becomes distribution centres for village markets surrounding them. There was interflow of goods and services in the sense that while the village markets obtain both local and imported goods from the urban markets, they (village markets) in turn supply agricultural goods to the town markets.

In his contribution, Nwokoye (1996:168) opines that channel structure reveals the kinds of participants involved in the production, distribution and ultimate use of a product. It shows the nature of the linkages connecting the producer, the middlemen, and the consumer.

Renowned marketing author of international repute, Kotler (2003:509) submits that the concept of marketing channels is not limited to the distribution of physical goods.

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Producers of services and ideas also face the problem of making their output available and accessible to target populations. Kotler furthers that with the proliferation of customer segments and channel possibilities, more companies have adopted multi channel marketing. Multi channel marketing occurs when a single firm uses two or more marketing channels to reach one or more customer segment.

In channel design decisions, a new firm typically starts as a local operation selling in a limited market using existing intermediaries. A firm might have to use different channels in different markets. In smaller markets, the firm might sell directly to retailers, in larger markets, it might sell through distributors. In rural areas, it might work with general goods merchants, in urban areas with limited line merchants. In one part of the country, it might grant exclusive franchises. In another, it might sell through all outlets willing to handle the merchandise.

Kotler (2003:511) advises that in managing intermediaries, the firm must decide how much effort to devote to push versus pull marketing. A push strategy involves the manufacturer using its sales force and trade promotion money to induce intermediaries to carry, promote and sell the product to end users. Push strategy is appropriate where there is low brand loyalty in a category, brand choice is made in the store, the product is an impulse item and product benefits are well understood.

A pull strategy involves the manufacturer using advertising and promotion to induce consumers to ask intermediaries for the product, thus inducing the intermediaries to order it. Pull strategy is appropriate when there is high brand loyalty and high involvement in the category, when people perceive differences between brands and when people choose the brand before they go to the store. It is noteworthy to remind us that companies in the same industry may differ in their emphasis on push or pull.

Knee and Walters (1988:110) outline a number of assumptions concerning strategy and structure. The first is they are quite separate and require individual attention. The second view is the firm's strategy should be imposed upon the existing structure.

Dalrymple and Cron (1982:49) are of the view that distribution varies depending on the type of product. Choi (1991:271) states that the underlying channel structure in most studies consists of two manufacturers and two retailers each of whom sells only one manufacturer's product exclusively. Channel intermediaries reduce the intensity of direct competition between manufacturers.

RESEARCH METHODOLOGY

The study adopted the survey research approach with questionnaire as the instrument of data collection. The population of the study was made up of all motorists who purchase premium motor spirit (PMS) or fuel from fueling stations in Benue State. The sample size of 400 was determined statistically using Taro Yamane (1967) formula. The customers (motorists) were divided into those who are resident in Benue State and those just passing through the state.

Normal Distribution Test as well as cross tabulation were utilized for the test of hypothesis and data analysis. The hypothesis was tested at 5% level of significance. In order to demonstrate the relationship between the research variables, the Gamma value obtained from the cross

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tabulation was used at 95% level of significance. The Gramma value would indicate either positive or negative relationship.

A total of 400 copies of questionnaires were distributed randomly to customers of fueling stations operated by major marketers including Mobil, Texaco, Total, Forte and Oando across Benue State. The towns covered included Makurdi the state capital, Gboko, Otukpo, Katsina Ala, Adikpo, Vandeikya, Aliade and Otukpa. The research used secondary data obtained from books, Journals, internet and other publications. Primary data were collected first hand for the study specially, using questionnaire.

DATA PRESENTATION AND ANALYSIS

Table 1.1 Distribution and Retrieval of Questionnaire

Number of questionnaires distributed	Number of questionnaires retrieved	Number of questionnaire not retrieved	Number of questionnaires not properly or completely filled	Number of questionnaires properly filled returned and used in the analysis
400 (100%)	378 (94.5%)	22(5.5%)	19(4.75)	359(89.75%)

Source: Field Survey (2018)

Table 2.1 Descriptive Statistics for Research Data

Variable	N	Mean	Std. deviation
1	359	3.41	1.071

Source: Researchers Computations (2018)

Test of Hypothesis

Indirect channel structure is not effective in the distribution of petroleum products in Nigeria.

Table 2.2 Descriptive statistics of the normal distribution test on the effectiveness statistics of the normal distribution of indirect distribution of petroleum products in Nigeria

N	Mean	Std. deviation	Std. error mean
7 359	3.41	1.071	057

Source: Researcher's computation, 2018

Table 2.3 Normal distribution test on the effectiveness of indirect distribution of petroleum products in Nigeria

Test value = 3.0			
95% confidence interval			
	Mean difference		
7	7.243358	409	1.96

Source: Researcher's computation 2018

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From the above table, we can see the results of the valid sample size used for the test was 359 respondents, with sample mean 3.41, standard deviation of 1.071, the degree of freedom (df) 358. The confidence interval was 95% with z-score value of 7.243 and level of significance of 1.96 at confidence level 95%.

Since the Z-value (7.243) is higher than the critical value (1.96), we reject the null hypothesis which states that indirect distribution of petroleum products is not effective in Nigeria. We therefore accept the alternative hypothesis that indirect distribution of petroleum products is effective in Nigeria.

Table 2.4 case processing summary of cross tabulation of the difference in the effectiveness of indirect distribution of petroleum products between motorists who are resident in Benue state and those who just pass through the state while travelling to various destinations.

Cases

Valid	Missing	Total
N Type of customers effectiveness of distribution 359	Percent 100%	N percent N percent 0 0% 359 100%

Source: Questionnaire distribution, 2018

Table 2.5 symmetric measures of cross Tabulations of the Variance in the effectiveness of indirect distribution of petroleum products between motorist who are resident in Benue State and those who just pass through the state.

Value Aprox. Sig.

Ordinary by ordinal Gamma N of valid case	.127 359	.113

Source: Questionnaire Distribution, 2018

Table 2.5 above shows that there are altogether 359 valid cases with a Gamma value of 0.127. The Approximate significance is 0.113. This result means that there exists an insignificant positive association between motorists who are resident in Benue State and those who are passersby. This means that the effectiveness in indirect distribution of petroleum products is the same.

This means that the cross tabulation demonstrates that it is indeed immaterial whether with motorist who are resident in Benue State and those who just pass through the state to their various destinations, that the effectiveness of indirect distribution of petroleum products is the same.

DISCUSSION OF FINDINGS

The research examined the effectiveness of indirect distribution of petroleum products in Nigeria. The study used the most sought after product fuel or premium motor spirit (PMS). Only one hypothesis was formulated for the study.

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The result of the test reveal that the z – value was higher than the significant level. Therefore, the null hypothesis which states that indirect distribution of petroleum products was not effective was rejected. This result supports the alternative hypothesis which means that indirect distribution of petroleum products was effective. Cross tabulation analysis further lends credence to the fact that indirect distribution of petroleum products was effective irrespective of whether the customer were resident in Benue State or just passing through the state to other destinations.

This finding is consistent with the submission by Chukwu (2004.239) that the channel manager should choose a channel structure that offers him the desired level of effectiveness in performing the distribution tasks at the lowest possible cost.

CONCLUSION

Fuel distribution in Nigeria has always been with several challenges. The justification for conducting the research was to seek to proffer solutions to the distribution challenges in terms of designing an effective channel structure.

The study ascertained the effectiveness of indirect distribution of petroleum products in Nigeria by NNPC through fueling stations operated by major oil forms such a Mobil, Texaco, Total, Forte and Oando.

The main objective of the study was realized as a relationship war established between indirect distribution of petroleum products and effectiveness in the opinion of customers (motorist) who participated in the survey. The result was the same between motorists who reside in Benue State and those who drive through the state to their various destinations.

The major limitation of the study was the fact that respondents who were just passing through Benue State had to be persuaded to quickly fill the questionnaire during their brief stay at the fueling station, while having their meal or at the vulcanizer's shops. They had no time to wait for long. Also some motorists were not literate and therefore refused to participate in the survey.

The study concluded that indirect channel structure is effective in the distribution of petroleum products in Nigeria. In fact, result from cross tabulation reveal that both motorists who reside in Benue State and those who pass through the state agree that indirect distribution of premium motor spirit (PMS) or fuel is effective in Nigeria.

By implication management of NNPC will focus more on policy issues and regulation of the industry and allow oil firms to distribute petroleum products across the country.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are deemed appropriate.

(1) Nigeria National Petroleum cooperation(NNPC) should sustain the indirect channel structure of petroleum products through fueling stations operated by oil firms across the country

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(2) NNPC should ensure that indirect distribution of fuel or premium motor spirits (PMS) in Nigeria continue to be effective so that customers (motorists) will continue to be satisfied and happy.

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