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Non-Parametric Analysis on the Effects of Fuel Subsidy Removal on Small Business Performance in South-East Nigeria

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Abstract:
This paper centers on the effects of fuel subsidy removal on small business performance in South-East Nigeria. Two research questions were raised as a guide to this study while data generated through the questionnaire were analyzed using Non-parametric Kruskal Wallis test. The statistical software package known as MINITAB version 16.0 was used for the analysis. The use of Bartlet's test of homogeneity of variance shows variation in the data, and the test for normality assumption rejected the null hypotheses which lead to the use of Non-Parametric methods. The outcome reveals the following: Fuel subsidy removal has significant impacts on the financial performance of small business in Nigeria; and Fuel subsidy removal has a significant impact on the market performance of small businesses in Nigeria.

Key words: *Fuel subsidy removal, small business performance, Kruskal-Wallis test, market price*

1. Introduction

1.1. Background of the Study

The Nigerian economy being classified as a developing economy has been enjoying a lot of support from the government. These support are often aimed at ensuring that relevant sectors of the economy contribute maximally to the growth and development of the economy and improve the living standard of the citizens. One of the most critical sectors of the economy is the oil and gas industry or the energy sector that produces fuel, diesel, kerosene and other important products. This industry or sector is today the mainstay of the Nigerian economy and have received enormous support from the government. The Small businesses in Nigeria cannot be insulated from the effects of the fuel sub-sector since their activities both economic and social have a direct link with this all important sub-sector. In order to ensure that small businesses in Nigeria and indeed all Nigerians, enjoy the full benefit from this gift of nature (fuel) to the Nigerian nation, the government makes policies to regulate the operations of the sector, one of which is the fuel subsidy.

According to Todaro et al, (2009), a subsidy is an assistance paid to a business or economic sector mainly by the government to prevent the decline of that industry. On the other hand, the Oxford Advanced Learners Dictionary (2001) defined a subsidy as money that is paid by a government or an organization to reduce the cost of services or of producing goods so that their prices can be kept low. In addition, Bakare (2012), points out that to subsidize is to sell a product below the cost of production. At the most conventional level, subsidies are government financial transfers to an industry, through payments to workers or to firms.

This is the narrowest definition of a subsidy. A more broad based and operational definition of subsidy is that provided in the GATT Agreement (1999) which defined subsidy as a direct or potentially direct transfers of funds from governments to firms or individuals (e.g. grants, loans, loan guarantees, equity infusions), government revenue foregone (e.g. tax waivers or deferrals), government provision of goods and services, other than infrastructure, at less than market prices, and government support of prices and incomes. To be a subsidy, the action must confer a benefit on the firm or individual, and it must be specific to an industry or group of industries. Within the Nigerian context, fuel subsidy means to sell petrol below the cost of importation. Subsidies, loosely speaking, are government policies in aid of one or more industries, usually carrying a financial benefit to the

industry. Fuel and indeed other petroleum products have enjoyed a subsidy from the federal government of Nigeria until 1st of January 2012 when the Federal Government of Nigeria led by President Goodluck E. Jonathan introduced the fuel subsidy removal policy. The fuel subsidy removal policy was anchored on the argument to open up the sector for improved private sector participation both in the up and down-stream sub-sectors and the need to save and generate money to finance government expenditures.

According to Iyobhebhe (2012), the Nigerian government stated that its Medium Term Fiscal Framework won't work unless the subsidy is scrapped or to put it in another way that the scrapping of the subsidy is an integral part of its MTFF. That it needs the N1.3trillion savings for critical infrastructural development projects. The theory is that deregulation and removal of the fuel subsidy may initially lead to inflationary pressures, but as the market is opened up to investors, billions of dollars will flow into the downstream sector and more private refineries will open for business in Nigeria. Eventually, the market will self-regulate and prices for refined petroleum products and other goods and services will be at the natural market level as competition forces prices down. That's the long term benefit will be more than the short term pain. Though agitations, protest and pressures from individuals, civil society organizations, etc. compel the government to opt for a partial removal of the fuel subsidy, it have indeed elicited diverse interest and attention, hence the desire of the researcher to investigate the effects of this fuel subsidy removal on small businesses in Nigeria with specific interest in the south-eastern part of Nigeria.

1.2. Research Problem

Small businesses in Nigeria over the years have emerged to be a significant contributor to the growth of Nigerian economy through their various productive activities. Many of them actively participate in the economic sector of the Nigerian nation, culminating in the ownership of productive ventures. Because the power or energy problem of the nation is yet to be fixed, these productive ventures owned rely heavily on private power generation to run their business. The removal of fuel subsidy has led to an increase in the price of fuel, this also have increased the operational cost of firms in Nigeria, hence having a negative impacts on the financial performance of small businesses in Nigeria since private power generation constitutes a significant component of their operational cost.

Small businesses in Nigeria depend heavily on physical distribution for their marketing unlike their counterparts in technologically advanced nations that adopt electronic online marketing, hence, fuel subsidy removal may have constituted marketing constraints as fuel subsidy removal may have led in the increase in transportation cost.

1.3. Research Objectives

The general purpose of this study is to investigate the impacts of fuel subsidy removal on the performance of small businesses in Nigeria. In line with this, the following specific objectives will be examined.

- Examine the financial performance impacts of fuel subsidy removal on small businesses in Nigeria.
- Examine the marketing performance impacts of fuel subsidy removal on small businesses in Nigeria.

1.4. Research Questions

The following questions are asked to serve as a guide to this study.

- What are the impacts of fuel subsidy removal on the financial performance of small businesses in Nigeria?
- What are the impacts of fuel subsidy removal on market performance of small businesses in Nigeria?

1.5. Research Hypotheses

The assumptions in this study as made by the researchers are;

1.6. Hypothesis One

- H_0: Fuel subsidy removal does not have significant impacts on the financial performance of small businesses in Nigeria.
- H_1: Fuel subsidy removal has significant impacts on the financial performance of small businesses in Nigeria.

1.7. Hypothesis Two

- H_0: Fuel subsidy removal does not have any significant impact on the market performance of small businesses in Nigeria.
- H_1: Fuel subsidy removal has a significant impact on the market performance of small businesses in Nigeria.

1.8. Scope and Limitations of the Study

This study was targeted at examining the impacts of fuel subsidy removal on the performance of small businesses in Nigeria. In conducting this study, the researchers concentrated on the south-eastern part of Nigeria. Contextually, only financial and market performance were examined, leaving out other business performance dimensions.

1.9. Significance of the Study

The relevance of this study is seen in the number of people that this study will benefit. It is the believe of the researcher that the outcome of this study will be of enormous benefit to different people.

- Firstly, the outcome of this study will be of immense benefit to public policy makers. This is because it will educate them on how to manage public interest, perceptions and reactions when making policies that affects members of the public.

The findings and suggestions made in the study will also serve as a veritable input in the implementation of the subsidy re-investment Programme (SURE-P), especially as it affects Micro, Small and medium Scale Enterprises support.

- Secondly, the outcome of the study will help educate the public, especially operators of small businesses in the south-eastern part of Nigeria on how to take advantage of the benefits of fuel subsidy removal, and also ameliorate its negative effects on them.

To scholars and researchers, this study will serve as a source of current and relevant information when carrying out a research in this line of knowledge.

2. Related Literature Review

2.1. Meaning of Subsidy

According to the Academics Dictionary of Economics (2006) defined subsidy – "The cash incentive given by the government to an industry with a view to lower the price of the product of the concerned industry and to raise its competitive power is known as subsidy. This may be given as a counter balancing measure to the imposition of the custom duty (In the nature of protection duty) by an importing country government. One important objective of subsidy is to keep its prices below the cost of production."

Furthermore, in the view of Lawson (2012), subsidy can also be defined as any measure that keeps prices consumers pay for goods or products below market levels for consumers or for producers above market. He posits that Subsidies take different forms. Some subsidies have a direct impact on price. These include grants, tax reductions and exemptions or price controls. Others affect prices or costs indirectly, such as regulations that skew the market in favour of a fuel production and importation, government sponsoring technology, or research and development. Thus, there are two major classes of subsidies – production subsidies which is associated with developed countries and Consumer subsidies, which are found mainly in developing countries like Nigeria. According to Ebuka (2012), a subsidy is a reverse tax. It is a deliberate attempt by the government to support a chosen economic agent – a consumer and a producer and it can be applied in any market that involves the buying and selling of products and or services. Commenting on the meaning of subsidy, UNEP (2002) defined it as basically a government action that decreases the consumption price of the consumer and or increases the selling price of the producer. It further posits that subsidies enjoy widespread use in several countries and several commodities such as petroleum products, food or farm inputs like fertilizer and machinery. Though, a subsidy can be a very powerful policy tool that can be used to address market failures or achieve social objectives. It may also be an artificial tool to skew markets and this can impose large economic costs with huge negative externalities such as corruption.

2.2. The Roles or Functions of Fuel Subsidy

According to Kutter (2004), It has been shown in the past that any significant increase in the fuel price often causes economic recession, such as witnessed in 1973 and 1979. One way in which the government had made fuel sufficiently available and affordable to the low –income earner is through subsidy. The introduction of subsidy indirectly promotes economic growth and development as a result of the affordability of the price of goods which provides an enabling point for the middle class citizen to contribute significantly to the economy. The success could be attributed to the affordability of energy and hence an increase in its demand.

It therefore connotes that subsidy removal, though will play significant role in nation building it is not the absolute resort to improve the economy. While it looks significantly important, there are other measures that could be adopted even without subsidy removal which would improve the economy significantly. And the presence of subsidy will play a pivotal role in the accomplishment of this measure. The removal of government benefit to the people in the form of subsidy will have a negative impact on the low to middle income earners. The middle income earners have been identified as the group of people in the nation, whose activities mostly drive economic growth and development. The high cost of commodities following the removal of subsidy will constitute an impediment to the good plan of the government associated with subsidy removal.

3. Impacts of Fuel Subsidy Removal

Fuel subsidy removal would have both negative and positive effects on the nation generally and small businesses in particular. The following impacts are discussed under benefits and negative consequences

4. Benefits from Fuel Subsidy Removal

If well implemented, there are certain benefits which the government and her economic experts explained can be derived from the fuel subsidy removal. These benefits includes: -

- Fuel subsidy removal will allow government access to more funds to develop infrastructure.
- Reduction in the pressures on foreign reserves
- It will provide employment for the teeming jobless citizenry as well as improve education, health, power, water resources and agriculture.
- It will reduce borrowing
- Allows free market operation
- Helps address the great imbalance between the recurrent and capital expenditure in Nigeria.
- Encourages local and foreign direct investment in the oil sector).
- Frees more funds for local investment in the oil sector.

- Increases local refinery production.
- Reduces importation of refined products in the medium to long term.

Discussing the positive side or benefits of subsidy, Fleming (2007) averred that there are two basic arguments that can justify the implementation of subsidies in a domestic market. First, the infant industry argument, and second, the national security argument. GATT also recognizes these two arguments as valid excuses for governments to implement subsidies, however, it is difficult to draw the line between what can be defined as an infant industry, and what a valid national security argument is.

First, the infant industry argument is most commonly used in less industrialized nations like Nigeria. It argues that a new national industry has to be protected from foreign competition during its "infant" stage. The industry should be able to gain a significant market share within the domestic market, before subsidies are abolished. Secondly, the national security argument has been heavily discussed in recent GATT forums. This argument argues that due to national security measures, certain domestic industries must be able to survive foreign competition and continue to operate inside the domestic market.

5. Negative Consequences of Fuel Subsidy Removal

In the view of Abang (2012), the removal of fuel subsidy is associated with certain negative consequences which affect businesses and the Nigerian citizens. These consequences as advanced by Abang (2012) include:

5.1. Increase in Cost of Production

Removing fuel subsidy would result an increase in the cost of production for the few companies that still exist. This would lead to more job losses (as the companies would be forced to down-size in order to survive) in addition to the unavoidable increase in the cost of the companies' products.

5.2. Increase in the Cost of Providing Services

Removal of fuel subsidy would increase the cost of service provision because the astronomical inflation arising from subsidy removal would not have been factored into the budget; this certainly would have negative effects on the standard of living of Nigerian households and businesses.

5.3. Increase in the Cost of Transportation

Everybody appreciates the fact that when motorists pay more for fuel, the transport fare increases. This has been the case even when the increase is only marginal. In the particular case where the cost of fuel is expected to double, the increase in transport fare will be astronomical. This will in turn affect everything else – school fees, house rent, just name it.

5.4. Increase in Cost of Living

In addition to school fees, house rent, etc. the cost of every item of food will astronomically increase with removal of fuel subsidy and, for all sane people; this is where the trouble is. When poor people are unable to eat because they cannot buy roasted corn or yam (which they usually eat as meal) as is bound to happen when fuel subsidy is removed, there will be no peace in this country.

5.5. Increase in Corruption

Removal of fuel subsidy and devaluation of the Naira would render the salaries received by civil/public servants at all levels inadequate. The tendency is that corruption, which the government has proved incapable of fighting, would increase. This has always been the case and there is no reason why this will not happen now.

6. Aspects of Subsidy

Subsidy concept has many angles to it as averred by Bernard (2003), these angles reflects the opinion and area of emphasis by experts and professionals. The various aspects have been reduced to three according Bernard. They are:

6.1. Economic Aspects

Adelekunle (2013) commenting on the economic side of fuel subsidy removal posits that, One of the most important argument against subsidy is based on economic theory. He furthered his opinion by stating that Subsidies and price supports have existed for centuries, but now they are incredibly wasteful and completely outmoded for world markets. Subsidies, fostering the protection of domestic industries have a negative effect on employment, the budget deficit, and other economic aspect. The economic implications of subsidies are significant. Government subsidies given to the private industry usually end up hurting the economy. A subsidy sponsors unprofitable business enterprises and often favors one firm over another. Therefore, subsidies effectively interfere with the concept of a free market economy. In addition, government support to import-threatened industries seem to contain the growth of bilateral trade between developed and developing nations. Government subsides revitalize the import-threatened industries through sustained investments in capital intensive assets, thus creating permanent barriers to bilateral trade.

Naturally, sponsoring unprofitable and profitable industries by subsidies require the high government expenditure. Subsidies are most commonly funded by revenues derived from trade tariffs and internal federal income taxes. It is highly questionable if government expenditure on subsidies can be justified by the increase in exports, which normally cause an increase in the Gross Domestic Product. Furthermore, critics argue that leniency on subsidy rules burdens, tax payers and disrupt trade and investment.

Moreover, many domestic subsidies influence imports and exports. This influence interferes with theory of absolute/comparative advantage of trade. This theory states that if one country is more efficient in production of one particular good, both nations will benefit if they utilize the industries which are the most efficient. The comparative advantage situation makes countries trade with

each other. By the effective use of subsidies, the comparative advantage that one nation has in comparison to another will be equalized by the amount of subsidies.

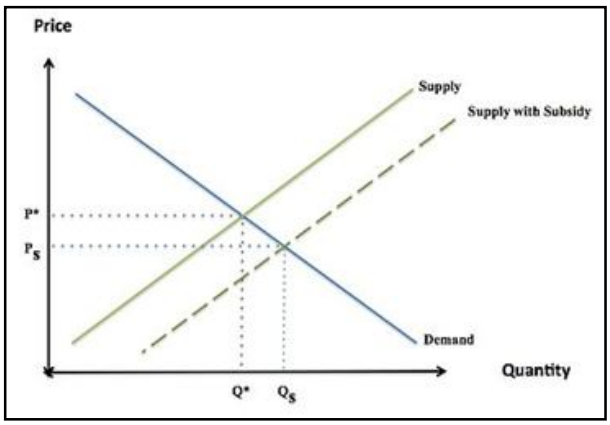

Figure 1

6.2. Political Aspects

The power of World politics has in recent years moved from military forces in economic power. The implementation of subsidies on trade of products and services, presently constitute a major threat to international political stability. The trend of recent GATT rounds is that they have become longer and more complex in nature. International trade disputes are today more difficult to solve than even before. The formation of free trade areas in recent years has also contributed to international tension. Sequel to the above, it is the considered opinion of Ojobo (2012) that Subsidizing of major multinational industries creates major implications to the domestic markets.

6.3. Social Aspects

The dilemmas of social implications of subsidies include all of the following; subsidies are a major obstacle to the free market economy, lower quality goods and services and finally domestic social consent. It is the widespread belief that a free market economy creates innovativeness and superior products. The strife of spirited entrepreneurs creates a dynamic economy, where only the best adapted to a particular market segment survives. Subsidies, however, create a disequilibrium in certain market segments. By supporting certain industries, a favorable competitive situation is created for certain industries, and others are left competing on their own. Such government interference could, in the long-term perspective, create several extremely large global industries.

Furthermore, since subsides present a major obstacle to the free market economy, they may impact on the quality of products and services produced by subsidized industries. Many cases, subsidies have practically illuminated foreign competition in the domestic market. The power of the buyers will decrease, since there will be less competition in the marketplace. It could therefore be possible for the subsidized industry to offer its customers, products and services of less quality. It is the widespread belief that more stringent competitive forces tend to enhance the quality of products and services.

7. Different Categories of Subsidies

When working on identifying subsidies, we will realize that there are many different types of subsidies. Some situations and measures can quite indisputably be identified as subsidies; Ozoaka (2012) identified the following classes of subsidies:

- Direct financial transfers
- Services and indirect financial transfers
- Interventions with different short and long-term effects
- Lack of intervention

7.1. Direct Financial Transfers

The first category includes all direct payments by the government to the industry. These subsidies have a direct short-term effect on the profitability of the industry and can also be negative. Their cost (revenue) to the government can usually be found in the public budget and its direct value to the industry will appear directly in the cash flow of the recipient industry. Subsidies belonging to this category are easy to identify and it would generally not be difficult to find consensus when defining these subsidies.

7.2. Services and Indirect Financial Transfers

The second category covers any other active and explicit government intervention, but which does not involve a direct financial transfer. These subsidies also have a direct short-term effect on profitability, but are rarely negative. Their cost may or may not be specified in the public budget and the value to the industry does usually not appear explicitly in the accounting of the recipient

industry. Many of the subsidies in this category are services of some kind provided by the public sector or indirect financial transfers.

7.3. Interventions with Different Short and Long-term Effects

The third category of subsidies allows for a longer time perspective and includes **g**overnment interventions that have a negative economic impact on the industry in the short-term, but ultimately result in long-term benefits (with regard to, for example, the resource base) and/or more general benefits to society as a whole (with regard to, for example, the environment). The cost of these subsidies, usually an administrative cost may be accounted for among other public expenditures for management and regulations and difficult to identify. The short-term value to the industry would commonly appear as expenditure in the accounting of the industry while the positive long-term effects are implicit.

7.4. Lack of Intervention

The last and fourth category covers the area of lack of government intervention and may be the most difficult one to deal with. This Category comprises inaction on behalf of the government that allows producers to impose - in the short or long-term - certain costs of production on others, including on the environment and natural resources, and that has short-term positive effects on the industry's revenues and/or costs. These subsidies are usually positive in the short-term, but negative in the long-term. By definition, they do not imply a cost to the government and their value to the industry is implicit.

7.5. Assessing Different Categories of Subsidies

The impact of different categories of subsidies differs, while some have direct impact on the industry, economy and citizens, others hold an indirect impact.

7.6. Investment Grants

An investment grant program is probably one of the most obvious examples of a direct financial transfer subsidy. These schemes are commonly used for the purchase or modernization of equipment and facilities, having improved competitiveness through more efficient production as an objective.

8. Market Price Support

Market price support can take several forms and is defined by OECD (2000) as occurring when the domestic price of a product is higher than the world price as a result of government policy. If the program is co-financed by the industry, the industry contributions should be deducted in order to arrive at the net value of the program. If a government body administers the program, the cost of the scheme to the government should include an estimated administration cost in addition to the total compensation payments.

Transfer of money to producers are typically divided into two broad categories: those provided at a cost to government, such as grants and tax concessions, and those provided through the market as a result of policies that raise prices artificially. The latter, called market price support (MPS), may derive from a domestic price interventions (for example, a minimum-price policy), and is usually supported by foreign trade barriers such as a tariff or quantitative restriction on imports. The OECD defines Market Price Support formally as an indicator of the annual monetary value of gross transfers from consumers and taxpayers to producers arising from policy measures creating a gap between domestic producer prices and reference prices of a specific commodity measured at the production-gate level. MPS is an element that is included in many studies of support to particular goods or sectors, and is added together with other subsidies to yield an estimate of total support.

According to Orji (2008), the concept of market price support is simple enough. By maintaining an import tariff on a good, for example, a government raises the price of that good above what it could sell at in the absence of the tariff. From the producers' standpoint, the revenues they will receive would be similar to those they would receive were the government instead to pay them an equivalent premium per unit produced. The main difference is that MPS raises domestic prices, and may therefore dampen demand compared with a budget-financed price premium, especially if there are close substitutes that, as a result of raising the price of the targeted good, become relatively cheaper.

Usman (2011), posits that from the government's perspective, the advantage of providing support indirectly, through a market intervention, is that it is less transparent, and the transfers do not appear in its budget. Rather than taxpayers, consumers bear the burden. For this reason, Market Price Support is considered by economists to be one of the most market-distorting forms of support provided through government policies. Unfortunately, it is also still one of the largest elements of total support.

9. Import Quotas, Tariffs and Other Border Measures

Border measures that do not involve a financial transfer to - or from - the industry can be classified as **Category 2** subsidies. To Flaaten and Wallis (2000), these include regulatory frameworks such as import quotas and other non-tariff measures, import tariffs as well as landing, bans for foreign vessels and can represent important advantages for the domestic industry. They posit further that the measures represent in practice transfers from consumers to oil importers arising from government policy. Tariff escalation regimes are border measures that benefit in particular the processing industry by allowing petroleum products to be imported at lower tariffs than processed products.

Border measures are often difficult to assess with regard to their value to the industry. If there are international prices available for the products in question, these prices could be used in a comparison with domestic prices to assess how the measure has influenced the national market and price structure. If there is a difference between local and international prices that cannot be

explained by other influences, this difference could be used for drawing conclusions with regard to the border measure's impact on, for example, revenues to the local processing industry.

10. Investment tax Credits and Deferred Tax Programmes

Benefits gained through investment tax credits should be assessed by comparing the subsidized scheme with the normal tax regulations applicable to other industries. However, because this type of tax credit often means a redistribution of costs over a period of years by allowing accelerated depreciation of fixed assets, i.e. faster than the real economic life span, or by allowing investments to be made out of non-taxed profits on certain conditions, the actual value of the scheme for the industry in a specific year is usually difficult to calculate. One benefit is the extra capital made available for additional investments and this could be valued at the cost of commercial interest rates. Other benefits include the easing of fluctuations in income over a period of years that would constitute a subsidy equaling, for example, an income loss or unemployment insurance or the financial cost of borrowing working capital.

Deferred tax programmes are similar to the investment tax credits and a similar approach for evaluating their benefits to the industry should be applied. With regard to government costs, it is the foregone revenue that should be estimated.

10.1. Production Subsidy

A production subsidy encourages suppliers to increase the output of a particular product by partially offsetting the production costs or losses. The objective of production subsidies may be to expand production of a particular product at a lower price. In such case, the government is also supporting the consumer. Other examples of production subsidies include the assistance in the creation of a new firm (Enterprise Investment Scheme), industry (Industrial Policy) and even the development of certain areas (Regional Policy).

10.2. Tax Concessions

In countries with well-developed tax systems, subsidies provided by reducing companies' tax burdens are commonplace. Examples include tax exemptions (when a tax is not paid), tax credits (which reduce a tax otherwise due), tax deferrals (which delay the payment of a tax) and a host of other instruments. In common language these preferential tax treatments are called tax breaks or tax concessions; public-finance economists refer to them as tax expenditures. They should not, however, be confused with general tax reductions.

Generally, when a government provides a tax break its budget is affected in much the same way as if it had spent some of its own money. The exception is a tax credit, which is worth more to a corporate recipient (and costs a government more) than a direct payment of an equivalent nominal value, as a direct payment raises a company's taxable income and therefore is itself taxable. Besides adding complexity to tax systems, tax concessions are often criticized by economists as being less transparent than grants and more resistant to change. Several national governments, and even a few sub-national governments, produce annual tax expenditure budgets. But the information contained in these "budgets" is often reported at a higher aggregate level. Information on the value of tax breaks received by particular industries or companies is usually much more difficult to find.

11. Research Methodology

The researchers in this chapter showed the effort made to generate relevant data for this study. The chapter also brought to the fore, the statistical tools that are used to analyze the data generated.

11.1. Research Design

The researchers adopted a survey approach in carrying out this study. This approach was chosen to enable the researchers reach out to a reasonable number of the population within the available resources.

11.2. Area of Coverage

This study focused on the impact of fuel subsidy removal on Nigerian small businesses in south eastern part of Nigeria.

11.3. Population of the Study

The population of interest in this study consists of two hundred (200) small businesses selected randomly from south-eastern part of Nigeria.

11.4. Sample Size Determination

Alugbuo (2005), defined sample size as the optional number of sampling unit or elements that should be sampled, interviewed or those who can be useful in the study. They researcher used the Yaro Yame method to determine the sample size.

The formula is given as;

$$n = \frac{N}{1 + N(e)^2}$$

Where n =Sample size of the study, N = Population of study

$(e)^2$ = Square of the level of significance

$$n = \frac{200}{1+200(0.05)^2} = 133$$ Women.

11.5. Sampling Procedure

In determining those that will make up the sample size, the researcher used simple random sampling (SRS) using the balloting technique. This is to ensure that all the member of the population had equal opportunity of being selected into the sampled unit.

11.6. Sources of Data

The data used in this study were generated from two major sources namely;

- Primary sources
- Secondary sources

The primary sources include; questionnaire, oral interview and the researchers direct observation, while the secondary sources are journals, articles, internet, and textbooks.

11.7. Validity and Reliability of Data

To ensure that the research instrument (questionnaire) measure what it was expected to measure, the instrument was subjected to face and content validity test by a social science business research expert (supervisor) before it was administered, on the respondents.

To guarantee the reliability, (consistency) of the instrument, a pre-test was conducted on a smaller portion of another set of respondents with similar characteristics with the main respondents before the actual test was conducted on the main respondents.

12. Method of Data Analysis

Aham (2000) defined data analysis as the conversion of raw data into usable information. The statistical tools to be used for data analysis is simple percentage (%) and the Non-Parametric Kruskal Wallis Test . Simple percentage (%) is given as;

$$\% = \frac{A \times 100}{N}$$

Where A = Number of respondents to a particular option
B = Total population of respondents

12.1. Kruskal-Wallis Test

The Kruskal-Wallis test is a non-parametric equivalent for one-way ANOVA. The Kruskal-Wallis Test may be describe thus:

Suppose that we have k samples of sizes $N_1, N_2, \cdots, N_k$, with the total size of all samples taken together being given by $N = N_1 + N_2 + \cdots + N_k$.

Supposing again that the data from all the samples taken together are ranked and that the sums of the ranks for the k samples are $R_1, R_2, \cdots, R_k$. If we define the statistic as in equation (13) then it can be shown that the sampling distribution of H is very nearly a chi-square distribution with k – 1 degrees of freedom, provided $N_1, N_2, \cdots, N_k$ are all at least 5.

Consider the sampling scheme where n integers are selected at random, without replacement, from the first N integers, 1 to N. Let X_i be the ith integer selected (Opara et al; 2013), and let

$$T_n = X_1 + X_2 + \ldots + X_n \quad \ldots \quad (1)$$

be the sum of the integers selected. The expected value of T_n is given by

$$E[T_n] = E[X_1 + X_2 + \ldots + X_n] = \frac{n}{N}\left[X_1 + X_2 + \ldots + X_N\right] \quad \ldots \quad (2)$$

$$= \frac{n}{N}\left[\sum_{i=1}^{N} X_i\right] = \frac{n}{N}\frac{N(N+1)}{2}$$

$$\therefore \quad E(T_n) = \frac{n(N+1)}{2} \quad \ldots \quad (3)$$

and the variance of T_n is given by

$$Var(T_n) = E(T_n^2) - \left[E(T_n)\right]^2 \quad \ldots \quad (4)$$

where

$$E(T_n^2) = E\left[\{X_1 + X_2 + \ldots + X_n\}^2\right] \quad \ldots \quad (5)$$

$$= E\left[X_1^2 + X_2^2 + \ldots + X_n^2 + 2X_1X_2 + \ldots + 2X_{n-1}X_n\right]$$

By symmetry

$$= E\left[X_1^2 + X_2^2 + \ldots + X_n^2\right] = \frac{n}{N}\left[X_1^2 + X_2^2 + \ldots + X_N^2\right] \quad \ldots \quad (6)$$

also,

$$E\left[2X_1X_2 + \ldots + 2X_{n-1}X_n\right] = \frac{n(n-1)}{N(N-1)}\left[2X_1X_2 + \ldots + 2X_{N-1}X_N\right] = \frac{n(n-1)}{N(N-1)}\left[(X_1 + X_2 + \ldots + X_N)^2 - (X_1^2 + X_2^2 + \ldots + X_N^2)\right] \ldots (7)$$

Adding Equations (6) and (7), and substituting the result, and equation (3) into equation (4), we have

$$Var(T_n) = \frac{n(N+1)(N-n)}{12} \quad \ldots \quad (8)$$

A version of the central limit theorem implies that

$$Z = \frac{T_n - E(T_n)}{\sqrt{Var(T_n)}} \quad \ldots \quad (9)$$

has an approximate standard normal distribution when n is of at least moderate size, say n > 5. In this paper, we shall replace T_n with R_i, the sum of the ranks for group i. Then

$$Z = \frac{R_i - E(R_i)}{\sqrt{Var(R_i)}} = \frac{R_i - n_i(N+1)/2}{\sqrt{n_i(N+1)(N-n_i)/12}} \sim N(0, 1) \quad \ldots \quad (10)$$

And so

$$Z^2 = \frac{\left[R_i - n_i(N+1)/2\right]^2}{n_i(N+1)(N-n_i)/12} \sim \chi^2_{(1)} \quad \ldots \quad (11)$$

But, since the $R_{i's}$ are not independent, an adjustment is needed when summing, and one degree of freedom is lost. The weighted sum of the Z^2's for all k groups is

$$T = \sum_{i=1}^{k} \frac{N - n_i}{N} \frac{\left[R_i - n_i(N+1)/2\right]^2}{n_i(N+1)(N-n_i)/12} \sim \chi^2_{(k-1)} \quad \ldots \quad (12)$$

$$= \frac{1}{N}\sum_{i=1}^{k} \frac{R_i^2 - \frac{2R_in_i(N+1)}{2} + \frac{n_i^2(N+1)^2}{4}}{\frac{n_i(N+1)}{12}}$$

$$= \frac{1}{N}\sum_{i=1}^{k} \frac{4R_i^2 - 4R_in_i(N+1) + n_i^2(N+1)^2}{4} \cdot \frac{12}{n_i(N+1)}$$

$$= \frac{1}{N}\sum_{i=1}^{k} \left[\frac{12R_i^2}{n_i(N+1)} - 12R_i + 3n_i(N+1)\right]$$

$$= \frac{1}{N}\sum_{i=1}^{k} \frac{12R_i^2}{n_i(N+1)} - \frac{12}{N}\sum_{i=1}^{k} R_i + \frac{3(N+1)}{N}\sum_{i=1}^{k} n_i$$

$$= \frac{12}{N(N+1)}\sum_{i=1}^{k} \frac{R_i^2}{n_i} - \frac{12}{N}\frac{N(N+1)}{2} + \frac{3(N+1)}{N}N = \frac{12}{N(N+1)}\sum_{i=1}^{k} \frac{R_i^2}{n_i} - 6(N+1) + 3(N+1)$$

$$\therefore T = H = \frac{12}{N(N+1)}\sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(N+1) \quad \ldots \quad (13)$$

If there are many ties, and $n_i > 5$, use the test statistic

$$T(ties) = \frac{1}{S^2}\left[\sum \frac{R_i^2}{n_i} - \frac{N(N+1)^2}{4}\right] \quad \ldots \quad (14)$$

where

$$S^2 = \frac{1}{N-1}\left[\sum_{all\ ranks} R(X_{ij})^2 - \frac{N(N+1)^2}{4}\right] \quad \ldots (15)$$

under H_0, T(ties) ~ $\chi^2_{(k-1)}$

The decision rule is to reject the null hypothesis if H $\geq$ $\chi^2_{(k-1)}$, where k is the degrees of freedom.

13. Data Presentation

This section presents and analyses the data collected for this study. The presentation and analysis are according to the research questions and hypothesis.

13.1. Research Question I

What are the impacts of fuel subsidy removal on the financial performance of small businesses in Nigeria?

Questions	SA	A	SD	D	U
4	32	40	9	28	24
5	16	41	23	34	19
6	21	47	14	38	13
8	9	33	24	41	26
10	14	47	10	38	24
13	19	35	16	30	33

Table 1: Responses on Research I

13.2. Hypotheses I

The null and alternative hypotheses are;

- H_0: Fuel subsidy removal does not have significant impacts on the financial performance of small businesses in Nigeria.
- H_1: Fuel subsidy removal has significant impacts on the financial performance of small businesses in Nigeria.

Using the MINITAB software package to run the data in Table 1, we have the result below;

H = 21.14

From the chi-square table, $\chi^2_{4,0.05} = 9.488$ at 5% level of significant.

Since the H value is greater than the chi-square tabulated, we reject H_0 and conclude that Fuel subsidy removal has significant impacts on the financial performance of small businesses in Nigeria.

13.3. Research Question 2

What are the impacts of fuel subsidy removal on market performance of small businesses in Nigeria?

Questions	SA	A	SD	D	U
7	11	44	20	36	22
9	19	48	10	38	18
11	12	38	26	49	8
12	13	34	17	42	25
14	15	23	28	40	27

Table 2: Responses on research question 2

13.4. Hypotheses II

The null and alternative hypotheses are;

- H_0: Fuel subsidy removal does not have any significant impact on the market performance of small businesses in Nigeria.
- H_1: Fuel subsidy removal has a significant impact on the market performance of small businesses in Nigeria.

Using the MINITAB software package to run the data in Table 2, we have the result below;

H = 11.16

From the chi-square table, $\chi^2_{4,0.05} = 16.84$ at 5% level of significant.

Since the H value is greater than the chi-square tabulated, we reject H_0 and conclude that Fuel subsidy removal has a significant impact on the market performance of small businesses in Nigeria.

14. Conclusion

From the findings made, the researchers conclude as follows;

- Fuel subsidy removal has significant impacts on the financial performance of small businesses in Nigeria.
- Fuel subsidy removal has a significant impact on the market performance of small businesses in Nigeria.

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