JOURNAL OF APPLIED ECONOMICS AND BUSINESS

VOL. 10, ISSUE 3 – SEPTEMBER, 2022

Education and Novel Technology Research Association

Journal of Applied Economics and Business

VOL. 10, ISSUE 3 – SEPTEMBER, 2022

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Journal of Applied Economics and Business

OPEN ACCESS ARTICLE

AN EMPIRICAL STUDY OF THE SUSTAINABLE PERFORMANCE OF AGRICULTURAL FIRMS IN NIGERIA

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Abstract

This study is an empirical study of the sustainable performance of agricultural firms in Nigeria from a perspective of social identity theory. The study was quantitative and qualitative. Primary and secondary data sources were used for the study. For the quantitative study, a sample of 264 respondents gotten using email sent out to small, medium-scale and large-scale firms in Nigeria and for the qualitative analysis, interviews were granted by six firm senior executives. The questionnaire was developed in a 5-point Likert scale format. The Spearman's rank-order correlation was used to test the validity of the questionnaire at a 5% level of significance. Analysis was conducted using descriptive statistics correlations and hypotheses was conducted using multiple regression analysis. Findings from the study revealed among others that; managerial behaviour positively impacts firm sustainable performance. Employee behaviour positively impacts firm sustainable performance. Customer behaviour positively impacts firm sustainable performance. Based on the study's findings, the researcher recommended that re-engineering of manufacturing processes be done to ensure efficient use of resources. Improved packaging to increase shelf life should be the priority of firms. Better inventory management, waste audits and measurements should be undertaken by firms for improved sustainable development.

Keywords: *Agricultural firms; Customer behaviour; Employee behaviour; Sustainable performance.*

INTRODUCTION

Increasing global environmental awareness and the push for sustainable economic growth have shifted the focus of corporations on environmental sensitivity. It is because of this desire for long-term sustainability that a number of international organizations have been formed, each with their own set of rules for human interaction with the natural world. Using these criteria, businesses are persuaded to see how their strategic role in society can influence behavior and alter the physical, social, and economic environment (Ngwakwe, 2009). Companies are re-awakening to the strategic and competitive role of environmental responsibility in corporate survival as a result of government regulations, social pressure groups, and green consumer pressure at various national levels. Companies are beginning to realize the importance of environmental responsibility in their long-term survival (Ngwakwe, 2009).

As a result of current agricultural food production techniques, ecosystems are under stress in two ways. It is impossible to have one without the other because they lead to resource depletion. Another issue is that food waste from the manufacturing process harms both the environment and public health (Wenzel & Süßbauer, 2021). This matter is of a greater importance in the developing countries given the prime position of agriculture in their economies. In Nigeria for example, the agriculture sector provides more than 60% of employment in remains the primary source of food for a large chunk of the country's population (Babalola & Babalola, 2013). Moreover, agriculture and food processing businesses account for most of SME activities in the country (Oloruwa, 2018). These statistics imply that the waste generated by the Nigeria food processing sector are indeed considerable. These result from activities in the industry including food production, preparation and consumption. There will be a loss of important biomass and nutrients as a result, as well as additional waste and potential environmental issues.

It is no secret that food waste contributes to water pollution, poor working conditions, and sick workers (Gustavsson et al., 2018). As a result, these can lead to higher labor costs and in some cases, higher trash disposal costs. The limited land resources can also be severely strained by the disposal of large amounts of onerous trash, whether in a landfill or by processing and disposal (Evans, 2011).

The term "waste" refers to anything that has been produced or consumed but has not yet been put to use. Included are all types of wastes and residues from various sources: agricultural and industrial as well as municipal (Stancu et al., 2016). Most European regulations classify these compounds as waste because they are removed from the manufacturing process as unwanted elements. The term "by-product," which is frequently heard in the workplace, refers to compounds that are secondary in nature but have a market value (Papargyropoulou et al., 2014).

Waste in the food industry is marked by a high percentage of waste that is specific to the product. If the finished product's quality must be maintained, then not only must waste be generated, but the volume and type of waste that is generated, which consists mostly of organic residue from processed raw materials, cannot be changed (S.M & Barrett, 2017). No matter how hard you try, product-specific waste is difficult to use and dispose of because of its low biological stability, possible pathogen, high water content and quick autoxidation.

Organic raw materials are transformed into consumables through extraction or separation of the nutritionally useful components of the raw materials (Kantor et al., 1997). Due to the lack of nutritional value or inedible components in the unused remains, they cannot be used as a food source. Product-specific waste is unavoidable when raw materials are processed (Kantor et al., 1997). It's created over the course of several manufacturing steps, each of which involves removing the raw materials' essential components. After extraction, other valuable components are often found in the residue.

Disposal, source minimization, and zero-point discharge have all been described in terms of waste management. The sustainability of waste disposal is a major concern for most food processing operations. Waste reuse has become more appealing as a result of new types of process engineering, new products, and new markets (Papargyropoulou et al., 2014). "Recovery" is a key word to emphasize food waste's uniqueness. Instead of being viewed as trash, agro-industry by-products can be used to create high-quality new products (Kiil et al., 2017). However, in order to properly manage waste, a company must consider the costs and long-term viability of the strategy.

Given the following, the broad objective of this study is to undertake an empirical study of the sustainable performance of agricultural firms in Nigeria. Specifically, the study seeks to examine the relationship between managerial behaviour on the firm sustainable performance of agricultural firms in Nigeria. Find out the extent to which employee behaviour impacts the firm sustainable performance of agricultural firms in Nigeria and determine how customer behaviour impacts the firm sustainable performance of agricultural firms in Nigeria.

LITERATURE REVIEW

From a theoretical perspective, the social identity theory and self-categorization theory are two theories that aim to explain how group connections influence our attitudes, feelings, and behaviors. Social identity theory and self-categorization theory have unique differences, although they all contain comparable assumptions and meta-theoretical attitudes at their foundation. We will refer to them as the "social identity method" in this part because of that. Social identity theory asserts that our self-concept is made of both personal and social identities; personal identity refers to our individual traits, while social identities are obtained from the communities to which we belong. ' Gender and ethnicity are just two examples of social groupings that we can belong to, as well as professional associations like the American Society of Association Executives (ASAE), which we can also join (e.g., environmental groups). It is important to recognize the similarities and distinctions among members of one's in-group and out-group when constructing one's social identity. To fit in with the dominant social group's standards, one must conform to its own set of values, principles, and behavior in order to be categorised. Since "group members are psychologically driven to regard [their] groups as different from and more positive than other relevant groups," according to social comparison theory (Suls & Wills, 1991), in-group members give preference in judgments and resource allocation to their own group members (Brown, 2000; Hewstone et al., 2002). When it comes to our ingroup, we are more likely to like, trust, and know each other than we are when it comes to our outgroup members, for example (Tanis & Postmes, 2005; Foddy et al., 2009).

Depending on the position of the parties involved, the effects of ethnocentrism on waste management results might be either peaceful or conflictual, depending on the circumstances.

Climate change and environmental attitudes and behavior are increasingly being studied through the lens of social identity notions. A growing body of research reveals the influence of social identity on pro-environmental elements not directly related to social identity. For waste management, the social identity approach has two major advantages: first, it explains how members of a group can encourage (or discourage) greater commitment to finding solutions; second, it acknowledges how ties between members of different social groups can hamper significant progress toward better waste management policies.

Empirical studies have found that causes and prevention of food waste are linked to age, gender, and location. It was shown that gender disparities were not significant in terms of people's desire to box their leftovers because they feared being seen as obnoxious or because they thought it was against societal standards. In contrast, the amount of food thrown away by females and younger customers was higher than the amount thrown away by males (Collison & Colwill, 1987). According to Sebbane and Costa (2018), men were more likely than women to have larger gaps between their declared and real food waste.

It has been noted that cultural and regional discrepancies in food waste, such as the differences in food consumption habits associated with pre-packaged versus freshly prepared meals, can have an impact on the amount of food that is thrown away. Furthermore, Wang et al. (2017) found that the amount of restaurant waste in China was comparable to that in Nordic countries when compared to Western nations. In addition, the study found that restaurant food waste was higher among tourists than residents, and that restaurant food waste varies by city type.

METHODOLOGY

Population and Sample

The study's population was made up of operators of small, medium, and large-scale enterprises in the food processing industries in Nigeria. Agricultural food processing operators were chosen as the sample population because they are linked to the subject of the study and are interested in the sustainability of food waste management.

Probability sampling entails selecting a totally non-random sample from the group of individuals you are interested in (referred to as the "population"). The outcomes of this study will be generalizable to the full population. In other words, without having to collect data from the entire group, we expect the same findings across the board. A probability random sampling was employed to collect a sample size of 264 respondents.

The data collection process was essential since it allowed for the collection of a large quantity of information in a brief period. The theme of the questionnaire is also varied. Questionnaires do not have time constraints, particularly when distributed by mail, email, or online. In the context of the research, respondents are kept secret. The poll provides actionable statistics, and this information should be used to develop new techniques for following tactics and tendencies in the audience. The study's findings make analysis and visualization tremendously simple. The statistics should be readily quantified to compare and contrast with other kinds of studies. The questionnaire may also be translated into different languages to enhance comprehension and answer rate. A total of 300 questionnaires were shared with small, medium and large-scale Enterprises agricultural/food processing firms in Nigeria. A total of 264 questionnaires were filled out properly and was utilized to conclude the study.

Measurement of Variables

The scale for managerial behaviour was self-designed questionnaires gotten from the review of relevant related literature (Principato et al., 2018; Pirani & Arafat, 2016). The questionnaire has 6 items:

(1) In managing food waste, the firm takes proper Inventory.

(2) The firm management have a strong policy on food waste management.

(3) The firm user uses technology in food waste management.

(4) The firm management, keep accurate and transparent data on products being rejected.

(5) The firm ensures employee commitment and in managing food waste.

(6) The firm ensures that there is a cooperation between staff and management on food waste management.

Cronbach's Alpha was 0.863 for this scale's reliability. The rationale for including managerial behaviour derives from the fact that management's choices are known to have serious implications for operational efficiency, resource management, and firm performance (Guluţă & Rusu, 2016; Miska et al., 2017). Moreover, employees tend to look to managerial example which influences their actions and have serious implications for their productivity and performance. Therefore, employees tend to buckle up and give extra effort when they perceive similar behaviours from management and act in lax manner when they view the opposite from their superiors (Paetzel et al., 2019). Similar arguments have been put forward within the context of food processing firms (Pirani & Arafat, 2016).

Employee behaviour scale was gotten from several pieces of literature reviewed (Aamir et al., 2018; Bharucha, 2018; Okumus, 2020; Papargyropoulou et al., 2016).

The scale was designed in a 5-point Likert format having 8 items the items on the questionnaire include:

(1) The employees are made to adhere to the firm's policy on food waste management.

(2) The employee avoids overproduction to reduce food waste.

(3) The employee is constantly monitored to reduce food waste.

(4) The staff makes use of an automated production process that ensures a significant reduction of food waste

(5) Goods are subsidized towards the end of their shelf life to reduce food waste.

(6) The business invests much in proper storage to reduce food waste.

(7) The employee shows significant commitment to reducing food waste in production.

(8) The firm train the staff to be waste-conscious and efficient.

The coefficient α for this scale of 0.893. Similar rationale can be put forward for including employee behaviour as a predictor of sustainable performance as with management behaviour. The right behaviour by employees means that they are putting in the required effort, giving their best, and being mindful of waste. This is of particular importance in the food processing business as highlighted by scholars like Bharucha, (2018) and Okumus (2020). For instance, employees are directly responsible for managing serving waste by doing a proper job when servings customers and guests (Papargyropoulou et al., 2016; Aamir et al., 2018).

The customer behaviour scale was designed from several kinds of literature (Betz et al., 2015; Liao et al., 2018; Mirosa et al., 2018; Sirieix et al., 2017; Chen & Jai, 2018).

The 5-point Likert scale questionnaire has 7 items. The items include:

(1) In the implementation of a sustainable food waste management program, the firm pays much attention to consumer purchasing behaviour.

(2) The firm has proper management of customer expectations in the production process.

(3) In managing food waste, the firm considers the consumer's income.

(4) In the implementation of a sustainable food waste management program, the firm pays much attention to product packaging.

(5) To ensure that food waste is better managed, the firm ensures that the products meet the customer expectations/satisfaction.

(6) To ensure reduced food waste among the customers the firm use smaller packaging that ensures reduced food waste.

(7) The firm improves on the quality of our food product and this discourages food waste among the consumers.

The coefficient α for this scale or 0.873.

Concerning the inclusion of customer behaviour as a dependent, the business management literature is replete with implication of customer satisfaction for business success (e.g., Beckers et al., 2018; Golovkova et al., 2019). Customer behaviour is therefore of key interest in the food processing industry most especially as regards food waste management as has been suggested by several authors (see for example, Betz et al., 2015; Liao et al., 2018; Mirosa et al., 2018; Sirieix et al., 2017).

The firm's sustainability performance scale was a self-designed 5-point Likert scale questionnaire. The questionnaire was designed based on the review of the literature. The scale has 12 items. The scale has the following items on it:

(1) Our firm conducts a periodic food waste audit.

(2) In managing food waste, the firm considers the costs of management, production, procurement, and other related costs.

(3) In managing food waste, the firm not only considers short-term profits but also focuses on long-term profit.

(4) In the implementation of a sustainable food waste management program, the firm pays attention to consumer purchasing behaviour.

(5) Our company considers the economic incentive of food waste management.

(6) The firm ensures that the benefits resulting from saving food that would have gone to waste outweigh the costs associated with the implementation of the measure.

(7) We train our staff to be waste-conscious and efficient.

(8) The company manages customer expectations properly during the manufacturing process.

(9) When deciding on a food waste management strategy, the company takes the market price into account.

(10) When transaction costs associated with food waste prevention become so high that it becomes "rational" to let food go to waste.

(11) Firms along the food chain need an economic incentive to tackle food waste.

(12) Firms adopt food waste prevention measures that could contribute to a company's positive image or corporate social responsibility.

The coefficient for this scale is 0.917.

The control variables include: Position at the firm, Status of the institution or firm, Scale of business, Total cost of the business including working capital (excluding land), and Nature of Employment.

Statement of Hypotheses

As per the first objective of the study, managerial behaviour is believed to impact on competitive advantage of a company. Studies (e.g., Guluţă & Rusu, 2016) suggest that management choices typically have strong implications for competitive ness because management controls and allocate productive resources, ensure operational efficiency, and thus, improve firm profitability and competitive advantage. Moreover, employees have been known to act based on the body language of managers (Miska et al, 2017). Strict monitoring, effective management, and astute oversight on the part of management would likely motivate workers to put in their best and exhibit proper behaviour (Paetzel et al., 2019). Pirani and Arafat (2016) put forward similar arguments as pertains to the food processing industry. These arguments imply that that Managerial behaviour positively impacts on firm sustainable performance and this is what will be proposed for the first hypothesis. Based on these arguments, hypothesis 1 is stated as follows:

H_1: Managerial behaviour positively impacts firm sustainable performance.

As per the second objective, it is stated that those employees who have a strong sense of company identity, on the other hand, are motivated to work hard to achieve the firm's shared goals for improved performance because they see these successes and failures as personally significant (van Dick et al., 2006; Lee et al., 2015). Those employees who lack firm identification, on the other hand, are less invested in their work and employer, less likely to view firm successes and failures as personally significant, and thus less likely to show high levels of work engagement and discretionary effort (Mael & Ashforth, 1992). Strong identification is expected to occur when one's own group is considered to be "good" in terms of accepted standards and values. As a good benchmark, companies that show social and environmental responsibility will be looked upon favorably. Our conclusion is this: Firm identity influences employee behavior, which in turn affects the firm's long-term viability. Based on the foregoing, it is expected that employee behaviour would impact on sustainable performance positively. Hypothesis 2 is thus, stated as follow:

H_2: Employee behaviour positively impacts firm sustainable performance.

In terms of the third objective of the study, societal influences have an impact on "social identities," or the sense of self derived from group affiliations, in people (Tajfel and Turner 1986). People are more likely to engage in environmentally friendly practices if they see others doing so (Goldstein et al., 2008; Han & Stoel 2017; Welsch & Kühling 2009). Additional research shows that people who identify with an environmental group are more likely to make environmentally friendly decisions and

engage in environmentally friendly activities (Stancu et al., 2016). A person's self-identification as a "typical recycler" predicts their intentions to recycle, regardless of other factors such as attitudes, subjective norms, and perceived behavioral control (Papargyropoulou et al., 1987). People in dominant and minority groups with a high degree of in-group attachment are more likely to hear messages supporting sustainable waste management. Information about sustainable practices can be more readily accepted by those who have a strong sense of in-group identity when it is presented in the context of that group's shared, superior identity (Flapper et al., 2002). The foregoing arguments suggest that customer behaviour could positively impact sustainable performance. Hence, hypothesis 3 is developed as follows:

H_3: Customer behaviour positively impacts firm sustainable performance.

The conceptual model which derives from the stated hypotheses of the study is outlined as follows in Figure 1.

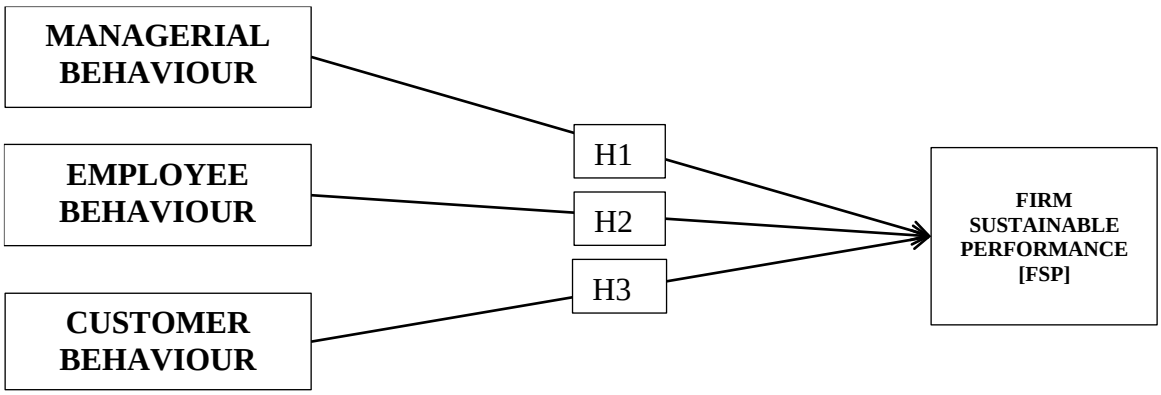

FIG 1. THE CONCEPTUAL MODEL

Model Specification

For this study which is to capture the sustainable performance of agricultural firms in Nigeria from the social identity perspective which is the major and only model employed for this research and also this model specification is along side the social identity perspective, we developed regression model for the study and it goes thus;

$$FSP = a_1 + b_1MB + b_2EB + b_3CB + +U_1 \quad (1)$$

$$FSP = a_1 + b_1MB + U_1 \quad (2)$$

$$FSP = a_2 + b_{21}EB + U_2 \quad (3)$$

$$FSP = a_3 + b_{31}CB + U_3 \quad (4)$$

Where;

FSP= Firm Sustainable Performance,

MB = Manager Behaviour,

EB = Employee Behaviour,

CB = Consumer Behaviour

$a_1 \ldots a_6$, $b_1 \ldots b_6$ are parameters to be estimated for the models

U_1, U_2, and U_3, = stochastic error terms for model 1, 2, and 3.

RESULTS

Respondents based on position at the firm shows that managers had greater percentage of 34.8%, followed by directors 31.4%, then senior staff 22.0% while junior staff had 11.7%. Although there are more senior staffs than junior staff position at the firm will not be a deciding factor as shown in Table 1.

Respondents based on status of firm indicates that majority of the firms (51.1%) are public owned while 48.9% are private owned. The disparity between the status of firm is insignificant as shown in Table 1.

TABLE 1. DEMOGRAPHIC CHARACTERISTICS

Demographic characteristics	Category	Frequency	Percentages
Position at the firm	Director	83	31.4
	Manager	92	34.8
	Senior staff	58	22.0
	Junior staff	31	11.7
	Total	264	100.0
Status of firm	Private owned	129	48.9
	Public owned	135	51.1
	Total	264	100.0
Scale of business	Small and Medium-scale Firm	227	86.0
	Large Scale Firm	37	14.0
	Total	264	100.0
Working capital	Less than N1.5 million	29	11.0
	N1.5 - N50 million	84	31.8
	N50 - N200 million	97	36.7
	N200 million and above	54	20.5
	Total	264	100.0
Nature of Employment	Work part-time	89	33.7
	Work full-time	175	66.3
	Total	264	100.0

Table 1 shows the distribution of the respondents based on the scale of business shows that small and medium scale firms have greater majority of 86% while large scale firms have 14.0%. Although majority of the respondents are small and medium scale enterprises the scale of business will not be a significant factor in this study.

Distribution based on working capital shows that majority have a working capital of N50 - N200 million while the least have a working capital of Less than N1.5 million. This shows that majority for the respondents have a working capital less than 200 million as shown in Table 1.

Responses based on the nature of employment shows that 66.3% of the respondents are full time workers while 33.7% are part time workers. This is an indication that majority of the workers will understand better the context of the study as shown in Table 1.

There was no need to worry about common method variance because the information was gathered from two distinct sources. It was found that Podsakoff et al. (2003)'s statistical remedy reduced the amount of source bias significantly. For this study, Podsakoff and Organ (1986) stated that they arranged the survey data in random order and then used Harman's one-factor test to avoid common method bias. It is possible for a single factor to account for more than half of the total variance, according to Podsakoff and Organ (1986). A principal component factor analysis was used to test all of the variables. In this dataset, the total variance extracted by a single factor is 41.69%, which is less than the 50% recommended threshold for common method bias.

Initially, the factorability of the 33 items was examined. Several well-recognised criteria for the factorability of a correlation were used. Firstly, it was observed that all the 33 items correlated at least .3 with at least one other item, suggesting reasonable factorability (see Appendix).

Kaiser-Meyer-Olkin Test

The Kaiser-Meyer-Olkin (KMO) Test determines how well your data is suitable for Factor Analysis. The test determines sampling adequacy for each variable in the model as well as for the whole model. The statistic is a measure of the percentage of variance that may be common variation among variables. The result of the Kaiser-Meyer-Olkin measure of sampling adequacy was .931, above the commonly recommended value of .6, and Bartlett's test of sphericity was significant ($\chi 2$ (5500) = 528.0, $p < .01$) as shown in Table 2.

TABLE 1. KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.931
Bartlett's Test of Sphericity	Approx. Chi-Square	5500.711
	df	528
	Sig.	.000

Principal Components Analysis

Principal component analysis is adopted for all items, and maximum variance orthogonal rotation is carried out. The final analysis results are obtained, as shown in Table 3. From the analysis results, 4 factors were extracted from exploratory factor analysis which are Managerial Behaviour, Employee Behaviour, Consumer Behaviour and Firm Sustainable Performance The load of all items on the corresponding factors is greater than 0.6, and the load on other factors is less than 0.5, indicating that the

scale has good one-dimensional property.

TABLE 2. QUESTIONNAIRE SCALE KEY

Managerial Behaviour	MB1-MB6
Employee Behaviour	EB1-EB7
Consumer Behaviour	CB1-CB7
Firm Sustainable Performance	FSP1-FSP12

TABLE 3. ROTATED FACTOR MATRIC

	Factor			
	MB	*EB*	*CB*	*FSP*
MFB1	.091	.605	.228	.123
MFB2	.172	.653	.201	.169
MFB3	.131	.680	.236	.238
MFB4	.309	.562	.127	.196
MFB5	.313	.622	.120	.203
MFB6	.349	.573	.260	.192
EF1	.143	.470	.317	.237
EF2	.201	.438	.291	.439
EF3	.305	.461	.114	.467
EF4	.326	.443	.183	.505
EF5	.263	.269	.282	.601
EF6	.229	.294	.217	.598
EF7	.245	.189	.212	.678
EF8	.282	.319	.347	.482
CB1	.230	.148	.462	.264
CB2	.359	.181	.466	.351
CB3	.323	.131	.475	.381
CB4	.176	.190	.573	.363
CB5	.232	.238	.535	.348
CB6	.269	.267	.590	.150
CB7	.161	.316	.683	.156
FSP1	.387	.226	.455	.124
FSP2	.471	.347	.364	.126
FSP3	.438	.224	.400	.205
FSP4	.483	.332	.298	.206
FSP5	.668	.243	.188	.294
FSP6	.615	.295	.273	.258
FSP7	.643	.224	.186	.268
FSP8	.703	.207	.130	.309
FSP9	.600	.162	.239	.288
FSP10	.586	.168	.342	.064
FSP11	.509	.112	.421	.154
FSP12	.343	.278	.442	.026

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

As shown in Table 4, Capital (M = 2.66, SD = 0.92), MB (M = 3.87, SD = 0.80), EB (M = 3.78, SD = 0.76), CB (M = 3.78, SD = 0.77) and FSP (M = 3.79, SD = 0.73) show a higher

deviation from the mean.

TABLE 4. DESCRIPTIVE STATISTICS

	Mean	Std. Dev.	N
Capital	2.6667	.92425	264
MB	3.8750	.80132	264
EB	3.7680	.76988	264
CB	3.7868	.77749	264
FSP	3.7926	.73404	264

As shown in Table 6, Working Capital shows an insignificant weak correlation with Managerial Behaviour (r=0.074, p>0.05), Employee Behaviour (r=0.036, p>0.05)), Consumer Behaviour (r=-0.004, p>0.05) and firm sustainability Performance (r=0.073, p>0.05). Managerial Behaviour has strong and significant positive correlation with Employee behaviour (r=0.74, p<0.05), Consumer Behaviour (r=0.605, p<0.05) and Firm Sustainability Performance (r=0.649, p<0.05). Employee Behaviour have significant strong positive correlation with consumer behaviour (r=0.707, p<0.05) and Firm Sustainability Performance (r=0.707, p<0.05). Consumer Behaviour have significant positive correlation with Firm Sustainability Performance (r=0.739, p<0.05).

TABLE 5. CORRELATIONS

	CAPITAL	MB	EB	CB	FSP
CAPITAL	1				
MB	.074	1			
EB	.036	.707**	1		
CB	-.004	.605**	.707**	1	
FSP	.073	.649**	.726**	.739**	1

**. Correlation is significant at the 0.01 level (2-tailed).

a. Listwise N=264

A multiple regression was run to test the impact of managerial functions/behaviour (MB) on firm sustainable performance (FSP). The result shows that result is significant at 5% level of significance, these variables statistically significantly predicted $p < 0.05$, $R^2 = .419$. hence the hypothesis 1 is accepted with implies that Managerial behaviour positively impacts on firm sustainable performance as shown in Table 7.

To test for hypothesis 2, multiple regression was run to test the impact of employee functions/behaviour (EB) on firm sustainable performance (FSP). The result shows that it is significant at 5% level of significance, these variables statistically significantly predicted FSP $p < .05$, $R^2 = .525$. hence, we accept the hypothesis 2 which implies that Employee behaviour positively impacts on firm sustainable performance as shown in Table 7.

To tests for hypothesis 3, multiple regression was run to test the impact of customer behaviour (CB) on firm sustainable performance (FSP). The result shows that the

relationship between FSP and CB is significant at 5% level of significance, these variables statistically significantly predicted FSP $p < 0.05$, $R^2 = .544$. hence, we accept the hypothesis 3, that Customer behaviour positively impacts on firm sustainable performance as shown in Table 7.

TABLE 6. HIERARCHICAL REGRESSION RESULTS FOR HYPOTHESIS

Dependent Variable: FSP											
Variable	B	t	Sig.	Variable	B	t	Sig.	Variable	B	t	Sig.
MB	.595	13.817	.000	EB	.692	17.063	.000	CB	.698	17.747	.000
R^2	.422			R^2	.526			R^2	546		
ΔR^2	.419			ΔR^2	.525			ΔR^2	.544		
Sig.	.000[a]			Sig.	.000a			Sig.	.000a		

Notes: n= 264. Firm sustainability Performance (FSP), Managers Behaviour (MB), Employee Behaviour (EB), Consumer Behaviour (CB)

CONCLUSION

The study investigated an empirical study of the sustainable performance of agricultural firms in Nigeria from the perspective of social identity theory. The results of the empirical study show that managerial behaviour has a significant positive correlation with firm sustainable performance. This strong association between the two indicates that for a firm's sustainable performance, managerial behaviour is very important. The reason for this positive impact is not farfetched, as the managers are at the top echelon of the business. They drive any innovation in the firm and see to its implementation. They have the responsibility to improve the sustainable performance of the firms, especially as regards waste management. When managers have an environmental consciousness, they consider sustainability management of their waste. Research by Guo et al. (2019) has found that increasing concerns have been raised about firms' sustainable development performance. Businesses may benefit from the environmental traits of their managers, who are more likely to promote environmentally-friendly practices in their organizations. Waste management and green self-efficacy are used in their study to examine the relationship between the attributed responsibility of managers and the green, sustainable practices of businesses. Green and sustainable practices are more likely to be implemented when managers assume more accountability for their actions. Self-efficacy in sustainable actions is bolstered by trash management. Sustainable development practices can be improved by understanding the environmental features of managers.

A considerable link exists between long-term firm performance and employee behavior, according to the findings of this research. This indicates that the employee's actions or inactions have a major impact on the long-term performance of the company. Workers who identify with their company have a stronger sense of belonging and connection to it, which is in line with Deci et al. (2014)'s contention that belongingness is a major psychological need for workers. In addition, Haslam et al. (2016) assert that workers' positive sentiments toward their firm and employment are

fostered as a result of satisfying this desire for belonging. Employee loyalty is a key factor in a company's capacity to remain viable in the long term (Sheahan & Barrett, 2017) based on rmployees who have a strong sense of loyalty to the company are more likely to regard the company's policies as essential. They also believe that the firm's success and long-term viability are inextricably linked to their own. Also, Employees who don't feel a connection to their work or organization are less likely to display high levels of work engagement and extra effort (Flapper & Fransoo, 2014) because they are less emotionally invested in their work and employer. Scholars already showed that the psychological need for belongingness is satisfied by workers who identify with their employer and feel a sense of belonging and connection to it, according to social identity theory" (e.g., Deci et al., 2001). As a result of meeting this need for belonging, workers' positive feelings about their company and employment are bolstered (Haslam et al., 2003). As a result, employees who lack a strong sense of company identity exhibit less positive work and work-related behaviors, which can lead to subpar performance from the company as a whole. In addition, a strong sense of belonging to a company can lead to a greater level of commitment from employees, including a possible psychological investment in their work and employment (Haslam et al., 2003).

Moreover, the findings of the study indicate that consumer behaviour significantly has a positive correlation with firm sustainable performance. The reason for this is that it increases consumer loyalty in the near term, and as the firm continues to thrive in a more environmentally conscious future, it secures long-term customer loyalty as well. Customers see the term "sustainable" as anything that can continue and "be maintained at a specific pace or level." For consumers, this may mean their own health, the health and environment of others, or both, but it could also mean their money. Hence, the behaviour of the customers will affect firm performance. In the area of waste management, customers will like to support firms that undertake sustainable waste management. The study also found that consumer purchasing behaviour determines, to a large extent, the food waste management programmes of firms as they try to meet customer expectations (Suls & Wills, 1991).

Based on the qualitative study conducted using interviews, findings have shown that waste management is a challenge to firms irrespective of size. This agrees with the assertion of Armed (2008) who opined Waste management is an issue that all businesses, regardless of size, must contend with. Inadequate waste collection bins and bin structures; inadequate distribution of waste containers; a lack of adequate waste transport vehicles; an insufficient waste transport frequency; inadequate vehicle paths; and the unaddressed issue of waste transport from health care facilities are all issues that should be addressed. The biggest challenge with food waste management is its financial implications for the firms. In addition, machinery for

waste management is almost nonexistent in small and medium-scale food manufacturing industries. This makes waste management a major challenge. On the other hand, oversupply, production defects, trimming to achieve the desired shape, contamination, technological flaws, and inefficiency are the major sources of waste generation in the food processing firms in Nigeria.

Also, there are indications that employees' lack of technical expertise, poor motivation, and lack of commitment to handling waste constitute a major challenge in waste handling. This is in consonance with the opinion of respondents interviewed who held that for waste management to successful, the employees must be carried along with its formulation of the policies so that they can show significant commitment to its implementation. The findings of this study also agree with WHO findings that employee attitude and lack of awareness can affect firms' sustainability waste management drive (Wenzel & Süßbauer, 2021). Also, several researchers have reported commitment and inclusiveness as the major thrust to successful implementation of sustainable waste management (Ayo et al., 2016). Also, another researcher has reported that Waste may be decreased in the manufacturing business by recycling resources, employing less hazardous alternative materials, or by altering design and manufacturing components and processes. Waste minimization or source reduction may result in a variety of advantages, including lower use of natural resources and reduced toxicity of wastes. (Gekas & Nikolopoulou, 2017).

Based on what we also previously saw in the result, iterating the findings of the study indicate that consumer behaviour significantly has a positive correlation with firm sustainable performance. The reason for this is that it increases consumer loyalty in the near term, and as the firm continues to thrive in a more environmentally conscious future, it secures long-term customer loyalty as well. Customers see the term "sustainable" as anything that can continue and "be maintained at a specific pace or level." For consumers, this may mean their own health, the health and environment of others, or both, but it could also mean their money. Hence, the behaviour of the customers will affect firm performance. Likewise, like we said A considerable link exists between long-term firm performance and employee behavior, according to the findings of this research. This indicates that the employee's actions or inactions have a major impact on the long-term performance of the company. Workers who identify with their company have a stronger sense of belonging and connection to it, which is in line with Deci et al. (2014)'s contention that belongingness is a major psychological need for workers. In addition, Haslam et al. (2016) assert that workers' positive sentiments toward their firm and employment are fostered as a result of satisfying this desire for belonging.

Further more based on the findings of the study, the findings of the study we see that Managerial behaviour positively impacts on firm sustainable performance. As mentioned earlier the reason for this positive impact is not farfetched as the managers

are at the top echelon of the business, they run the firms hence why they positively impact on the firm sustainable performance. Employee behaviour positively impacts on firm sustainable performance. The actions and in-actions of the employees significantly affects the firm sustainable performance. Lastly Customer behaviour also significantly positively impacts on firm sustainable performance.

This study is an empirical study of the sustainable performance of agricultural firms in Nigeria from a perspective of social identity theory. Specifically, the study seeks to examine the relationship between managerial behaviour, employee behaviour and Customer behaviour on the firm sustainable performance of agricultural firms in Nigeria. The study was quantitative and qualitative. Primary and secondary data sources were used for the study. For the quantitative study, a sample of 264 respondents gotten using email sent out to small, medium-scale and large-scale firms in Nigeria and for the qualitative analysis, interviews were granted by six firm senior executives. The questionnaire was developed in a 5-point Likert scale format. The Spearman's rank-order correlation was used to test the validity of the questionnaire at a 5% level of significance. Analysis was conducted using descriptive statistics correlations and hypotheses was conducted using multiple regression analysis. Findings from the study revealed among others that; managerial behaviour positively impacts firm sustainable performance. Customer behaviour positively impacts firm sustainable performance. Based on the study's findings, the researcher recommended that re-engineering of manufacturing processes be done to ensure efficient use of resources. Improved packaging to increase shelf life should be the priority of firms. Better inventory management, waste audits and measurements should be undertaken by firms for improved sustainable development. Packaging, labeling and types of packs as per buyer's requirements, consumer needs of importing countries should be implemented properly to reduce waste assorted with consumption. The development of cheap reusable and/or degradable packaging should be pursued by firms. Training and retraining of workers should be untaken by firms for improved waste management. In addition, people prefer a positive image of their in-groups and do not want their in-group to be overtaken by other groups. (Papargyropoulou et al., 2014). Dissociative groups, which are out-groups to which the consumer aspires to belong, are an example of this. Study participants were asked about their intentions to engage in sustainable practices like waste sustainability, organic composting and recycling (Sheahan & Barrett, 2017). To avoid casting themselves in a negative light, members of the focus-group realized that a dissociated reference group was doing better on positive, long-term behavior (thus making the in-group look bad). In public places, where the communal self is most prominent, these effects were amplified. Friendly competition between rival groups such as cities, communities, organizations, or corporate units could be fostered as a practical application of this research (Kantor et

al., 1997). Another finding from the literature on social identity is that people with a high level of "in-group identification" are more affected by the effects of social identity. Organic purchases are predicted, for example, by self-declaration as a "green consumer" or a "organic consumer" (Sheahan & Barrett, 2017). Several researchers (e.g., Ayo et al., 2016) have reported commitment and inclusiveness as the major thrust to successful implementation of sustainable waste management (Ayo et al., 2016). Also, another researcher has reported that Waste may be decreased in the manufacturing business by recycling resources, employing less hazardous alternative materials, or by altering design and manufacturing components and processes. Waste minimization or source reduction may result in a variety of advantages, including lower use of natural resources and reduced toxicity of wastes. (Gekas & Nikolopoulou, 2017).

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OUTREACH AND FINANCIAL SUSTAINABILITY: A DEPOSITORY MICROFINANCE PERSPECTIVE:

Evidence from Low Income Sub-Saharan Africa

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Abstract

This article examined the relationship between outreach and financial sustainability of 64 Deposit-taking Microfinance Institutions sampled across 18 Low Income Sub-Saharan African countries. The System Generalized Method of Moments was employed utilising 2006-2017 panel data that was obtained from the Microfinance Information Exchange. The estimated results revealed that there is no significant relationship between financial sustainability and outreach depth but financial sustainability is negative and significantly related to outreach breadth. The study concluded that there is neither mission drift nor a trade-off in outreach depth but a trade-off exists in outreach breadth in depository microfinance. The practical implication is that Deposit-taking Microfinance Institutions should develop appropriate deposit products for each market segment identified and also leverage on cost-efficient deposit-taking methods such as the use of agents and mobile phone banking technology. The policy recommendation is that mobile phone use should be followed by reduction of the transaction costs through subsidisation.

Keywords: *Outreach; Financial Sustainability; Depository Microfinance, Mission Drift; Trade-off.*

INTRODUCTION

The provision of microfinance is a policy vehicle for accelerating financial inclusion, poverty alleviation, microenterprise finance and economic development in Low Income Countries (LICs) (Nogueira et al., 2020). However, the Microfinance Institutions (MFIs) in Low Income Sub-Saharan Africa (LISSA) and other parts of the world face a challenge in balancing outreach and financial sustainability which are the double bottom line objectives of microfinance provision (Reichert, 2018). Outreach measures social performance while financial sustainability measures financial performance. Outreach has several dimensions but the most common ones are outreach depth and breadth (Woller & Schreiner, 2004). Outreach depth looks at the poverty or socio-economic level of the clientele by emphasizing on reaching out to the pro-poor, women and the marginalised or rural populations. Outreach breadth focusses on the number of clients served. Financial sustainability is the ability of the

MFIs to cover the operational and financial costs from operating revenues so that their continuity as going concerns is guaranteed (Mersland & Strøm, 2010; Hermes et al., 2011).

The problem on the attainment of the double bottom line objectives concurrently is based on the arguments of two groups of microfinance researchers and practitioners; the Welfarists and the Institutionalists. On the one hand, the Welfarists prioritise outreach, which is the 'original mission' of the MFIs by encouraging them to serve the poorest and very remote clientele with financial services of small average balances (Woller et al., 1999). Serving this niche market is costly due to high administration and distributions costs involved. As a result, profitability is eroded thereby stifling attainment of financial sustainability. On the other hand, pursuing financial sustainability as promulgated by the Institutionalists encourages the MFIs to focus on the urban clientele or the better-off poor with financial services of large average balances (Rhyne, 1998; Ledgerwood & White, 2006; Lützenkirchen & Weistroffer, 2012). This is profitable and guarantees the assured continuity of the MFIs. Nonetheless, as the financial mission of the MFIs eclipses their social mission, it may result in 'mission drift'.

Mission drift is the shift of focus from serving the pro-poor to serving the better-off poor (Cull et al., 2007; Armendariz & Szafarz, 2011; Quayes, 2021). Mission drift results in a change in the composition of the target market from pro-poor to better-off poor, rural to urban, informal to formal, groups to individuals and less focus on women (Hermes et al., 2011). Mission drift is caused by commercialisation of MFIs in search of profitability and competition (Kar, 2013; Hermes & Hudon, 2018). According to Beisland at al. (2019), mission drift can also occur at loan officer level (personal mission drift), and then detected at firm level.

In addition to the argument of a mission drift in the outreach-financial sustainability symbiosis, there is also the argument of a 'trade-off', which is "the choice MFIs make regarding combinations of financial and social performance and the consequences this has for their operations" (Hermes & Hudon, 2018: 6). The nature and acuteness of trade-offs are contingent on several factors and exhibit variations across contexts (Wry & Zhao, 2018). According to Bennouri et al. (2020), dealing with trade-offs is a difficult task for the managers of MFIs as they have to strike a desirable balance between financial and social performance.

A detailed look into existing literature shows that the outreach-financial sustainability nexus has always been discussed from a lending perspective. Thus, evidence of a mission drift or trade-off is extant on the microlending business of MFIs (Xu et al., 2016; Hermes & Hudon, 2018; Reichert, 2018; Wry & Zhao, 2018; Bennouri et al., 2020). However, scanty literature exists on the outreach-financial sustainability nexus

explained from a deposit-taking perspective particularly in the context of the LISSA's Deposit-taking Microfinance Institutions (DTMFIs). These financial intermediaries have high levels of deposits that exceed the level of loans since 2010. Moreover, the number of depositors far exceeds the number of borrowers since the early 2000s (Microfinance Information Exchange (MIX) and Consultative Group to Assist the Poor, 2010; MIX, 2016). Lafourcade et al. (2005: 4) called this phenomenon, "the African exception" as the aforementioned trends in deposits are largely observed in Africa than in any other sub regions of the world. These deposits outreach statistics dismiss the once-held view that deposits were the "forgotten half" of microfinance as the poor have demonstrated that they can save more than they can borrow (Helms, 2006: 24).

Against the background discussed above, the objective of this article is to examine whether there is any evidence of a mission drift or a trade-off in the LISSA's depository microfinance sector in the pursuit of outreach and financial sustainability goals. Thus, the study will answer the question: is there any evidence of an outreach-financial sustainability trade-off or mission drift in the LISSA's depository microfinance sector?

To the best of the researchers' knowledge, this study contributes to microfinance literature in two ways. Firstly, the present study looks at the nexus between outreach and financial sustainability from a deposit-taking perspective contrary to the previous studies in Sub-Saharan Africa (SSA) that looked at the same nexus from a lending perspective (Abdulai & Tewari, 2017a; Nyanzu et al., 2019; Chikalipah, 2020). Accordingly, this study fills this void in existing literature by adopting deposit-taking outreach depth and breadth measures and sampling DTMFIs only. Thus, the Credit-only MFIs (COMFIs) did not constitute the adopted sample. Secondly, the study focussed on the LISSA countries due to the prevalence of high extreme poverty rates, low financial inclusion levels and low minimum monthly wages which make these countries, the most appropriate consumers of microfinance (Demirgüç-Kunt et al., 2018; International Labour Organisation – ILO, 2017; World Development Indicators of the World Bank - WDIs, 2017). The sole focus on LICs also distinguishes the current study from the previous ones carried out in SSA that focussed on MFIs drawn from all SSA countries regardless of their income classification by the WDIs.

This study is significant to microfinance stakeholders. The study benefits the managers of DTMFIs in balancing their social and financial performance objectives by shedding light on whether the mission drift or trade-offs that are observed on the microcredit side are also experienced on the deposit-taking front as well. Thus, the managers of DTMFIs will be equipped to formulate strategies on goal congruence. The study is also essential for international policy decision makers in the current era of the Sustainable Development Goals where microfinance provision is an esteemed tool of eradicating extreme poverty mostly in LICs by the year 2030. This can only be

possible if there is minimal or no mission drift and when optimal trade-offs are found that ensure sustainable outreach.

The rest of the article is structured as follows: literature review is discussed next followed by an exposition of the research methodology, discussion of results and lastly, the conclusions and recommendations.

LITERATURE REVIEW

A careful analysis of empirical studies reveals that the relationship between outreach and financial sustainability varies across studies depending on the variables used to measure outreach and the objective to be achieved. Several studies found the existence of a trade-off and mission drift. Hermes et al. (2011) utilised data 1997-2007 data of 435 MFIs. They concluded that there is a trade-off between outreach depth and efficiency as they found that focusing on the pro-poor with small average loans and targeting women is costly to MFIs resulting in reduced efficiency. Their finding also suggested signs of mission drift as the MFIs change the composition of their clientele in search for efficiency. Ageing MFIs were found to be inefficient and group-based lending was found to favour efficient operations due to group cohesion in loan repayments.

Xu et al. (2016) sampled 218 MFIs across 76 countries utilising 2001-2011 data. They found evidence of mission drift between the average loan balance and operational self-sufficiency including other variables such as the domestic credit to the private sector and the shares in the Gross Domestic Product (GDP) of net foreign direct investment. Hermes and Hudon (2018) carried out a systematic review of 170 articles to identify the determinants of social and financial performance and found that the determinants which have an impact on the existence of trade-offs depend on the study's context particularly the country specific context.

Reichert (2018) conducted a meta-analysis study of 61 articles to examine the nature of trade-offs in microfinance. That study found that trade-offs are catalysed by outreach depth proxied by the average loan size, outreach cost measured by the yield on the loan portfolio and efficiency captured by the cost per borrower, operating expenses and total expenses. The portfolio at risk resulted in fewer trade-offs while focusing on women and profitability does not exhibit trade-offs. Wry and Zhao (2018) considered 1995-2013 data of 2,037 MFIs across 115 countries to examine the relationship between outreach intensity and financial sustainability. That study found that outreach intensity is negatively related to financial sustainability implying that a trade-off exists. Additionally, that study found that the outreach-financial sustainability trade-offs are dependent on the institution's cultural roots on social issues, operating market conditions and the professionalism of the management.

Bennouri et al. (2020) examined the effect of workforce diversity on the trade-off between social and financial performance using 2010-2018 data of 1,257 MFIs across 107 countries. The findings revealed that the average loan balance is negatively related to operational self-sufficiency indicating that a trade-off exists between social and financial performance. However, the trade-off is reduced by the moderating effect of interacting the female loan officers and average loan balance variables. Thus, having more female loan officers in the disbursement procedures weakens the trade-off.

There are empirical studies that did not find the presence of a trade-off and mission drift. Hartarska and Nadolnyak (2007) sampled 114 MFIs drawn across 62 countries and found that imposing regulations on MFIs does not directly influence the way they balance their outreach and financial sustainability goals. Mersland and Strøm (2010) utilised 1998-2008 data of 379 MFIs across 74 countries. They did not find existence of mission drift and suggested that MFIs can deepen outreach through reducing the average loan size, focussing on women, the rural and group clients as long as this is followed by cost cutting measures so that profitability is not eroded. Zerai and Rani (2011) investigated 85 Indian MFIs using 2009 data and found a positive relationship between financial sustainability and outreach breadth as measured by the number of borrowers. No evidence of a trade-off and mission drift.

Quayes (2021) examined 1,591 MFIs using 2003-2018 data to examine the presence of a mission drift. That study found that outreach depth and financial performance measured by the return on assets had a negative coefficient. This result implies that there is no evidence of a trade-off and the absence of a trade-off was confirmed by the positive coefficient between financial performance and outreach to women.

Quayes and Joseph (2021) utilised data of 1,291 MFIs to investigate the effect of the legal system and MFI-specific characteristics on outreach. The results showed that, in jurisdictions where common law is applied, outreach depth, outreach breadth and outreach to women is better than in countries where code law and mixed law prevail. Unregulated MFIs were found to achieve better outreach than the regulated ones. No evidence of a trade-off was found.

Empirical literature also shows that some studies found mixed evidence. Ahlin et al. (2011) studied 329 MFIs from 70 countries utilising 1996-2006 data. They found a positive and significant relationship between foreign direct investment and outreach depth; and a negative and significant relationship between outreach depth with the manufacturing share in GDP and the labour force participation rate.

Previous research works also present findings that exhibit comparisons in the pursuit of social and financial performance. Wijesiri et al. (2015) sampled 420 MFIs using 2013 data and found that aging MFIs achieve financial sustainability better than the younger ones but they fall short in pursuing the outreach objective. In terms of size, older MFIs were found to outperform the younger ones in achieving both outreach and financial sustainability.

The empirical studies discussed above show that the outreach and financial sustainability nexus has always been examined from a lending perspective and not from a deposit-taking perspective. In this realm, this study seeks to examine the outreach-financial sustainability nexus in the context of the LISSA's depository microfinance sector thereby deviating from the existing studies.

RESEARCH METHODOLOGY

Data

This study used an unbalanced panel dataset for the years 2006-2017 of 64 purposively sampled and self-reporting MIX DTMFIs drawn across 18 out of 27 LISSA countries. Purposive sampling enabled the selection of DTMFIs with the highest level of information disclosure as measured by the completeness of their datasets based on the five-point diamond scale of the MIX database. However, this may result in self-selection bias which poses limitations in the generalisation of the results. Nonetheless, previous studies also relied on the MIX database as it is currently, the most reliable database that provides microfinance data (Ahlin et al., 2011; Hermes et al., 2011; Xu et al., 2016).

Data on the country specific variables was sought from the World Development Indicators and the data on the sub regions was extracted from the 2018 United Nations Conference on Trade and Development (UNCTAD) Handbook of Statistics. For robustness check purposes, this study also used data of 36 DTMFIs that were sampled across 6 Non-LISSA countries. Since the data is panel in nature, diagnostic tests for heteroscedasticity and serial correlation were conducted. The null hypothesis test of the Breusch-Pagan test that the errors are homoscedastic was rejected indicating that the data utilised suffered from heteroscedasticity. The robust option of the dynamic data model estimated corrected this problem (Roodman, 2009).

The Arellano-Bond test for serial correlation was conducted and the study failed to reject the null hypothesis that there is no second order serial correlation in the first differenced residuals. The Sargan-Hansen test was employed to test for the validity of the instruments employed. The study failed to reject the null hypothesis which states that the instruments are valid. The results of the Arellano-Bond and the Sargan-Hansen tests are reported in the lower panel of Table 1.

Estimation method and variables

For data analysis, a dynamic panel data model, the System Generalized Method of Moments (SGMM) which was first developed by Arellano and Bond (1991) and later on refined by Arellano and Bover (1995) and Blundell and Bond (1998) was employed. This method was adopted as it is suitable for situations where the number of cross-sections "*N*" (64 DTMFIs) is greater than the time period under consideration "*T*" (12

years, 2006-2017) (Baum, 2013). Since this study utilised unbalanced panel data, the SGMM is appropriate because it can handle unbalanced data through orthogonal deviations thereby minimizing loss of observations. Furthermore, the SGMM is superior to other panel data methods in solving the endogeneity problem which is caused by reverse causality, omitted variables and measurement errors. The SGMM incorporates a lagged regressand as one of the regressors thereby introducing dynamic bias as the lagged dependent variable correlates with the time invariant fixed effects which allow for individual DTMFI heterogeneity (Arellano & Bond, 1991). In the first SGMM equation, the SGMM utilises the one period lagged regressand as instruments in levels thereby ensuring no correlation between the endogenous DTMFI specific variables and the error term. In the second SGMM equation, the first differenced equation provides additional instruments to increase efficiency of the model. The instruments proliferation problem is addressed through the collapse option. The general form of a dynamic panel data model is shown in equations (1) and (2):

$$Y_{it} = \gamma Y_{it-1} + X_{it}\beta + \epsilon_{it}; |\gamma| < 1 \quad (1)$$

$$\epsilon_{it} = \mu_i + \varepsilon_{it} \quad (2)$$

where; Y_{it} is the regressand factor, Y_{it-1} is the lagged regressand, $|\gamma| < 1$ is the intercept and is less than one; X_{it} is a 1 x k vector of regressors; β is k x 1 vector of parameters to be estimated on the regressors for i = 1, … N and t = 1, … T. μ_i denotes the time invariant individual heterogeneity and ε_{it} denotes the idiosyncratic error component. μ_i and ε_{it} are assumed to be independent and identically distributed *(IDD)* with a zero mean and constant variance (0, σ^2) and are exogenous to each other hence,

$$\in (\mu_{it}) = (\varepsilon_{it}) = (\mu_{it}, \varepsilon_{it}) = 0 \quad (3)$$

According to Rozas and Erice (2014), the outreach of MFIs that mobilize deposits can only be analysed accurately if the number of depositors and their average account balances are considered. Therefore, the study adopted two dependent variables in the outreach models specified below. This is also in line with previous studies such as Abdulai and Tewari (2017a).

$$AVDGNI_{it} = \beta_0 + \beta_1 AVDGNI_{it-1} + \beta_2 OSS_{it} + \beta_3 DTA_{it} + \beta_4 DEPSTAME_{it} + \beta_5 AGE_{it} + \beta_6 POW_{it} + \beta_7 lnASSETS_{it} + \beta_8 PAR_{it} + \beta_9 ComBB_{it} + \beta_{10} RPOP_{it} + \beta_{11} D_{it}^{SUBREGION} + \mu_i + \partial_t + \varepsilon_{it} \quad (4)$$

$$lnNODEP_{it} = \beta_0 + \beta_1 lnNODEP_{it-1} + \beta_2 OSS_{it} + \beta_3 DTA_{it} + \beta_4 DEPSTAME_{it} + \beta_5 AGE_{it} + \beta_6 POW_{it} + \beta_7 lnASSETS_{it} + \beta_8 PAR_{it} + \beta_9 ComBB_{it} + \beta_{10} RPOP_{it} + \beta_{11} D_{it}^{SUBREGION} + \mu_i + \partial_t + \varepsilon_{it} \quad (5)$$

Equation 4 is the empirical model for outreach depth following the Welfarists' approach where the dependent variable is the average deposit balance per depositor/Gross National Income (GNI) per capita *(AVDGNI)*, a measure of the size of the savings that the microdepositors contribute to the deposit base of the DTMFIs (Rosenberg, 2009). The lower the AVDGNI, the deeper the outreach. Equation 5

specifies the empirical model for outreach breadth following the Institutionalists approach where the dependent variable is the logarithm of the number of voluntary depositors *(lnNODEP)* (Rozas and Erice, 2014). The higher the number of depositors, the broader the outreach. $AVDGNI_{it-1}$ is the one period lagged dependent variable for outreach depth. $lnNODEP_{it-1}$ is the one period lagged dependent variable for outreach breadth. The lagged dependent variables where considered as endogenous variables.

The main independent variable is operational self-sufficiency *(OSS)*, the commonly used measure of financial sustainability and was treated as a weakly exogenous variable (Hartarska and Nadolynak, 2007; Abdulai and Tewari, 2017a). Following the Welfarists' approach, a negative relationship between outreach depth and financial sustainability was expected and following the Institutionalists' approach, a positive relationship between outreach breadth and financial sustainability was expected. Several DTMFI-control variables were considered and were assumed to be strictly exogenous variables. The percentage of women borrowers *(POW)* is a proxy that reflects the relative proportion of the total number of women to the total number of clients served. A high POW reflects that the DTMFIs are deepening their outreach (Marr & Awaworyi, 2012). A declining focus towards lending to women is a sign that the DTMFIs are inclining their programs to those of the commercial banks who mainly focus on men (Briere & Szafarz, 2014). The POW variable was expected to be positive in the depth of outreach model and positive in the breadth of outreach model.

The deposits to assets *(DTA)* variable indicates the extent to which the deposits finance the total assets portfolio of the DTMFIs (Bayai & Ikhide, 2016). The depositors per staff member *(DEPSTAME)* variable is an indicator of how many depositors can an employee handle at a particular period. Experience *(AGE)* relates to the number of years the DTMFIs have been operational and exhibits variations in terms of outreach success due to ageing (Vanroose & D'Espailler, 2013). The size proxy, logarithm of total assets *(lnASSETS)*, represents the ability of the DTMFIs to strategically position themselves in fighting competition, adapting to technological revolutions and seizing diversification and investment opportunities (Wijesiri et al., 2015). The portfolio at risk greater than 30 days *(PAR)* variable was included to account for the proportion of the total gross loan portfolio that is overdue for repayment by 30 days and also the portion of the gross loan portfolio that has been renegotiated (Abdulai & Tewari, 2017a).

Macroeconomic controls were also included in the estimated model. The existence of commercial banks in the financial development landscape as measured by the number of commercial bank branches per 100 000 adults *(ComBB)* measures the competition for microfinance clientele by downscaling commercial banks (Cull et al., 2014). The WDIs show that more than 50% of the population in the LISSA countries resides in rural areas. Janda and Zetek (2014) noted that vastly populated rural areas indicate

that there is a high demand for microfinance products therefore, DTMFIs are envisaged to cater for their financial needs. Following several empirical works, location is a dummy variable which constitute four sub-regions; Central Africa *(CA)*, Western Africa *(WA)*, Eastern Africa *(EA)* (base category) and Southern Africa *(SA)* (Sainz-Fernandez et al., 2015; Wijesiri et al., 2015). β represents the estimation parameters. The error component was broken down into the unobservable individual DTMFI heterogeneity effects, μ_i; the time varying effects, ∂_t; and the idiosyncratic term, ε_{it}.

DISCUSSION

TABLE 1. ESTIMATION RESULTS FOR LISSA AND NON-LISSA DTMFIS

	LISSA DTMFIs (baseline results)		Non-LISSA DTMFIs (robustness check)	
	(1)	*(2)*	*(3)*	*(4)*
Variables	AVDGNI	lnNODEP	AVDGNI	lnNODEP
Lagged dependent variable	0.3220842* [0.191]	0.5985122*** [0.194]	0.5886173* [0.297]	0.4300257* [0.256]
Financial sustainability *(OSS)*	-0.0120457 [0.087]	-0.0028037** [0.001]	-0.0061762 [0.099]	-0.0013667 [0.002]
Financial intermediation *(DTA)*	0.8370487** [0.410]	0.0006808 [0.003]	0.0039353 [0.121]	0.008721 [0.006]
Productivity *(DEPSTAME)*	-0.090919*** [0.036]	0.0015744** [0.001]	0.0192184 [0.034]	0.0000713 [0.0004]
Experience *(AGE)*	-0.1560299 [0.491]	-0.0048697 [0.009]	-0.6788366 [0.794]	0.0172496 [0.032]
Gender *(POW)*	0.1437431 [0.141]	-0.001912 [0.003]	0.2353173 [0.313]	0.0039261 [0.009]
Size *(lnASSETS)*	3.094286 [2.691]	0.2623647* [0.142]	3.970207 [2.935]	0.4261237** [0.190]
Risk and portfolio quality *(PAR)*	-0.7854077 [0.813]	0.0001223 [0.005]	0.5436917 [0.651]	-0.0227735 [0.022]
Competition *(ComBB)*	3.885022* [2.208]	-0.2344905 [0.159]	0.0948781 [2.916]	-0.3309803 [0.276]
Location *(RPOP)*	1.801151*** [0.609]	-0.019813 [0.013]	-0.6370262 [0.396]	0.021059 [0.017]
Central Africa *(CA)*	40.61682*** [15.878]	-0.7826032* [0.450]	26.45515 [17.478]	-1.841606** [0.916]
Western Africa *(WA)*	28.38413*** [11.181]	-0.417262* [0.221]	-28.49342* [15.500]	1.12536 [0.798]
Eastern Africa *(EA)*			17.30637* [7.657]	-1.209407** [0.461]
Number of observations	172	185	111	112
Time dummies	Yes	Yes	Yes	Yes
Number of groups	53	55	30	30
Number of instruments	43	36	29	29
GMM instrument lag	1	1	1	1
AR(1)	0.004	0.063	0.223	0.077
AR(2)	0.224	0.379	0.292	0.229
Hansen Test	0.126	0.267	0.054	0.294

Note: ***, ** and * denotes 1%, 5% and 10% significance level, respectively.
The figures in brackets are robust standard errors.
Source: Authors' compilation

Columns (1) and (2) of Table 1 present the baseline results for the LISSA DTMFIs. Columns (3) and (4) of Table 1 present the robustness check results for the Non-LISSA DTMFIs. The lagged dependent variables in columns (1) to (4) are all positive, significant and less than one at 10% significance level except in column (2) where the significance level is 1%.

This shows that the estimated models are consistent with dynamic stability. The positive and significant lagged dependent variables indicate that the DTMFIs are persistent in increasing outreach depth and breadth through deposits. This means that the past deposits' outreach programs have a positive bearing on the future ones implying that DTMFIs that deepen and broaden their current levels of outreach will continue intensifying them in the future in line with national financial inclusion policy initiatives.

Column (1) of Table 1 presents the baseline results for the outreach depth model. No significant relationship was found between financial sustainability and outreach depth. This entails that the self-sufficiency of the LISSA DTMFIs does not have any bearing on the deposit size scaled by the GNI per capita. The implication is that the LISSA DTMFIs can accept deposits of any size from any depositors regardless of their poverty status. This finding supports the Welfarists' theory as the pro-poor clientele who lodge small deposit balances will not be left out by the LISSA DTMFIs. Thus, no trade-off exists and no mission drift has occurred in outreach depth of the LISSA DTMFIs. Similarly, Mersland and Strøm (2010) and Zerai and Rani (2011) did not find existence of mission drift and a trade-off on the microcredit lending side. The results may indicate that outreach is not driven by their level of self-sufficiency (Abdulai & Tewari, 2017a). Thus, both outreach and financial sustainability can be pursued concurrently without the depth of outreach goal straining the quest for attaining operational self-sufficiency.

Contrary to the findings of this study, Hermes et al. (2011) as well as Xu et al. (2016) found existence of mission drift and a trade-off between financial performance and outreach depth. de Sousa-Shields and King (2005) argued that deepening outreach through mobilizing small deposit balances is done at the expense of achieving financial sustainability because administering many small deposits is costly and erodes the operating income thereby stifling financial sustainability. Any deviation from small average balances reflects a change in the market segment served and improves financial sustainability (Armendariz & Szafarz, 2011). Therefore, this study's findings may suggest that the LISSA DTMFIs ought to focus on both the pro-poor and the well-off poor as well so that profits earned from serving the well-off poor can subsidise the losses on serving the pro-poor (Robinson, 2004).

It is possible that the LISSA DTMFIs work with different segments of the market as they also provide credit as well. The LISSA DTMFIs can have different policies in terms of credit which may restrain access to credit by the poorest segments as they are less profitable and riskier or there may be interest rate caps in place. Under such circumstances, there might be signs of mission drift in the access to credit as found by Hermes et al. (2011) and Xu et al. (2016).

The deposits to total assets are positive and significant at the 5 % significance level indicating that the LISSA DTMFIs are effective in the mobilisation of intermediated deposits. The depositors per staff member variable is negative and significant at the 1 % level giving the impression that administering small scale deposits reduces the productivity of the personnel handling them. In concurrence with Johnson (2015), the study did not find any significant relationship between age and outreach depth but Hermes et al. (2011) found that ageing reduces the efficiency of MFIs in outreach. The insignificant relationship between the percentage of women clientele and outreach depth is further evidence that no mission drift has occurred in outreach depth of the LISSA DTMFIs. Reichert (2018) also reported that focusing on women clientele does not usually exhibit trade-offs.

Size is insignificant in explaining outreach depth. Wijesiri et al. (2015) found that size significantly influences the decisions of mature MFIs in achieving outreach and financial sustainability simultaneously. In line with the findings of Xu et al. (2016) and Reichert (2018), the study did not find a significant relationship between risk and portfolio quality and outreach depth. The commercial bank branches coefficient is positive and significant at 10% significance level indicating that competition encourages the DTMFIs to re-strategise their deposit-taking programs to further deepen their outreach as they try to fight off their rivals (Cull & Morduch, 2017). The rural population percentage coefficient is positive and significant at 1% significance level suggesting that the deposit-taking programs are in line with the financial inclusion agenda of expanding financial access in remote areas. Contrary to the findings of this study, Xu et al. (2016) found no significant relationship between rural population and outreach depth. The sub-regional dummies coefficients (Central Africa and Western Africa) are positive and significantly related to outreach depth at the 1% level of significance implying that the sub-regional differences positively influence the size of the deposits accepted by the LISSA DTMFIs. This finding concurs with that of Sainz-Fernandez et al. (2015) who noted that regional differences influence the size of micro-financial services. Eastern Africa is the default category in both outreach depth and breadth models. No DTMFIs were sampled from Southern Africa as this sub-region had no low-income countries based on the classification of countries reported in the 2018 UNCTAD Handbook of Statistics.

Column (2) of Table 1 presents the baseline results for the outreach breadth model. In marked contrast to the outreach depth model where financial sustainability was

insignificant with the average deposit size, financial sustainability is negative and significant at 5% significance level with outreach breadth (logarithm of the number of depositors). Thus, a percentage decrease in financial sustainability stifles the growth rate in the number of depositors by 0.28% thereby contradicting the Institutionalists' theory. Therefore, a trade-off exists in achieving outreach breadth and financial sustainability concurrently in the LISSA's depository microfinance sector. Kipesha and Zhang (2013) who found that outreach breadth measured by the number of borrowers is negative and significantly related to financial sustainability reported related findings on the microlending side. The findings of the present study did not support Zerai and Rani (2011) who found a positive relationship between financial sustainability and outreach breadth.

The trade-off between outreach breadth and financial sustainability of the LISSA DTMFIs can be attributed to decreasing returns to scale that for every increase in the number of depositors, the profit from trading activities is reduced by the costs of dealing with those depositors. Thus, inefficiency in dealing with increasing numbers of depositors in the name of financial inclusion in depository microfinance strains financial sustainability. Inefficiency that emanates from the use of deposit mobilisation strategies such as extensive branch networks is embedded with exorbitant costs which erode financial sustainability. It means that there is an optimal scale of the number of depositors that can enable the LISSA DTMFIs to achieve social and financial performance objectives simultaneously as noted by Ngo et al. (2014). The trade-off between outreach breadth and financial sustainability of the LISSA DTMFIs may also imply that these institutions are not using in the best way, the funds available through deposits and, hence, are not maximizing income generation of these funds through the provision of microcredit or deposits in other financial institutions.

Contrary to the outreach depth model results, the outreach breadth model results present a positive but insignificant relationship between deposits to total assets and the number of depositors. While the number of depositors per staff member variable was negative and significant in outreach depth, the outreach breadth model presents a significant but positive relationship between the depositors per staff member and outreach breadth at 5% significance level. This finding is consistent with Abdulai and Tewari (2017b) who found that highly productive loan officers contribute positively towards increased outreach breadth. This gives the impression that the personnel handling depositors' accounts in the LISSA region are very productive in serving a significant number of depositors but their productivity is slowed down when the deposit size is small (outreach depth).

Contrary to the outreach depth results, the coefficient of size is positive and significant with outreach breadth at the 10% level of significance. This result concurs with Wijesiri et al. (2015) who discovered that size influences social and financial performance. This

suggests that the LISSA DTMFIs can leverage on the goodwill they generate through their assets to tap as many depositors as possible. Similar to the outreach depth model results, no significant results are found for some DTMFI specific variables; age, percentage of women clientele and portfolio at risk. The macroeconomic controls are insignificant in explaining outreach breadth contrary to the outreach depth results. The sub-regional coefficients, Central Africa and Western Africa, are both negative and significant at 10% level of significance. This finding is not consistent with the findings on outreach depth where the coefficients of the sub-regional dummies were positive. The negative coefficients may therefore indicate that the DTMFIs from Central Africa and Western Africa are not coping well with sharp increases in the number of depositors.

In line with the baseline outreach depth results, the robustness check results in column (3) of Table 1 show no significant relationship between financial sustainability and the average deposit size indicating that neither a trade-off or nor mission drift has occurred in the depository microfinance sector of the Non-LISSA countries. The results of the other explanatory variables largely concur with those found in the baseline models except for deposits to total assets, depositors per staff member, competition, location and the sub-regional dummies. The Western Africa dummy is negative and significant with outreach depth at the 10% level of significance contrary to the baseline results. The Eastern Africa dummy is positive and significant with outreach depth at the 10 % level of significance in line with the sub-regional dummies in the baseline outreach depth model. Southern Africa is the default category in both outreach depth and breadth models of the Non-LISSA DTMFIs.

In the outreach breadth results, the robustness check results in column (4) are not in line with the baseline results as financial sustainability is insignificant in explaining the number of depositors. This indicates that there is no trade-off in outreach breadth amongst the Non-LISSA DTMFIs. The results of most of the explanatory variables largely concur with those of the baseline outreach results except for the productivity variable and the Western and Eastern African sub-regional dummies.

CONCLUSION

This article examined the relationship between outreach and financial sustainability of 64 DTMFIs sampled across 18 LISSA countries. Based on the estimated regressions, the study found no significant relations between the average deposit balance (outreach depth) and financial sustainability but the number of depositors (outreach breadth) was negative and significant with financial sustainability. The study concluded that for the LISSA DTMFIs, there is neither nor mission drift nor a trade-off in outreach depth but a trade-off exists in outreach breadth. Intuitively, it means that the LISSA DTMFIs are financial inclusion enablers that can tap deposits of any size from surplus units regardless of their poverty status without harming financial sustainability. However, the LISSA DTMFIs suffer from inefficiency that erodes

financial sustainability in dealing with large numbers of depositors. The significant deposits to assets coefficient in the outreach depth model led to the conclusion that the LISSA DTMFIs are effective in financial intermediation but this is done at the expense of the productivity of the personnel that handles the deposits. In marked contrast, productivity improved with broadening outreach. While the country specific controls and sub regional factors positively influenced outreach depth, they did not affect outreach breadth.

Based on the conclusions, recommendations for policy and practical implications were made. Firstly, the LISSA DTMFIs should segment their markets and then develop deposit products that are appropriate for each market segment. This intensifies deposit inflows from both the pro-poor and better-off poor thereby suppressing the chances of mission drift and also augmenting financial sustainability. The efficiency gains earned from profitable market segments can be leveraged on to offset the loss making ones. Secondly, the LISSA DTMFIs should devise cost cutting deposit-taking methods to boost financial sustainability as the numbers of both the pro-poor and the better-off depositors increase. Deposit-taking methods such as hiring commission based mobile agents or adjunct stationed agents and mobile phone deposit-taking platforms are cost efficient. Mobile phone use should be followed by reduction or subsidisation of the transaction costs by the policy authorities in their intervention strategies. The LISSA DTMFIs should also limit activities that choke financial sustainability such as free account opening as some of the accounts may be empty accounts, paying unsustainable interests on deposits and expensive clustering of office networks.

For further research, there is need to deepen the knowledge on savings access and use and its role on replacing or complementing credit and other micro-financial services in a bid to increase financial access to low income populations.

ACKNOWLEDGMENT

We are grateful to the partcipants of the 4th African Microfinance Week (SAM-Semaine Africaine de la Microfinance) Biennial Conference that was held in Ougadougou, Burkina Faso, 21-25 October 2019, for the valuable comments that led to improvement of this paper after presentation. The conference was organised and sponsored by Appui au Développement Autonome (ADA-Microfinance), Luxembourg.

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THE ART OF SELLING

Dr Nazima Afzal Nzaad

Abstract

Selling is difficult phenomena which involve skills behaviour and attitude of salesman so that the salesman attracts customers towards the product offered for selling therefore it is mandate for sales man to acquire leadership skills to achieve task of selling. As sales is the part of marketing which is popularity denotes the text of social and managerial process where the term social attributes to benefits for customers which in other sense every act of marketer must be beneficial for society therefore the marketer should not cheat customers and must become philanthropist for customer interest the other term managerial reflects that every act of marketer must be supported with decision making process, with this analysis it is clear that the phenomena of selling not only involves leadership skills but also integrates the aspect of philanthropy as well as interest of society. The modern business era which has been embroidered with enormous challenges in perspectives of competition mercury's changes in customer psychology in this scenario selling become a difficult task because the electrification of globalization which has created double density of competition both in perspectives of national and international sphere in this situation sphere in this situation selling a product is the most challenging task because customers enjoys greater choice adherence to availability of international products in domestic market Bharthi Wall Mart D Mart are access towards selling of international product with establishment of its outlets in various country across the globe. The task of selling involves transformational change from the perspectives of customers believes and ideology therefore the salesman should become psych friend for customers the salesman should not only guides customers in a right path but also tries to create good relationship with customers this aspect helps to maintain customer loyalty which has its impact towards customer satisfaction. It is the well acknowledged fact that salesman should poses creativity of course creativity is a natural phenomenon, and it is the result of intellectual capabilities of a salesman should possess effective communication skills as well as ability to listening.

Keywords: *Effective salesmanship; Marketing; Salesman; Leadership skills; Selling skills; Behavioural skills; Sales maximization.*

INTRODUCTION

Selling is the most difficult phenomena which employed the skills of salesmen which results in sales maximization that leads to profit maximization, now it is required to understand what is selling and what does it requires selling is nothing but transformation of ownership for price as the consideration.

For selling a product or a service the salesmen should have to adopt certain characteristic features amongst those effective communication with euphoria, it is well acknowledged factor that communication is the mother principal of organization its significance equally becomes indispensable in perspective of selling. The Art of selling is a boarder scope aspect which begins from advertisement and subsequently travels

from the stages of marketization influencing consumer behaviour maintaining customer relationship and lastly delivery of goods to the customer, in all these above prescribed practices of sales and marketing the one char eristic feature which has its dominancy and catalysing impact towards each activity of commercialisation is none other than creativity the most demanding natural psychological aspect which makes person unique in approach and monopolizing competitive advantage, this natural characteristic feature is a compound of large number of sluice and gyri the slight depressions and alleviations on the surface of human brain which reflect persons intelligence and rationalistic approach in the practices of decision making.

WHAT AN IDEA SURJI

AN IDEA CAN CHANGE YOUR LIFE

IDEA SELLER

Off course an idea can change the life of a person and also can change professional status therefore the success of any business entire price depends upon idea creation. The idea basically is a product according to Phillip Kotler and other marketing experts therefore the re-engineering of marketing and sales strategy stresses upon bold rethinking of marketing function that attributes to not only redesigning of marketing strategy but also creation of marketing needs marketing effectiveness. Amul the taste of India amul has created the needs of its dairy products in all over India even in perspectives of rural artisans.

PAPPU PASS HO GAYA

CACBOURY DAIRY MILK CHOCLATE

MERY MAGGI DO MINUTE MAI KHUSHIYA

These advertisements attract attention of customers towards proposes of purchasing. The other important characteristic feature which influence selling phenomena is praise worthy words for customers, one day a black complexion girl entered in a shopping mall with an intention of purchasing a dress cost of rupees 2,000rs suddenly a sales girl who has shown a dress which is cost of rupees 5,000 at this point of time the sales girl had a statement "madam you looks like a Aishwarya rai if you wear this dress with drawn from intention of purchasing 2,000rs dress and had favoured her behaviour towards purchasing a costly dress.

Selling is a comprehensive phenomenon which makes sales man not only good speaker but also good listener the sales man should allow customer to speak about their selves and also to speak about their family members about their pets about their profession and even about their likes and dislikes this opportunity of speaking by customer creates a confidence between customer and sales man this practice makes the sales man a psycho friend to understand customer psychology their needs wants

tastes and preferences with this analysis the sales man target right customer for right product at wright time and at right place.

The salesman should be good decision maker, the concept of decision making must be associated with intellectuality and rationality which makes the decision unique one among available competitors. The decision making process have a significant impact in every activity of marketing and sales which has cattily tactically transformed into sales maximization therefore into sales maximization therefore it was rightly observed by marketing guru Dr. Phillip Kotler in the definition of marketing "Marketing is social and managerial process by which individuals and groups offering services" in this definition of marketing the Kotler has emphasises upon two aspects social managerial, the term social express that every act of marketer must be beneficial for society which makes the marketer two stand firmly in the long run , whereas the term managerial express that every act of marketer must be supported with decision making involved choosing the best among available alternatives or selection of a unique one along with competitive advantage and competitive advantage and competitive prepared ness NISABA GODREJ adopts ZAG strategy for Godrej products my jio a wonderful strategy by Mukesh Ambani.

Selling is such a comprehensive aspect which also involves skills of digital transformation like, SAP CRM sales force Automation and also block chain. The sales man ship requires leadership skills which is basically trait behaviour situational charismatic skills the salesman should change their behaviour in accordance of environmental and situational perspectives, the challenges of modern business which has embroidered with frills of competitiveness mercuries changes in customer psychology and unification of global market all these factors responsible to adopt multiples of leadership skills which is a bundle of enormous personality development characteristic features which helps to boost leadership personality therefore dis concept must be transformed into a skills of must be translated into a skills of salesman.

Salesman the leader of business and market. As leaders' changes attitudes and believes of people and executing authority over a group of persons dis quality has to be transformed into personality of salesman so that the salesman could influence behaviour of buyers towards process of purchasing.

Selling is such a difficult phenomenon which involves behavioural changes of customer's crosses of purchasing this complicated task also involved motivational factor for salesman ship f helps to achieve assigned task with in or the purpose of delivering values towards performance of salesman that helps to achieve assigned task within stipulated time period.

The selling phenomena not only involves skills of salesman but also it requires certain happenings which can attract attention of listener it may be by means of colourful and bright display and also by means of images communication etc.

DAFLI WALE DAFLE BAZA KUCH BECHNA HAI TO BAJANA HAI

Any song or any colourful attraction can attract attention of listener and dis automatically creates need of that particular product in the mines of customers this is the true sense of marketing and selling.

Selling also involves customer satisfaction which makes the salesman two stand in competitive market in the long run therefore satisfaction not only influence customer behaviour but also makes the customer to go far purchase and repeat purchase therefore selling is an artistic capability which involves efficiency of selling practices to attract and satisfied customers in the competitive market for this perspectives the effective salesman ship must enjoy competitive advantage which makes the personality of salesman distinct and unique in the existing scenario human resource competition therefore effective salesmanship upgrades performance of salesman which allows performance appraisal with and incrementalism in the existing cadre of employment.

CONCLUSION

This article emphasis upon leadership skills for salesman therefore salesmanship requires creativity effective communication skills and ability to read human psychology all these characteristic features are the result of leadership skills therefore the salesman should possess leadership skills.

THE EFFECT OF HOUSEHOLD INCOME ON COOKING FUEL DEMAND IN IBADAN

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Abstract

The recent escalation of cooking gas price in Nigeria raises concerns about how possible the country can achieve substantial transition to cleaner energy use by 2030 as espoused in the Sustainable Development Goals. In addition, the deteriorating economic condition of the country shrinks household income making it more difficult for many households to sustain cooking fuel demand. This study sought to examine the impact of household income on cooking gas demand in Ibadan based on the propositions of the energy ladder hypothesis and the fuel stacking theory. The study used a sample of 127 households in Ibadan and applied linear regression technique based on OLS. There was evidence of fuel stacking rather than a linear progression up the energy ladder as suggested by the energy ladder hypothesis. Moreover, the study established that cooking gas obeys the law of demand which means that it is a normal good. However, the demand for cooking gas is found to be inelastic with own price, but elastic with respect to price of alternative cooking fuels. The study recommends an improvement in Nigerian's economic wellbeing through better macroeconomic policies and solutions to rising gas prices as means of improving cooking gas affordability for Nigerian households.

Keywords: *Energy ladder; Fuel stacking; Demand; Prices.*

INTRODUCTION

The issue of cooking fuel type and household energy consumption generally, have been a front burner topic both in policy circles and in the academia. Research suggests that household energy use connotes substantial consequences that are worthy of policy intervention. For instance, the nature of cooking fuel consumed is frequently linked to household health outcomes (James et al., 2020; Liu et al., 2020; Owusu Boadi & Kuitunen, 2006; Patel et al., 2019). According to Edwards & Langpap (2012) and Epstein et al. (2013) nonclean fuel for cooking could adversely impair both adult and child health. Some studies show that indoor use of unclean cooking fuel results in breathing problems (Jagger & Shively, 2014), sight issues (Pokhrel et al., 2005), cancer of the lung (Sapkota et al., 2008), and even, blood pressure problems (Baumgartner et al., 2011; Weinhold, 2011). Other studies report negative self-reported health status among persons who commonly cook with unclean fuels (Liao et al., 2016; Liu et al., 2017). In addition to the health hazards, biomass fuels are known to have negative environmental impacts. For instance, burning biomass fuels releases the so-called

"greenhouse gases" which are known to deplete the earth's ozone layer and cause climate change problems (Foell et al., 2011; Rosenthal et al., 2018). There is also the problem of vegetation loss and deforestation occurring due to excessive dependence on unclean cooking methods like firewood, and wood coal (Ochieng et al., 2020). Moreover, using unclean cooking fuels tend to take time (Martey et al., 2021) and women and children mostly at the receiving end, due to the hardship and the time spent to harvest the unclean fuels like firewood for use (Ochieng et al., 2020). Furthermore, because women and children perform the bulk of domestic house duties, they are more exposed to the negative health impacts of biofuels among which Oluwole et al. (2013) and Pekkanen et al. (2002) mention ocular damage, cardiovascular disease, tuberculosis, and other respiratory diseases.

Given the adverse effects of non-clean or heavy cooking fuel use, policymakers and other stakeholders have become quite interested in transitioning households to cleaner fuel consumption, especially in the developing countries. Consequently, policy interventions that target uplifting households up the so-called energy ladder are becoming increasingly popular (Dickinson et al., 2019; Kar et al., 2019; Ochieng et al., 2020; Saksena et al., 2018). Despite these efforts, the dependence on unclean cooking fuels remains relatively high in many of these countries. World bank estimates that more than 3 billion people still lack access to clean cooking fuels globally (Liu et al., 2020). Patel et al. (2019) confirms that nearly half of the world population are currently lacking access to clean fuels for cooking. This means that a substantial proportion of people worldwide are still relying on unclean cooking energy such as animal dung, charcoal, crop residue, and firewood. With regards to Sub-Saharan African countries, IEA estimates that nearly 760 million persons still cook with unclean fuels, a figure that represents around 80% of the region's population (Olopade et al., 2017). Statistics on Nigeria report that more than 60% of the population to still rely on fire wood for most of their cooking (Adamu et al., 2020). This is consistent with IEA figures according to which 122 million persons in Nigeria rely on biofuels (Olopade et al., 2017). While a greater proportion of such households reside in rural areas, Adamu et al. (2020) insist that in even in the urban areas, the demand for bio-cooking fuels is still high.

In view of these challenges, scholars opine that a transition to cleaner cooking fuels like Liquified Natural Gas or ethanol remains pertinent (Foell et al., 2011; Gould & Urpelainen, 2018; Rosenthal et al., 2018; Schlag & Zuzarte, 2008). Nevertheless, the transition to cleaner cooking fuels in the developing countries have met with minimal success so far. Some research attributes the poor LPG adoption to market barriers in the developing countries that tend to escalate LPG prices (Schlag & Zuzarte, 2008). In Nigeria for example, statistics confirm that LPG prices have risen steadily over the recent years. On year-on-year basis, the price of 5 kg of cooking gas has rose by 83.69%

from February 2021 to February 2022 while that of 12.5 kg increased by 70.68% during the same period (NBS, 2022). To worsen matters, household consumption income as mirrored by consumption expenditures has also witnessed substantial decline in the recent past. From 2019q4, household consumption expenditure growth decline in real terms by 14.46% in 2020q1, a decline that was sustained in 2020q2 of around 5.02%. Despite recording two quarters of consecutive growth, household consumption declined further by 14.13% in 2021q1 and further by 0.34% in 2021q2.

Clearly, the rising cooking gas prices added to the household income decline in Nigeria connotes negative implications for sustaining household transition to cleaner cooking fuels in the country. Despite the implication of prices for cooking gas consumption in Nigeria, it is surprising that research conducted on the topic have largely ignored the role of price in the adoption of cooking gas and other cleaner fuels in the country. For example, outstanding studies like those of Ajayi (2018) and Adamu et al. (2020) examined determinants of cooking fuel choice among Nigerian households, but they remained silent on the issue of price. The recent study of Shari et al. (2022) comment that high price, household income, and household size are among the impediments to adopting clean cooking fuels, but their analysis ignores the role of prices. One notable study that accommodate both income and prices is that of Arawomo (2019) which was conducted among households in Ondo State. Still, the paucity of research in that combines the influences of price and income implies that further research is needed on the subject so as to facilitate consensus.

This study therefore extends the existing literature with a specific focus on Ibadan. Ibadan remains the largest city in West Africa, and the second largest after Cairo in terms of land mass. In terms of population, Ibadan retains the third position in Nigeria after Lagos and Kano, making it one of the likely states with the most cooking fuel demand in the country. Indeed, the previous paper by Adelekan & Jerome (2006) confirm that cooking gas consumption in Ibadan has been on the increase, making it an ideal location to study the influence of household income and price on cooking gas demand. The rest of the paper is arranged as follows. Section 2 present the literature review, Section 3 covers materials and methods, while Section 4 covers analysis and discussion. The paper is concluded with policy suggestions in Section 5.

LITERATURE REVIEW

From a theoretical perspective, the decision to consume cooking gas is usually linked with theories like the energy ladder hypothesis, the fuel stacking hypothesis, and consumption theory. The energy ladder hypothesis provides strong arguments in favour of moving to cleaner fuels as the household's socioeconomic status increases (Adamu et al., 2020; van der Kroon et al., 2013). One rationale for this substitution as stated by Hanna & Oliva (2015) is that unclean fuel could have negative outcomes on the household especially in terms of health, such that there is strong incentive for a shift away from such fuels as soon as the household has the ability to do so. In

propagating the energy ladder hypothesis, Masera et al. (2000) agree that as households achieve higher socioeconomic status, they tend to prefer more advanced technology such as cleaner fuels for several reasons. Most importantly, the cleaner cooking methods help increase efficiency in energy use as per the lower pollution level associated with such fuels (Hiemstra-van der Horst & Hovorka, 2008; Saatkamp et al., 2000). In addition, there is the general opinion that such advanced technologies usually confer some form of prestige on the consumer since they are generally more expensive (Meried, 2021). As such, the energy ladder theory suggests that households' energy demand reacts strongly to income changes in accordance with the need to project status (Masera et al., 2000). One weak point identified with the energy ladder hypothesis is the rigid assumption that household energy demand exhibits an upward linear movement in relation with household income. Scholars like Adamu et al. (2020) opine that observed cooking fuel choices in developing countries like Nigeria do not always conform with the suggestions of theory because households in such countries typically consume a menu of clean and unclean cooking fuels simultaneously (Mekonnen & Köhlin, 2009).

In view of the weaknesses associated with the energy ladder theory, the fuel staking theory provides an alternative explanation frequently used to analyse household cooking fuel demand in the related literature. The main argument of the fuel staking theory is that households do not necessarily abandon cooking fuels in the lower rung of the energy ladder as they rise in socioeconomic status (Adamu et al., 2020; Baiyegunhi & Hassan, 2014; Dickinson et al., 2019; Nawaz & Iqbal, 2020). Rather, they more likely accommodate different fuel types which they use as the occasion demands. Alem et al. (2016), Masera et al. (2000), and Yadav et al. (2021) provide justification for why households might exhibit fuel stacking rather than a linear progression along the energy ladder. For instance, households do not wish to over depend on the cleaner cooking fuels so that sudden price hikes do not leave then vulnerable. In addition, households that cannot afford complete reliance on cleaner fuels would continue using lower fuel types even when income rises. Kowsari & Zerriffi (2011) Muller & Yan (2018) add that occasional supply shortages of modern cooking fuels would likely force households to backslide down the energy ladder from time to time. Moreover, cultural complexities in many developing countries could compel some household to not fully transition to cleaner cooking fuels even when they are able to (Masera et al., 2000).

Other than the energy ladder and fuel stacking hypotheses, the conceptual approach to analysing cooking fuel demand in existing studies implicit draw on traditional consumption theory. For example, many studies acknowledge that in demanding for cooking fuel, households are seeking to maximize utility (Edwards & Langpap, 2005; Gupta & Köhlin, 2006; Manning & Taylor, 2014; Nlom & Karimov, 2015), a behaviour

that is consistent with the theory of consumption. In this regard, some researchers (e.g., Afrane & Ntiamoah, 2011; Singh et al., 2014) opine that cooking fuel consumption and the resulting environmental impact follows a life cycle process. Moreover, the notion that households flaunt new status when they move up the energy ladder relates closely with the idea of conspicuous consumption propagated in the relative income theory of consumption (see Alvarez-Cuadrado & van Long, 2011; Brown et al., 2015; Ellison, 2002). This notion is implied in the work of Link et al. (2012) who argue that household movement towards non-wood cooking fuels are governed to some extent, by social factors. Ekholm et al. (2010) equally observe that income distributions, rather than actual income has strong implications for cooking fuel choice, thus suggesting a social character of cooking fuel demand as proposed in the relative income hypothesis.

In view the different propositions, the literature documents diverse empirical evidence either supporting or refuting the suggested household cooking fuel consumption behaviours. Within the context of Nigeria, Baiyegunhi & Hassan (2014) laments the likely health impact of unclean fuel use among rural households in Kaduna state. On the basis of their concerns, their analysis investigate transition to cleaner cooking fuels in location of interest with the aid of multinomial logit regressions. Their evidence supports energy stacking rather than smooth transitions to cleaner fuels. Households in the studied area were found to rely more on firewood, but occasionally utilized cleaner cooking fuels as well. Similar evidence was published by Cheng & Urpelainen, (2014) who worked with a national sample of Indian households. The main results confirmed fuel stacking behaviour when it comes to fuel for cooking, but not for lightening. Hanna & Oliva (2015) use the energy ladder hypothesis to investigate cooking fuel transition among Indian household, but unlike by Cheng & Urpelainen, (2014) they focus on the rural sector only. Unlike previous studies, they document evidence supporting the energy ladder for cooking fuel among the studied households.

Covering Nigeria, Bisu et al. (2016) investigate the cooking fuel choices among urban households in some Local Government Areas in Bauchi State. The study uses data on a sample of 100 households and proves that cooking fuel behaviour is more in line with the fuel stacking hypothesis than the energy ladder theory. In particular, households in the studies region typically consume a menu of cooking fuels irrespective of their income range. Yet, the consumption of cooking gas seemed to increase with affordability. Paudel et al. (2018) note a high reliance on traditional cooking fuels among Afghan households despite the suggested adverse health impacts. They draw on a national sample of Afghan households and apply the multinomial regression technique. Their findings seem to be consistent with the energy ladder theory. Wealthier households showed greater likelihood of transitioning to cooking gas relative to other fuels when compared to wealthier households. Moreover, urban residing households, households with better education, and those who had access to electricity exhibited higher likelihood of consuming

cooking gas relative to other fuels. Their findings thus suggest that socioeconomic status strongly dictates the use of cleaner fuels as proposed by the energy ladder theory. Saksena et al. (2018) applies a similar procedure to cooking fuel transitions among semi-urban and rural households in Vietnam. Their result provides some justification for the energy ladder theory since more households in both rural and urban areas had improved on their cooking fuel type in response to smallholder intervention programmes.

Contrary evidence can be found in the study by Dickinson et al. (2019) which sought to evaluate the impact of the REACCTING cleaner fuel intervention program among Ghanian households. In particular, the intervention seemed to change cooking fuel patterns among the target population, but no significant decrease was recorded on the use of traditional cooking fuels in general. A similar study was conducted by Kar et al. (2019) to test the impact of an intervention programme on cooking gas usage in Indian communities. Viewing the intervention as a form of income transfer, the findings suggest support for the energy ladder hypothesis. In particular, they find an increase in LPG consumers in response to the intervention programme. Yet, there was evidence that not all households had increased clean fuel consumption, suggesting that many households might still be stacking. Also, in accordance with the energy ladder hypothesis, Adamu et al. (2020) point out poverty as a major hinderance to cleaner energy transitions among Nigerian households. Nevertheless, the authors disagree that a smooth transition would be observable for a substantial proportion of households. Nawaz & Iqbal (2020) demonstrates contrary evidences. When they analyse the impact of an unconditional cash transfer programme on the cooking fuel choices among households in rural Pakistan, they find an increase in the demand for both unclean and clean cooking fuels alike. Thus, they conclude that rural household's behaviour is more consistent with fuel stacking than linear transitions. In the qualitative study of Ochieng et al. (2020), the authors survey the opinions of rural and urban Kenyan households about cooking fuel stacking versus linear transitions as a result of a proposed intervention programme. Again, the findings demonstrate preference for stacking among households in both locations.

Twumasi et al. (2020) focus mainly on the demand for clean cooking fuels like LPG and kerosene based on a number of determinants that include income, access to credit, and education. The study utilized instrumental regression techniques and found evidence that income and education improved the use of cleaner fuels significantly, thereby supporting the energy ladder hypothesis. Zahno et al. (2020) argues that household choice to climb up the energy ladder might depend on more than just socioeconomic considerations alone. In keeping with their argument, they focus on the role of health awareness rather than on income. Using an experimental approach, they showed an increase in the likelihood of consuming LPG of 30% among

households exposed to the health awareness impact of unclean fuels. The analysis by Meried (2021) centred on validating the energy ladder hypothesis using a sample of 212 households in Ethiopia. Indeed, the findings document support for the hypothesis showing that most households are likely to transit up the energy ladder. Factors identified as impacting the cooking fuel decision included education, access to credit, and income among others. The study of Yadav et al. (2021) rationalize the commonly observed behaviour of fuel stacking arguing that such cooking fuel behaviours are more prominent at certain stages of a household's socioeconomic progression. Form an analysis involving households in India's rural communities, the authors showed that fuel stacking will likely continue because it is a cultural part of such communities. Martey et al. (2021) recently approached the clean cooking fuel adoption from the angle of time poverty and consumption poverty. They argue that the use of unclean fuels consumes relatively more time whereas, the use of clean fuels consumes relatively more finances. With the aid of bivariate probit models, they show that time poverty actually supports diversion away from unclean fuels whereas, consumption poverty diverts away from clean fuel usage. Their findings demonstrate that fuel stacking would likely occur relative to linear progression since non-consumption poor persons would likely be time poor at the same time so that a variety of cooking fuels would be optimal.

The literature generally offers a robust analysis of the determinants of cooking fuel demand. However, one notable gap is that most of the notable studies reviewed have been silent on the role of price in the choice to either climb the energy ladder or hold a portfolio of cooking fuel alternatives. In other words, the implicit assumption has been that households' choice to move along the energy ladder is based strictly on their level of income. No doubt, this assumption may not be tenable because a simultaneous increase in the price of the preferred cooking fuel along with an increase in income would likely prevent an ascent along the energy ladder. Moreso, such an occurrence is likely to be consistent with fuel stacking, which might explain the overwhelming evidence in support of the fuel stacking theory. The next section outlines the research methods as well as an empirical model incorporating the role of cooking fuel price in attempt to fill the identified literature gap.

METHODOLOGY

Materials and Sample

The study relies on primary data collected with the aid of online questionnaires designed specifically for the study's purpose. In keeping with the extant literature, the questionnaires were designed with the intention of collecting information on popular variables that are suggested to influence the use of a cooking fuel over another. Consequently, the questionnaires elicited information on common demographic variables as well as measures of socioeconomic status. To capture demand for cooking gas, the households were first asked the frequency of their cooking gas purchase with

available choices covering the options: "weekly", "twice monthly", "once monthly", and "once in a while". A follow up question collected quantitative information on how many kilograms of cooking fuel the household consumes per specified. This formed the main variable capturing cooking fuel demand. The main independent variable of interest is household income. This was captured with an ordinal scale question that specifies different income ranges from less than N25,000 to above N100,000.

Due to lack of knowledge on the actual population of cooking gas consumers in Ibadan, a systematic sampling technique could not be applied. Moreover, the lack of notable previous research on household cooking fuel demand within Ibadan equally constrains the use of previous samples are a benchmark in the current study. Nevertheless, experts have suggested the use of non-systematic methods in such cases which could involve techniques like snowballing or respondent-driven sampling as convenience and purposeful sampling (see Goodman, 1961; Heckathorn, 1997; Salganik & Heckathorn, 2004). The present study relies on the purposeful approach. Specifically, since the relevant inclusion criterion was for the respondent to be currently residing in Ibadan, the researcher sent the questionnaire link to social media groups that are exclusive to Ibadan residents. The whole data collection process was conducted within a week at the end of which a total of 127 responses had been recorded and these formed the sample of the study. Table 1 gives a summarized description of the variables used for analyses.

TABLE 1. SUMMARIZED DEFINITION OF VARIABLES USED FOR REGRESSION

Variable	Measurement	Definition
Cooking gas consumption	Continuous	Natural log of cooking gas kilograms consumed
Income	Ordinal	Income range of household (1 = <N25k, 2 = N25k – N50k, 3 = N51k to N100k, 4 = > N100k)
Price of cooking gas	Continuous	Natural log of price per kilogram of cooking gas
Household size	Discrete	Number of persons living in household
Sex	Nominal	Sex of household head (1 = Female, 2 = Male)
Education	Ordinal	Education level of household head (1 = Lower, 2= Secondary, 2 = Higher)
Employment	Nominal	Employment status of household head (1 = Unemployed, 2 = Self-employed, 3 = Private sector, 4 = Civil servant)
Price of alternative	Continuous	Natural log of price of alternative cooking fuel
Residential location	Nominal	Household residential sector (1 = Rural, 2 = Urban)
Accommodation	Nominal	Household accommodation type (1 = homeowner, 2 = renter)

Source: Author.

Model Specification

Based on the energy ladder and fuel stacking hypotheses, the existing studies focus on demographic and socioeconomic variables as key predictors of household cooking fuel choice (e.g., Meried, 2021; Paudel et al., 2018; Twumasi et al., 2020). The present study likewise draws on these propositions, specifically targeting variables like household income, education, and other similar variables as determinants of cooking fuel demand. In keeping with traditional demand theory, additional variables capturing the price of cooking gas and alternatives are also featured as determinants contrary to previous studies. Hence, the demand for cooking fuel can be expressed in the following functional form.

$$gas_i = f(y_i, p_i, size_i, sex_i, edu_i, emp_i, p_{zi}, res_i, acc_i) \quad (1)$$

Such that,

gas_i = kilogrammes of gas consumed by household i (natural logs)

y_i = income level of household i

p_i = average price paid per kilogram of gas by household i (natural logs)

$size_i$ = household size of household i

sex_i = sex of household head of household i

edu_i = education level of household head in household i

emp_i = employment status of household head in household i

p_{zi} = is the price of an alternative cooking fuel other than gas (natural logs)

res = household residential area

acc = household accommodation type

The explicit form of equation (1) can be represented in the following expression.

$$gas_i = \beta_0 + \beta_1 y_i + \beta_2 p_i + \beta_3 size_i + \beta_4 sex_i + \beta_5 edu_i + \beta_6 emp_i + \beta_7 P_{Z_i} + \beta_8 res + \beta_9 acc + \mu_i \quad (2)$$

Equation (2) is a linear model that captures the effects of household income and other determinants on gas consumption. In equation (2), β_0 to β_9 are the coefficients to be estimated whereas, μ_i represents the error term of the regression. By virtue of the linear nature of equation (2), estimation is straightforward using Ordinary Least Squares (OLS) regression. The coefficients of the variable y_i is very critical for determining if there is evidence in support of the energy ladder hypothesis or not. Given that the variable is expressed in ordinal terms, if the coefficients attached to higher categories of y_i are significantly higher than those attached to a benchmark lower category of the variable, then there is evidence of energy ladder behaviour. Otherwise, the fuel stacking hypothesis is supported. The next section presents the empirical analysis and discussion.

ANALYSIS AND DISCUSSION

Preliminary Analysis

Frequency counts and summary descriptive statistics of the variables of interest have been presented in Table 2 to show the sociodemographic characteristics of the respondents. Not surprisingly, there are more male headed households (81.1%) than female headed households (18.9%). In terms of household head's education level, there is a somewhat uniform distribution which suggests minimal bias in the data collection process. Nevertheless, the Yoruba participants are more than others (37.01%) and this is in keeping with the fact that Ibadan is a Yoruba town. Household head religion is strongly skewed in the favour of Christianity (65.35%) whereas, only few participants practice "other" religions than the ones specified (9.45%). By marital status, very few of the respondents have never been married (9.45%), most are married 71.65%), and some have been previously married (18.9%). These set of participants are either widowed, separated, or divorced. We see that most participants fall under the "other" category of employment status whereas, less are private sector employees.

TABLE 2. FREQUENCIES AND SUMMARY STATISTICS OF VARIABLES

Variable	Freq.	Percent	Mean	SD	Range
Sex					
Male	103	81.1			
Female	24	18.9			
Ethnicity of head					
Hausa	25	19.69			
Igbo	31	24.41			
Yoruba	47	37.01			
Other	24	18.9			
Religion					
Christianity	83	65.35			
Islam	32	25.2			
Other	12	9.45			
Marital					
Never married	12	9.45			
Married	91	71.65			
Previously married	24	18.9			
Employment					
Other	65	51.18			
Private sector	22	17.32			
Civil servant	40	31.5			
Education					
Lower	28	22.05			
Secondary	34	26.77			
Higher	65	51.18			
Frequency of gas demand					
Once a while	9	7.09			
Monthly	27	21.26			

Twice monthly	83	65.35			
Weekly	8	6.3			
Alternatives to cooking gas					
Kerosene	7	5.51			
Charcoal	34	26.77			
Firewood	25	19.69			
None	61	48.03			
Income					
Less than N25k	16	12.6			
N25k to N50k	28	22.05			
N51k to N100k	52	40.94			
Above N100k	31	24.41			
Residence					
Rural	82	64.57			
Urban	45	35.43			
Means of transportation					
Public transport	48	37.8			
Own car	79	62.2			
Alternative electricity					
No	33	25.98			
Yes	94	74.02			
Homeowner					
No	66	51.97			
Yes	61	48.03			
Age of head (years)			44.55	9.93	(20 - 77)
Size of household (persons)			7.98	4.33	(1 - 20)
Gas demand (kg)			17.71	9.51	(1 - 56)
Price of gas (N)			699.88	34.44	(580 - 1000)
Price of alternative (N)			422.24	145.47	(100 - 700)

Source: Author's computation from field survey.

Many of the participants purchase cooking gas twice monthly (65.35%). This might be a manifestation of the steadily increasing gas prices in the recent times which have probably decreased the quantity bought per period thus leading to a higher purchase frequency. It is interesting that there is strong preference towards cooking gas among the participants as most of them rely fully on gas without alternatives (48.03%). Among those who use alternative, charcoal seems to be most common (26.77) whereas, only few rely on kerosene as an alternative (5.51%). There are more households that fall under the N51k to N100k income group relative to others (40.94%). More participants reside in rural areas (64.57%), reside in as renters (51.97%), have their own cars (62.2%), and have an alternative electricity source (74.02%). Average household size, age of head, and gas demand are respectively 44.5 years, around 8 persons, and 17.71 kg. Meanwhile, the average price of cooking gas is N699.88 or approximately N700 while the average price of the alternative used is N422.24.

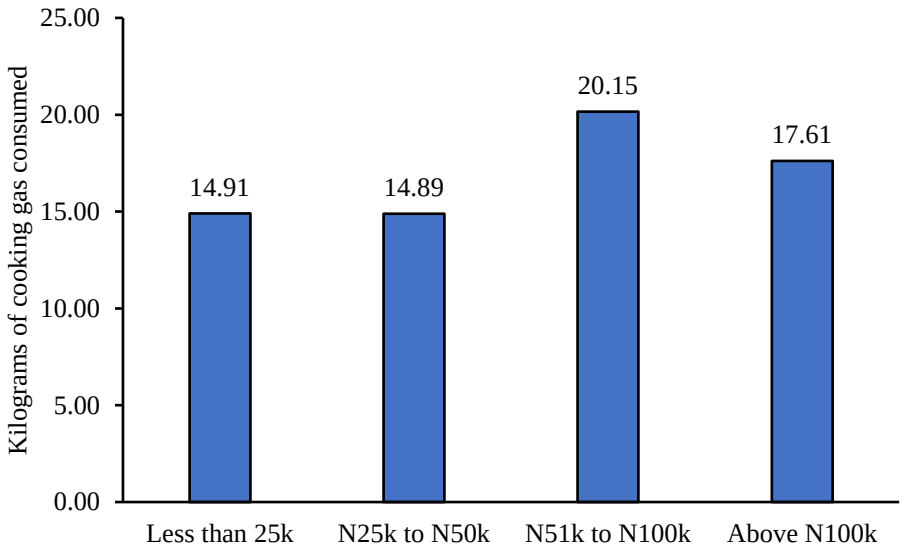

FIG 1. MEAN GAS DEMAND BY INCOME
Source: Author's design from field survey

Figure 1 shows the distribution of mean gas consumed by income. Households that fall within the N51k to N100k category have the highest mean cooking gas consumption of 20.15 kg while households within the N25k to N50k group consumed the least on average (14.89 kg). Looking at Figure 2 which shows the distribution of household residence by average cooking gas consumed, there is evidence that households in the rural areas consumed the most on average (19.07 kg).

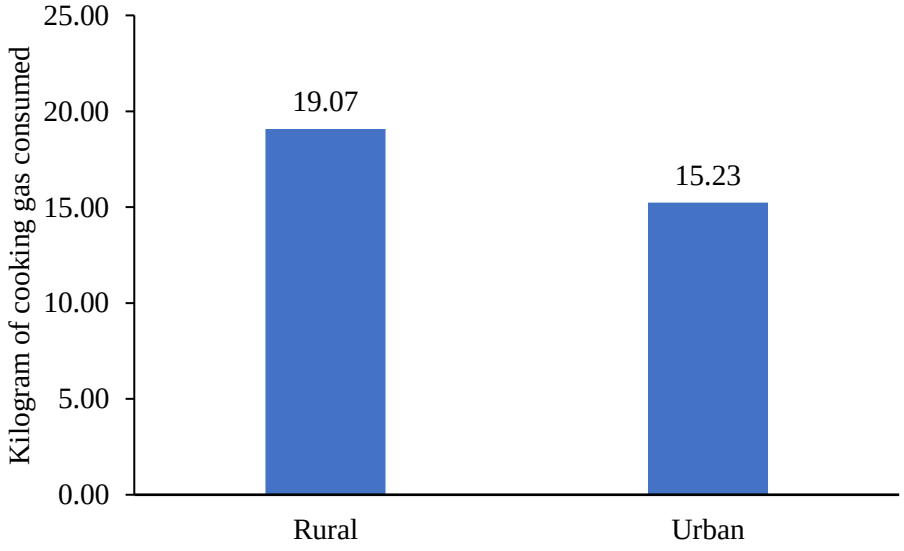

FIG 2. MEAN GAS DEMAND BY RESIDENCE
Source: Author's design from field survey.

Figure 3 equally shows that households who live in rented flats consume more cooking gas on average (19.97 kg) relative to those reside in their own houses (17.78 kg). Persons who reside in single rooms consume the least on average (15.85 kg).

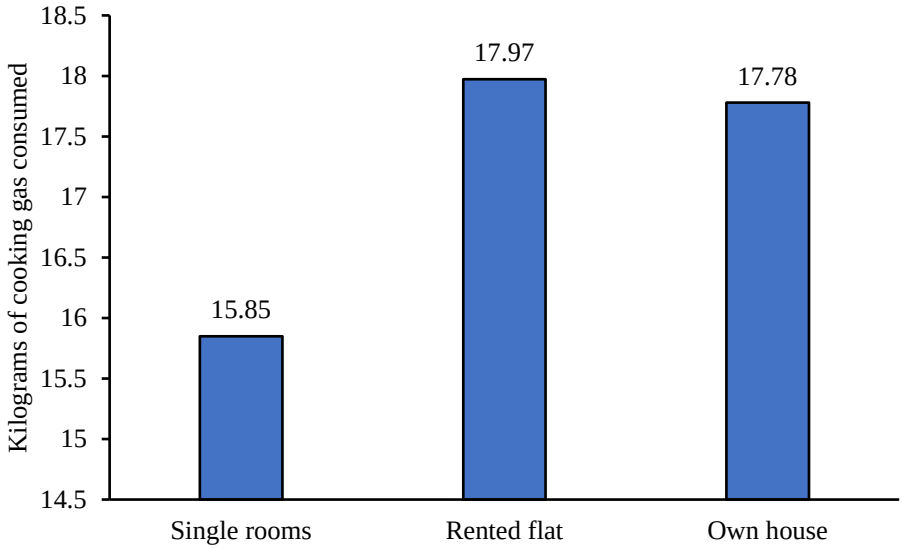

FIG 3. MEAN GAS DEMAND BY ACCOMMODATION
Source: Author's design from field survey.

Finally, in Figure 4, the mean consumption of cooking gas by education of household head is reported. Households who have secondary education as their highest education level have the highest cooking gas consumption on average (2.44 kg). Meanwhile, households in which the head has attained higher education consume 17.22 kg of cooking gas on average. Households with heads having just primary education consumed the least (14.30 kg).

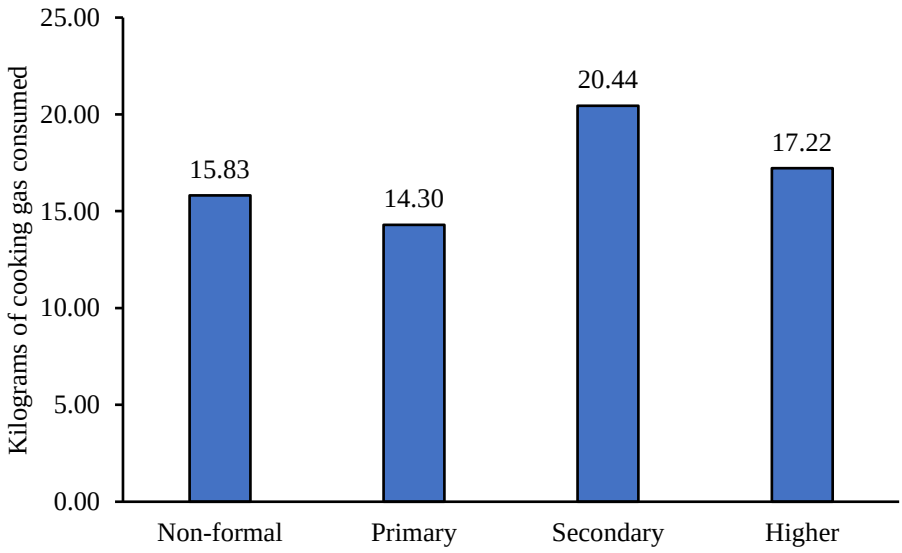

FIG 4. MEAN GAS DEMAND BY HEAD'S EDUCATION
Source: Author's design from field survey.

Main Results

In order to analyse the specific objective of the study which is to examine how income and the other specified determinants influence household cooking fuel demand, a linear regression was estimated using OLS, and the result has been summarized in Table 3. One striking feature of the result is the lack of significance of the income

variable. The result specifically suggest that higher income households consume less cooking gas on average relative to lower income households. The insignificance of the income variable seems to suggest support in favour of fuel staking rather than a smooth transition up the energy ladder. This result is consistent with diverse other studies (e.g., Bisu et al., 2016; Cheng & Urpelainen, 2014; Nawaz & Iqbal, 2020; Ochieng et al., 2020; Paudel et al., 2018; Yadav et al., 2021) that showed that households in the developing countries actually stack different cooking fuels rather than transition to higher ones as suggested by the energy ladder.

TABLE 3. REGRESSION RESULTS

Variable	Coef.	St. Err.	t-val.	p-val.	95% CI	Sig.
Income						
Less than N25k (ref)						
N25k to N50k	-0.189	0.162	-1.170	0.245	-0.509 – 0.131	
N51k to N100k	-0.048	0.160	-0.300	0.766	-0.365 – 0.269	
Above N100k	-0.049	0.167	-0.29	0.769	-0.380 – 0.282	
Sex of head						
Male (ref)						
Female	0.255	0.124	2.07	0.041	0.011 – 0.500	**
Education of head						
Lower (ref)						
Secondary	0.267	0.159	1.69	0.095	-0.047 – 0.581	*
Higher	0.21	0.125	1.69	0.094	-0.037 – 0.457	*
Employment of head						
Other (ref)						
Private sector	-0.287	0.139	-2.07	0.041	-0.562 – -0.012	**
Civil servant	0.126	0.122	1.04	0.301	-0.115 – 0.367	
Residential sector						
Rural (ref)						
Urban	-0.173	0.095	-1.82	0.071	-0.361 – 0.015	*
Homeownership status						
Non-homeowner (ref)						
Homeowner	-0.008	0.098	-0.08	0.934	-0.202 – 0.185	
Gas of price	-0.037	0.017	-2.18	0.031	-0.071 – -0.003	**
Price of alternative	2.471	1.016	2.43	0.017	0.459 – 4.483	**
Household size	-0.287	0.139	-2.07	0.041	-0.562 – -0.012	**
Constant	-14.092	6.65	-2.12	0.036	-27.267 – -0.917	**
R-squared	0.373	Obs.	127			
F-test	5.18	Prob > F	0.000			

Ref implies reference category

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's estimation using Stata 16.

There is evidence of a statistically significant impact of household head sex on the demand for cooking among Ibadan residents. The result suggests that female headed households purchase on average, 22.5% of cooking gas compared to male headed households. This result is, indeed, unexpected since the conventional assumption is

that female headed households are less well-off economically compared to male headed households. Nevertheless, the result could be consistent with the findings about income which shows an insignificant effect. In fact, Paudel et al. (2018) had previously documented contradictory evidence working on Afghanistan. The influence of household head's education is more in keeping with expectations. Households where the heads have secondary education or higher are shown to consume around 26.7% and 21% less more cooking fuel relative to households where the heads have lower education. The evidence provides support for the previous analysis of Bisu et al. (2016) where it was seen that demand for dirtier fuels decrease relative to that of clean fuels owing to higher household head education.

According to the result, households in the urban sector consume less cooking gas than household in the rural sector, although the effect of residence is only marginally significant (at 10%). In addition, a homeowning household should consume less cooking gas than non-homeowning households, but the result is not statistically significant. Nevertheless, homeowners may have the freedom to switch easily to unclean cooking fuels compared to non-homeowners since they live alone and do not need to be concerned of the adverse effects of unclean fuel use on neighbours. Conversely, non-homeowners live with neighbours. As such, they are mindful of the influence of their cooking choices on their neighbours. Hence, they may use coking gas more relative to owners. In fact, the result of Martey et al. (2021) support these arguments when they showed that renters are less likely to consume biomass fuels than homeowners.

Other interesting can be found with respect to the effects of prices and household size on cooking gas demand. The result confirms that a 1% increase in gas prices results in around 0.37% decrease in the demand for cooking gas. This finding is in accordance with the expectation that higher cooking gas prices would cause consumers to decrease consumption. Moreover, the result is consistent with the observed steady increase in the price of cooking gas in Nigeria and how this has impacted its consumption. The result confirms that cooking gas is indeed, a normal good. This paper's finding with respect to price matches that of Arawomo (2019) who confirmed a decrease in gas demand when price increased working with a sample of Ondo State households. Looking at the price of alternatives, we find a positive effect which is consistent with substitution. Hence, households tend to substitute to alternative cooking fuels when the price of cooking gas increases and vice versa. When one compares the own price elasticity (-0.037) with the cross-price elasticity (2.47), we notice that cooking fuel has an inelastic demand, meaning that households respond marginally to increase in cooking gas price. Conversely, the cross-price elasticity is elastic (higher than 1) implying that households do not hesitate to switch to cooking gas when they find it affordable relative to other fuels. This finding is consistent with that of Bisu et al. (2016) which reported a that affordability improves cooking gas demand. Finally, the findings report that an additional household member decreases

the demand for cooking gas by around 28.7%. This means that households with more members usually lack the financial capability to demand for gas. Diverse other findings like that of Paudel et al. (2018) had demonstrated similar results.

CONCLUSION AND RECOMMENDATION

This study sought to examine the impact of household income on cooking gas demand in Ibadan based on the propositions of the energy ladder hypothesis and the fuel stacking theory. The study used a sample of 127 households in Ibadan and applied linear regression technique based on OLS. There was evidence of fuel stacking rather than a linear progression up the energy ladder as suggested by the energy ladder hypothesis. Moreover, the study established that cooking gas obeys the law of demand which means that it is a normal good. However, the demand for cooking gas is found to be inelastic with own price, but elastic with respect to price of alternative cooking fuels. Larger households are shown to on average, demand less cooking gas than smaller ones.

The findings have several implications for policy actions in the direction of household cooking fuel demand. Government and relevant policymakers ought to seriously consider the effects of rising cooking fuel price on household cooking fuel demand in Nigeria. Hence, there is need for government to brace up and initiate policies such as subsidization to ameliorate the effect of rising cooking gas prices on households' purse. The dwindling economic wellbeing of Nigerians owing to the country's low economic performance has no doubt, constituted a drag on cooking gas consumption. There is therefore need for government to work sincerely towards improving the economy which would help boost household economic wellbeing and raise their ability to transition to cleaner cooking fuel like gas.

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