EFFECTS OF SUPPLY CHAIN MANAGEMENT PRACTICES ON CUSTOMER SATISFACTION OF INSTANT NOODLES IN EKITI STATE, NIGERIA: THE ROLES OF INFORMATION SHARING AND COMMUNICATION

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Abstract:
Firms in the noodles industry are facing dwindling sales for coming short of customer's demands and expectations. Efficient supply chain is considered an important approach to increase customer satisfaction. This study empirically evaluated the effects information sharing and communication on customer satisfaction of instant noodles. The survey was conducted among customers (retailers) of instant noodles in Ekiti State, Nigeria. A total of 381 respondents took part in the study with 369 returned questionnaire indicating 97% response rate as study hypotheses were tested through regression analysis. The outcome of the study revealed that information sharing and communication showed significant influence on customer satisfaction with communication returning slightly higher effect on customer satisfaction than information sharing.

Key words:
Supply Chain Management; Information Sharing; Communication; Customer Satisfaction; Logistics

INTRODUCTION

Business environment is becoming increasingly competitive at the passing of each day and various industry players are leaving no stone unturned in taking advantage as it unfolds. To this end, firms are innovatively strategizing to create added value at reduced costs in a bid to satisfy their customers [1]. Different firms adopt different approaches to attain industry relevance and achieve corporate objectives of the organisation [2] but strategic communication and efficient sharing of information has been identified by experts in supply chain management domain as strategies getting the most attention [3]. This has led to the

adoption of more simplified supply chain by manufacturers in order to deliver their goods to the consumers more promptly and efficiently.

For the supply chain to function adequately, utmost attention must be paid to the adequacy of information sharing and communication within the system [3]. Integration of efficient information system into any supply chain synchronises communication between supply chain members and the consumers [4,5]. Inadequacy of communication among firms and their teeming customers often result in misapprehension of their basic expectations. Feedback systems through live chat, social media, forum, direct customer engagement etc. play remarkable roles in bridging the communication gap between the parties [5], however, the opportunity is not well explored by manufacturers of instant noodles in Nigeria [6]. Institution of well-designed supply chain facilities promote unhindered movement of goods from the manufacturer through supply chain partners to the consumers and information in the reverse direction [7] and this flow of materials and information from one point to another determines the degree of efficiency of the entire supply chain [8].

One of the problems encountered by consumers of instant noodles in Nigeria is the unavailability of some brands in some areas of the country, especially the remote locations. This problem was recently brought to light by Markmonitor Nigeria Limited, a leading market research firm, in her noodles customer satisfaction survey conducted across 12 States in Nigeria [9]. The report showed that brands like Golden Penny and Honeywell noodles are highly unavailable in many areas due largely to inadequate logistics.

Instant noodles are fried or precooked dried noodle blocks packaged with seasoning powder and other widely available ingredients in different flavours. The major ingredients in the production of noodle blocks are wheat flour, palm oil and salt. The production process involves rolling the starched unleavened wheat dough into thin threads before being cut into various shapes and sizes. It is thereafter fried in saturated palm oil to increase shelf life and decrease cooking time [10,11].

Instant noodles which was invented by Momofuku Ando (1910-2007) of Nissi Foods, Japan in 1958 has gained global recognition as the most successful industrially produced food [11] as annual household consumption rate of the product has been on geometric increase across all continents since 2008 [11,12]. The popularity of instant noodles as the number one staple food, even for low income families, is linkable to its affordability, availability in multiple variance, ease of preparation, nutritional value and increased shelf life [10–12].

Empirical studies on supply chain management and customer satisfaction relationship especially involving level of information sharing and communication among the partners have been carried out by various authors around the world, however, most of the studies dwelled on investigating relationships at the upstream part of the supply chain involving the suppliers and manufacturers as regards level of their communication and information sharing vis-à-vis customer satisfaction [13–21]. None of these studies in any way addressed the effects of information sharing and communication on customer satisfaction as distribution of products approaches the downstream end of the supply chain which basically involves the numerous customers of the finished goods. The observed literature gap has made it difficult for indigenous producers of instant noodles to upscale production by leveraging on empirical information on customer satisfaction and requirements within the supply chain [9,22].

This study was motivated by the observed limitations in literature to empirically investigate the effects of information sharing and communication on customer satisfaction at the downstream or lower end of the supply chain. The procedure involved directly engaging the retailers of instant noodles who buy the products directly from the manufacturer or through other middlemen in the supply chain as research respondents. The findings of the study would highlight the degree of importance of information sharing and communication in

driving customer satisfaction towards helping decision makers in organizations set right priorities in supply chain management.

1.   LITERATURE REVIEW

1.1. Theoretical Literature

1.1.1. Application of Social Capital Theory to Supply Chain Management

Supply chain and logistics terms and glossary [23] defined a system as "a set of interacting elements, variables, parts, or objects that are functionally related to each other and form a coherent group". A system therefore comprises several units or parts working harmoniously for the attainment of a common goal or objective.

Systems theory exists in different fields of study and has been in use at various levels since the days of old. Researchers[24] gave a lucid and comprehensive explanation of systems theory; the basis, components and applications from the perspectives of different authors including Capra [25] who described systems theory as one that touches diverse fields in nature, society and many scientific areas with frameworks investigating trends from a holistic approach. Checkland [26] and Jackson [27] explained systems thinking as a divergence in concentration from systems sub-units to the whole, viewing investigated events as a united phenomenon of multiple fragments whereby the individual units are indistinct. Furthermore, the systems approach posits that it is impossible to completely understand a system by dissembling and re-assembling it but can only be observed in totality in order to understand its operation [24].

From the perspectives given by the various authors, it is obvious that the various parts play prominent roles in the functioning of a system, but better understanding of the latter is achieved by observing the integration (and its pattern) and synergy which forms the whole. Therefore, understanding the benefits inherent in the system and proffering solutions to the associated problems requires measuring the level of interrelationship among the parts [28].

1.2. Conceptual Literature

1.2.1. Information Sharing

The elaborate use of IT as a tool for sharing information among a group provides an avenue for speedy development of shared vision, confidence level, as well as trust which forms the primary characteristics of an efficient team or system [29]. Effective information dissemination enhances coordination and improved decision making as regards items to produce, needed quantity and how best to distribute the finished goods [30].

Mohr and Spekman [31] described information sharing as the degree or rate at which beneficial and proprietary information is communicated between all stakeholders in the supply chain. According to Adebayo [4] and Li et al. [3], information sharing among supply chain partners can take either qualitative or quantitative dimension. Quantitative measure of information sharing dwells on the degree at which crucial and commercial information is related to all partners in the supply chain network [32] while quality of information sharing describes characteristics such as accuracy, timeliness, adequacy, and credibility of information exchanged among supply chain partners [32,33].

Min and Zhou [5] analysed that the success of supply chain integration rely largely on the capacity of involved partners to harmonize and share information in real-time using time-

tested IT equipment such as Electronic Data Interchange (EDI), Electronic Point of Sale (EPOS), Enterprise Resource Planning (ERP) amongst others.

A customer of a particular product or firm is that individual/firm who buys or intends to buy a product or someone with intent to patronise the firm. Hom [34] clarified that the consumer of a product or service uses it but the customer pays for it though he/she may not end up as the direct user. Kotler and Keller [35] defined customer satisfaction as the level of contentment or fulfillment a customer derive from the product or service being paid for or the feelings of fulfillment or disappointment which results from comparing the perceived performance of a product with conceived expectations.

To test the magnitude and direction of the effects of information sharing among the supply chain partners on customer satisfaction, the relations is thus presented in both null and alternate hypotheses.

Ho₁: Information sharing among supply chain partners does not significantly affect customer satisfaction of instant noodles in Ekiti State.

Ha₁: Information sharing among supply chain partners significantly affects customer satisfaction of instant noodles in Ekiti State.

1.2.2. Communication

Froderberg [36] defined communication as the ability of a company to frequently disseminate information relating to order tracking, order status, back order status, order confirmation and product shortages among others. Taking the observation a bit further, researchers [37] described communication as the process of sharing formal and informal information essential for mutual success between partners within the supply chain. Suffice to say that communication is about creation of cordial relationship with supply chain partners as different from information sharing which merely indicate data or ideas dissemination. Communication shortens the inter- or intra-firm link already created by information sharing.

Communication provides the platform for information flow among the supply chain partners, establishing harmonious links for timely dissemination of product and transaction information between the middlemen and the manufacturer [38]. This communication platform can involve modern ICT and may be as simplified as the use of word-of-mouth in the distribution of information between the parties [39].

Good communication enhances the manufacturer's chance of understanding, firsthand, the needs of the teeming customers as well as how they prefer them to be met [40,41]. Regular client communication, complaint mail box and visiting customers regularly are goods measures to communicate with customers [40]. Heide and John [42] noted that trust among supply chain partners in inter-organisational relationships improves communication thereby aiding achievement of mutual benefits and satisfaction from joint business transactions [15,41].

On the other hand, bad communication among supply chain partners is one of the major reasons for sub-optimisation and breakdown in the supply chain [43] as a firm can render superior supply chain services but still fall short of customer satisfaction due largely to poor communication [44]. Customer satisfaction can therefore be considered as the perception of a customer that the purchased product/service has effectively met or surpassed his/her expectations [45].

The relations between communication among supply chain partners and the resultant impact on customer satisfaction is thus presented in both null and alternate hypotheses to empirically analyse the effects.

Ho₂: Communication among supply chain partners does not significantly affect customer satisfaction of instant noodles in Ekiti State.

Ha₂: Communication among supply chain partners significantly affects customer satisfaction of instant noodles in Ekiti State.

2. METHODOLOGY

2.1 Conceptual Framework

Haque and Islam [16] and Gilaninia et al. [17] in their studies and model constructs identified some factors in supply chain practices as determinants of customer satisfaction. These, collectively, include supply chain design, organization culture, collaboration and information sharing, communication, conformity, commitment, dependence and trust. The choice of driver variables of supply chain practices vis-à-vis customer satisfaction in the proposed research model premised on the modified model of Haque and Islam [16] and anchored on systems thinking theory.
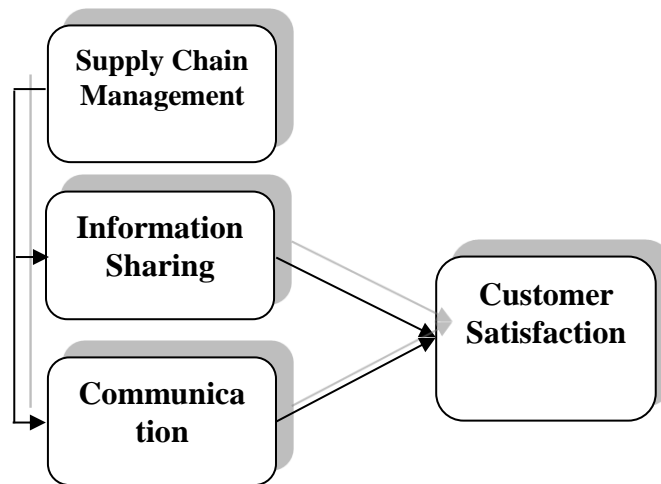

***Fig. 1** Proposed Research Model*
***Source:** Adapted from[16]*

2.2 ResearchDesign

This study adopted descriptive survey design to examine the effects of supply chain management practices on customer satisfaction of instant noodles in Ekiti State, with particular interest in information sharing and communication. It involved the use of primary data sourced by using 5-point Likert scale questionnaire self-administered to the various respondents (noodles retailers) by the researchers.

Variable measurement scales for this study were adapted from existing literature [16,17,46–50] and subjected to expert review for content validity and modifications for the purpose of data collection. The adapted questionnaire was structured to address questions pertinent to supply chain management practices covered by this study and the level of satisfaction as perceived by the customer(s). The content of the questionnaire was sub-divided into three sections. Section A was used to collate respondents' demographic information;

section B extracted data on information sharing and communication while section C extracted information on customer satisfaction variables among noodles retailers in Ekiti State.

2.3 Reliability and Validity Test

The reliability and internal consistency of the research instrument as performed on the relevant variables was determined or measured by Cronbach alpha which is most commonly used in reliability tests. Under this measure, Cronbach alpha with value greater than or equal to 0.7 was found adequate in the measurement of internal consistency of an instrument [51].

Tab. 1 Reliability of Variables

Constructs	N	Items	Cronbachα
Information Sharing	369	5	0.788
Communication	369	4	0.782
Service Satisfaction	369	2	0.768
Customer Involvement	369	7	0.773
Total Cronbach's Alpha for Scale = 0.808			

Source:SPSS Reliability Analysis Output, 2018

Table 1 described the output of reliability test on the scale used in this study. The 18-item scale, comprising of 4 constructs (variables) has an overall alpha value (α) of 0.808 which surpassed the standard threshold of 0.7 establishing adequacy of the instrument in achieving desired objectives [51]. In the course of testing the scales, some items were dropped due to relatively low item-total correlation. From the results, information sharing returned highest reliability coefficient of 0.788 while 2-item-scale service satisfaction recorded the lowest reliability coefficient of 0.768.

The questionnaire used in gathering primary data for this study was subjected to face and content validity to ensure it accurately measured the target parameters. In a bid to ensure content validity of the questionnaire, construct measurement items were carefully adapted from previous studies and modified where necessary. Modifications to the instrument which were done by professionals on the subject matter included simplifying used grammar, inclusion of items that most accurately address the constructs and dropping of others.

2.4 Study Population and Sample

Population of this study was taken as the retailers at the lower end of the supply chain network who buy directly from the noodles manufacturer(s) or through designated middlemen. The retailers were targeted as respondents to this study because they are the major supply chain stakeholders who take title to the goods and are therefore most affected by manufacturers' production and supply policies as well as practices in the entire supply chain network. On the other hand, the final consumers of the product are least bothered by supply chain activities.

Population of the study therefore covered 8265 retailers of made-in-Nigeria instant noodles in the three senatorial districts of Ekiti State (Ekiti North, Ekiti Central and Ekiti South Senatorial Districts). This figure covered 1850 variety stores in Ekiti North, 3550 in Ekiti Central and 2865 in Ekiti South Senatorial Districts as presented in Tables 2.

Tab. 2 *Study Population by Senatorial Districts*

Senatorial District	Study LGA	Headquarters	Store Population
Ekiti Central	Ado	Ado-Ekiti	3550
Ekiti North	Ido/Osi	Ido-Ekiti	1850
Ekiti South	Ikere	Ikere-Ekiti	2865
Total Study Population = 8265			

Source: Ekiti State Ministry of Commerce, Industry and Cooperatives, 2018

A total sample of 381 respondents generated from the total population with the aid of Yamane [52] formula was chosen for this study. Multistage sampling method was employed in the study as follows: At the first stage, simple random sampling technique was used to select one local government area each from the three senatorial districts of Ekiti state. At the second stage, purposive sampling method was employed to select the headquarters of each local government because of their commercial significance characterised by large concentration of stores and high trading activities and at the third stage, samples to be taken from each city was generated from the total sample using simple proportion formula. Consequently, 164 respondents were randomly sampled from Ado-Ekiti, 85 from Ido-Ekiti while 132 were taken from Ikere-Ekiti.

3. ANALYSIS OF DATA

This study employed both descriptive and inferential statistics to analyse the sourced data. Descriptive statistics such as frequency tables and statistical charts were used to report responses and distribution of respondents'demographics.

Analysis of sorted data was by multiple linear regression using Statistical Package for Social Sciences (SPSS) version 22.0. The objective of this study was to quantitatively test the effects of information sharing and communication (predictor variables) on customer satisfaction (criterion variable).

3.1 Distribution of Questionnaire

Table 3 below described the distribution of questionnaires administered to respondents of this study. Out of a total of 381 administered questionnaires, 369 (indicating 96.85% return rate) were returned while 12 or 3% were not returned. The researcher therefore made use of the 369 returned questionnaires for analyses purpose.

Tab. 3 *Number of Questionnaire Distributed, Returned with Percentage*

Location	Distributed	Returned	%	Unreturned	%
Ado-Ekiti	164	159	96.95	5	3.05
Ido-Ekiti	85	82	96.47	3	3.53
Ikere-Ekiti	132	128	96.97	4	3.03
Total	381	369	96.85	12	3.15

Source: Field Survey, 2018

3.2 Test of Research Hypotheses

With information sharing and communication separately tested as predictor and customer satisfaction as outcome variables in the SPSS regression model, the output of inferential analysis was presented in Table 4. The multiple linear regression equation for the test of hypotheses is given as:

$$Y = b_o + b_1X_1 + b_2X_2 + \cdots + b_nX_n + e \qquad (1)$$

where: Y–the dependent variable,
X–independent variable,
b – regression coefficient,
e– error term.

Tab. 4 *Regression Analysis of Information Sharing & Communication on Customers Satisfaction*

	Coefficients						
Model	UnstandardisedCoefficients		Standardised Coefficients	t	Sig.	CollinearityStatistics	
	B	Std. Error	Beta			Tol	VIF
(Constant)	0.896	0.194		9.769	0.000		
InfoSharing	0.247	0.044	0.274	5.6088	0.000	0.834	1.199
Communication	0.317	0.045	0.345	7.058	0.000	0.834	1,199

Model Summary:
R = 0.521; R^2 = 0.271; Adjusted R^2 = 0.267; F = 68.034; DW = 1.403
where DW = Durbin-Watson, Tol = Tolerance, VIF = Variance Inflation Factor

IndependentVariables: InformationSharing, Communication
DependentVariable: CustomerSatisfaction
Source: Author's Regression Output, 2018

The regression coefficient (B coefficient) of information sharing (B = 0.247) indicated a slightly weaker positive relationship with the outcome variable (customer satisfaction) when compared with that of communication (B = 0.317). However, both variables were statistically significant predictors of customer satisfaction: information sharing (t=5.608; p=0.000) and communication (t=7.058; p=0.000). From the model summary it could be observed that information sharing and communication both explained 27.1% of the variance in customer satisfaction. Variance inflation factor of 1.199 apiece which fell below maximum threshold of 10 as suggested by Field [53] indicated that there was no multicollinearity in the regression model. The regression equation for the model could be written as: CS = 1.896 + 0.247*ISH + 0.317*COM + e. This indicated that customer satisfaction increased by 24.7% for every 1% increase in information sharing, when communication was kept constant; while 1% increase in communication, with information sharing held constant, caused 31.7% increase in customer satisfaction.

4.   DISCUSSIONS AND IMPLICATIONS OF FINDINGS

4.1 Information sharing

The results of this study showed that information sharing within the supply chain was of paramount importance to all players involved and companies are evidently devising series of modern technologies to facilitate efficient information sharing. Some of these technologies deployed by firms include Electronic Data Interchange (EDI), Electronic Point of Sale (EPOS), Enterprise Resource Planning (ERP) among others [5,54].

The results of statistical analysis indicated that information sharing exerted moderate and significant impact on customer satisfaction (B=0.247; t=5.608; p=0.000). The findings were in accordance with the discovery of previous studies on the relations between customer satisfaction and information sharing including Saura et al. [21] who argued that information sharing and the use of ICT in the supply chain greatly strengthens logistics service quality, recording strongest positive correlation with satisfaction while further controlling for other predictor variables. This result also corresponds with the position of systems thinking theory which claims that system components are logically linked towards achieving the common goals [55]. Information sharing form an important link between the "system components" without which the purpose of the unified system is unachievable. For this reason, alternative hypothesis (Ha$_1$) was accepted and null hypothesis (Ho$_1$) rejected.

The implications of these findings, particularly for managers, centre on the importance of information sharing in facilitating prompt dissemination of product information and mutually-beneficial ideas among supply chain players. For the system to operate at optimal level, timely processing and sharing of relevant business information through modern ICT facilities between the manufacturer and various parties in the supply chain down to the final consumers must remain a priority. Alterations in production capacity or product offering must not be decided by the manufacturer of goods alone but in conjunction with other supply chain members.

4.2 Communication

From the regression results it would be recalled that communication exerted high and significant effects on customer satisfaction (B=0.317; t=7.058; p=0.000). This implies that communication among supply chain partners is highly essential for useful ideas beneficial to all parties to be propagated in the system for overall satisfaction. Communication was found to predict customer satisfaction more than information sharing indicating that within the supply chain, efforts should be made by partners to go beyond virtual sharing of business information and engage in real-time interpersonal connections [37].This findings were supported by the study of Gilaninia et al. [17] who reported that communication gave the highest effect on customer satisfaction among all dimensions of supply chain management treated as predictor variables. Monczka et al. [32] also found in their study that partnership success and satisfaction within the supply chain were highly attributable to significant bilateral communication among partners in the chain. The findings of this study also corroborated the findings of Liu and Fang [40] that good communication familiarises the organisation with the customers and their actual demands thereby enhancing strategic fulfillment of these needs and improving customer satisfaction. Strong correspondence could also be observed between the findings of this study and the stance of systems thinking theory that better understanding of the individual parts that form the whole system and benefits accruable is only achievable through holistic observation of the level of interactivity between the elements [24,28]. This interactivity or interrelationship is exclusively a function degree of communication between the intermediaries in the supply chain [37,38]. These results

conclusively led to the acceptance of the alternative hypothesis (Ha$_2$) while null hypothesis (Ho$_2$) was rejected.

The implication of the findings of this study for managers is that the importance of interpersonal relationship and interactivity among partners in a supply chain cannot be overemphasised if productivity across the chain was to be optimised. Communication between product manufacturer and all the intermediaries plays prominent role in cementing cordial relationship and harmonizing the system towards optimising value creation and satisfaction within the supply chain.

5. CONCLUSIONS AND RECOMMENDATIONS

It could be observed from the study results that the two practices of supply chain management, namely, information sharing and communication, emerged as statistically significant predictors of customer satisfaction of instant noodles in Ekiti State. It followed that information sharing among supply chain partners exerted lower effects on customer satisfaction than communication.

Conclusion could therefore be drawn from the statement above that there existed positive significant relationship between the level of customer satisfaction and the two factors of supply chain management: information sharing and communication. This implies that these two practices of supply chain management are highly important criteria any manufacturing firm especially in the noodles industry must pay close attention to in order to satisfy the needs of her consumers and win big in terms of market share.

The major limitations in this study are that it is limited to the downstream section of the supply chain and restricted to Ekiti State alone. Also, it focuses on the noodles sub-sector of the Fast Moving Consumer Goods (FMCG) only. Based on these, future studies could be extended to the upstream end of the supply chain and scope extended to the entire southwest geo-political zone or country.

The study recommended that stakeholders in supply chain should ensure flexible inter- and intra-organisational communication within the system in order to establish cordial relationship among the parties. Information sharing within the chain should go beyond virtual data transfer or business information exchange to interpersonal connectivity.

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