



CONCEPTUAL EVALUATION OF INFORMATION SYSTEM'S PROCESSES AND CUSTOMER RELATIONSHIP MANAGEMENT: A CASE STUDY.

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Manuscript Received: 20/05/2021 Accepted: 10/06/2021 Published: June, 2021

ABSTRACT

We cannot deny the role of information system processes in the actualization of an organization's objectives in terms of customer relationship and loyalty. Despite these roles, some school of thought, believes information system processes have nothing to do with customer loyalty. This study aims to evaluate information systems, processes and customer experience management of Etisalat Nigeria. Participants were randomly selected and administered questionnaires. Participants were asked to provide response relating to satisfaction, loyalty, trust, and perception of service quality of the Nigerian communication services. The result of the analyses revealed that management information systems processes have a negative/weak correlation with an insignificant impact on customer loyalty. On the other hand, management information system processes portray a positive/weak correlation indicating an insignificant impact on customer satisfaction. This result was confirmed by the regression analysis of the study, which also revealed the study had no error term of variance.

Keywords: *Customer Satisfaction, Customer Loyalty, Information System, Management processes, Nigeria*

INTRODUCTION

Information Systems can be theorized with respect to three types of systems: Management Information Systems (MIS), Transaction Processing Systems (TPS), and Experts Systems. Management information systems have several sub branches, like the Executive Information System and the Decisions Support System. The roles of MIS are clearly appreciated when it relates to decision support as it is best deliberated in the framework of the sub branches indicated as Decisions Support System (DSS). DSS is a computer based system which is built with the capacity to analyze a business data and presents it in a manner which supports the user of the data to make quick business decision more effective and efficiently (Komeily & Srinivas, 2015).

Hence, according to Al-Zhraini, (2010), the decisions making system are an increasingly crucial feature not just for companies alone, but also for stakeholders who, for their livelihood in the extremely competitive area of entrepreneurship, rely greatly on such decisions. Even more critically, Management Information Systems was an unarguably used device in regulation and choice settlement. Decision Support Systems are Managements Information Systems sub-branches crucial for specific decision-making and practical leadership.

Abror *et al.*, (2019) explained that loyalty is a widely-researched concept in marketing studies. Although initial product/services trials are crucial steps in the acceptance phase, businesses' primary aim is to ensure consistent consumer use. Much earlier research described loyalty as a repeat purchasing of a specific commodity. According to other researchers, the expectations of customers to buy back are possibly affected by their products and services use experiences. Subsequent research extended the concept description, with authors retaining that loyalty extends beyond repurchase motives to involve behavioral factors such as Commitment and activism and attitudinal elements such as strong attachment which could entail refusing offers of competing companies.

Satisfaction of consumers is key to service business performance. Comprehending which variables improve the satisfaction of consumers is indeed a goal of many research reports. Although multiple studies has explored determinants and outcomes of consumer satisfaction, scholars also believe that further studies need to be employed in this regard. The study by Thakur (2019) "the moderation roles of consumer engagements experience in consumer satisfactions loyalty relationships" explained that the concept of satisfaction relates to an evaluative assessment of a real, deliberate decision after the option.

This study, which is purposed at evaluating the processes of information systems, predominantly focuses on services to users, operators' instructions,

easy and upgraded facilities and materials used by Etisalat mobile company in Nigeria and how it positively affects customer experience management. The study will look at how customer satisfaction can be enhanced considering the company processes and how information systems, processes enhance customer loyalty in the short and long run. Many studies have attempted to prove the relationship of both variables with many using customer loyalty as the consequence as well as customer satisfaction. This study, however, will look at three major relationships which include: the relationship between customer satisfaction and customer loyalty, the relationship between information system processes and customer satisfaction, and the relationship between information system processes and customer loyalty. It is quite imperative to note that, all three variables are somewhat interwoven as information system processes tend to have a direct impact on customer satisfaction and customer loyalty. Hence, a crucial question posed in this study is "how does management of information system processes help to boost customer satisfaction and customer loyalty?" to answer this question, the following hypotheses were posited:

H1: MIS processes positively affect customer loyalty

H2: MIS processes positively affect customer satisfaction

MATERIALS AND METHODS

This study applied a quantitative analysis. Structured questionnaire items were adopted from the study of Hsin-Hui, and Yi-Shun (2005), Straub (1989) using a 5 point Likert scale. The questions asked were on customer loyalty, customer satisfaction and management information system processes. The examination applied a random sampling technique. Participants were randomly selected; having solicited their consent, questionnaires were given to them to provide information which was used as data for the study. Participants were asked to provide data relating to satisfaction, loyalty, trust, and perception of service quality of the Nigerian communication service. The questionnaire had two principal sections; section 1 focused on the demographic characteristics of subjects and asked questions like; age, gender, level of income and frequency of purchase. Section 2 focused on variables and asked questions relating to the different variables of the study.

Nigeria is divided into six geopolitical zones comprising of 36 states, including the Federal Capital territory (FCT). Hence, this study was carried out in the FCT (Abuja) in order to adequately measure the parameters of the study. The total population of Abuja according to the United Nations population (2021) is estimated to be around 3,464 000. Hence the study population, 3,464 000 with 360 as the study sample. A total of 380 questionnaires were distributed to the participants: out of which 360 were correctly filled and 20 questionnaires were incomplete and as such,

were not used for the analysis. Giving a response rate of approximately 95%. The study was conducted from 3rd March to 3rd April 2021.

Data from the questionnaires were analyzed with the aid of Statistical Package for Social Science (SPSS v21). To adequately measure the data, One-Way ANOVA was applied to measure the demographic characteristics of the respondents with items such as: gender, age, the frequency of purchase, and the duration spent being loyal to the brand. This measurement was tested to ascertain the possibility of a statistical significance difference between the different demographic variables vis-a-vis customer loyalty and customer satisfaction. Also, the study utilized Cronbach Alpha reliability test and the Exploratory Factor Analysis to test for data reliability. This approach ensures that the questionnaire is adequate and rightly measure the parameters of the study (Idoga *et.al.*, 2018). Lastly, the study utilized the correlation and regression analyses to test the relationship between the variables of the study. The measurement is intended to prove the nature of relationship, the strength of the relationship as well as the significance of the exploratory variable(s) on the explanatory variable(s).

RESULTS AND DISCUSSION

In respect to the reliability test, this applied the Cronbach Alpha and generally, if the result of the variable is less than 60%, then the data is said not to be reliable in the case of a social science study (Taber, 2018). This study, however had three major variables with MIS processes being the independent variables while customer loyalty and customer satisfaction being the dependent variables. Therefore the results are given as follows:

Table 1: Reliability test for items

	Cronbach Alpha	No of Items		N	%
Reliability test for MIS processes	.664	8	Valid Excluded Total	360	100.0
Reliability test for Customer loyalty	.707	6		0	0
Reliability test for Customer satisfaction	.724	7		360	100.0

With a Cronbach Alpha of 66.4%, 70.7% and 72.4% as can be seen from the table (1) above, indicates that the reliability test for the items: MIS Processes, Customer Loyalty and Customer Satisfaction are rightly measured and hence, their data are adequate for analysis and interpretation.

A one way ANOVA was implemented to quantify the demographic factors and to check how they influence the outcome. The demographic factors were checked to prove that there is a meaningful statistical gap between consumer engagement and

customer service. Unless the result of one-way ANOVA perceived as an F-test appears to be larger than 0.05, it is inferred that there is no substantial statistical difference. However, if the F-test is smaller than 0.05, then it is inferred that that there is a meaningful statistical difference in either consumer engagement or customer retention.

Table 2: One Way ANOVA for Customer Loyalty, Customer Satisfaction and Age of Respondents

Items	Sum of Squares	df	Mean Square	F	Sig.
Customer Loyalty					
Within Groups	88.734	344	258	64.612	000
Between Groups	49.999	3	16.666		
Total	138.733	347			
Customer Satisfaction					
Within Groups	139.584	356	392	699	553
Between Groups	.823	3	.274		
Total	140.407	359			

From Table 2 above, the F-result of Customer Loyalty is 0.000, illustrated as (F < 0.05). This means the age variable has a statistical significant difference with respect to customer loyalty. In other words, the different age groups tend to have a different tendency with respect to their loyalty with Etisalat. Similarly, the F-result of Customer Satisfaction is 0.553, illustrated as (F > 0.05). This therefore means that age variable does not have a statistical significant difference with respect to customer satisfaction. In other words, the different age groups tend to have a similar tendency with respect to their satisfaction with Etisalat.

Table 3: One Way ANOVA for Customer Loyalty, Customer Satisfaction and Respondents Gender

Items	Sum of Squares	Df	Mean Square	F	Sig.
Customer Loyalty					
Within Groups	132.541	345	.384	8.059	000
Between Groups	6.192	2	3.096		
Total	138.733	347			
Customer Satisfaction					
Within Groups	139.793	357	.392	784	457
Between Groups	.614	2	.307		
Total	140.407	359			

From Table 3 above, the F-result of Customer loyalty is 0.000, illustrated as (F < 0.05). This means that gender variable has a statistical significant difference

with respect to customer loyalty. Likewise, the F-result of Customer Satisfaction is 0.457, illustrated as ($F > 0.05$). Implying that the gender variable does not have a statistical significant difference with respect to customer satisfaction. In other words, the different gender groups tend to have a similar tendency with respect to their satisfaction with Etisalat.

This study applied a correlation analysis to validate the orientation of the interaction between the consumer service and management information system processes in relation to consumer satisfaction. The outcome of the correlation can be viewed from three separate angles: the orientation of the association, the frequency of the correlation, and the sense of the correlation.

When the result of the correlation is positive, it indicates a noteworthy impact in the correlation. On the other hand, there is no substantial impact in the correlation when the result is negative. A correlation of 0.6 and above indicates a strong relationship, between 0.39 – 0.59 indicate a moderate relationship and between 0.01 and 0.38 implies a weak relationship (Idoga et.al, 2019). The last thing under the correlation is the significance of the correlation. When the result of the 2-tailed significance is lesser than 0.05 (2 tailed sig. < 0.05), a significant correlation is achieved. On the other hand, when the 2 tailed significance is greater than 0.05 (2 tailed sig. > 0.05), there is no significance in the correlation.

Table 4: Pearson Correlation of MIS Processes with Customer Loyalty

		Customer Loyalty	MIS Processes
	Pearson Correlation	1	-.004
Customer Loyalty	Sig. (2-tailed)		.941
	N	348	348
	Pearson Correlation	-.004	1
MIS Processes	Sig. (2-tailed)	.941	
	N	348	360

From Table 4 above, the correlation between MIS processes and customer loyalty is -0.004 with a 2 tailed significant value of 0.871. This result is interpreted to mean MIS processes have a negative correlation with or negative impact on customer loyalty. This result is also interpreted to mean a very weak correlation between MIS processes and customer loyalty. At the same time, this relationship is said to have no significance since the value for significance (2-tailed significance) is greater than 0.05. The main interpretation of this result reveals that MIS processes have a negative impact customer loyalty and the effect of the relationship is very low and insignificant. Therefore, it will be insignificant for the Company to focus on MIS processes in an attempt to boost the loyalty of customers.

Table 5: Pearson Correlation of MIS Processes with Customer Satisfaction

		Customer Satisfaction	MIS Processes
	Pearson Correlation	1	.088
Customer Satisfaction	Sig. (2-tailed)		.097
	N	360	360
	Pearson Correlation	.088	1
MIS Processes	Sig. (2-tailed)	.097	
	N	360	360

From Table 5, the correlation between MIS processes and customer satisfaction is 0.088 with a 2 tailed significant value of 0.097. This result is interpreted to mean MIS processes have a positive correlation with or positive impact on customer satisfaction. Also interpreted to mean a very weak correlation between MIS processes and customer satisfaction. This relationship is said to have no significance since the value for significance (2-tailed significance) is greater than 0.05. The main interpretation of this result reveals that MIS processes have a positive impact on customer satisfaction and the effect of the relationship is low and insignificant. Hence, it will be very insignificant for the Company to focus on MIS processes in an attempt to boost the satisfaction of customers.

Table 6: One Way ANOVA for Customer Loyalty, Customer Satisfaction and Brand Continuity of Respondents

Items	Sum of Squares	Df	Mean Square	F	Sig.
Customer Loyalty					
Within Groups	115.962	345	.336	33.873	.000
Between Groups	22.771	2	11.385		
Total	138.733	347			
Customer Satisfaction					
Within Groups	140.317	357	.393	.114	.892
Between Groups	.090	2	.045		
Total	140.407	359			

From Table 6, the F-result is 0.000, illustrated as ($F < 0.05$). Indicating that brand continuity variable has a statistical significant difference with respect to customer loyalty. Similarly, the F-result in Customer Satisfaction is 0.892, illustrated as ($F > 0.05$). Meaning that brand continuity variable does not have a statistical significant difference with respect to customer satisfaction.

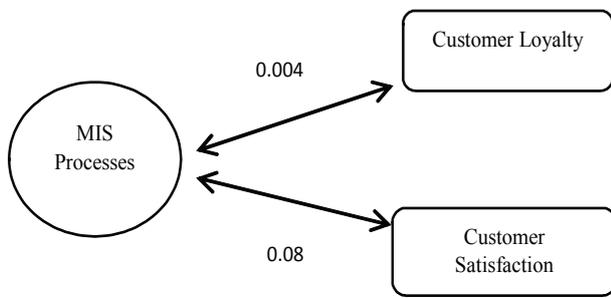


Figure 1: Research Structural Model

Regression Analysis

Before examining the regression analysis, it is imperative to note that the analysis is a confirmation of the correlation analysis, even though it gives profounder meaning of the relationship of the variables in a distinctive fashion. Consequently, to fully appreciate the efficacy of the regression analysis, this study assumes that; the regression analysis must

be linear, i.e. taking into consideration a single dependent variable and same for the independent variable, there must be no multi-collinearity between the independent variables, in order to check the normality of the distribution, the test of normality should be checked. This is to ensure there is no homoscedasticity, the error distribution should be checked and finally, the regression model must be tested to prove the absence of autocorrelation in the error term (Yang, Tu and Chen, 2019).

From the major assumptions held, the linear regressions for this study is liner. The study had two dependent variables. However, these variables were analyzed separately so that, MIS processes, customer loyalty, and customer satisfaction was separately analyzed. Multi-collinearity could not be tested because the study had just a single independent variable. However, normality of distribution was examined.

Table 7: Model Summary (Customer Loyalty and MIS Processes)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.004	.000	-.003	.63321	.000	.006	1	346	.941	2.354

Predictors: MIS Processes

Dependent Var.: Customer Loyalty

The model summary of the regression analysis reveals two vital findings. The first is the value of R which explains the power of the exploratory variable. This value gives a rate of the factors of the independent variables applied in the study to measure the dependent variable(s). In this case, the independent variable is MIS processes, therefore MIS processes represents just 0.4% of all elements responsible for a significant impact on customer loyalty.

Table 8: Regression ANOVA (Customer Loyalty)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.002	1	.002	.006	.941 ^b
	Residual	138.731	346	.401		
	Total	138.733	347			

The regression ANOVA explain the significance of the independent(s) variable to the dependent variable. The significant value of the regression ANOVA is 0.941. This result explains that MIS processes are insignificant in bringing about a noteworthy impact on customer loyalty.

Table 9: Regression Coefficient (Customer Loyalty)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.005	.034		.145	.885	-.062	.072
	MIS Processes	-.005	.061	-.004	-.074	.941	-.124	.115

The regression coefficient translates in the form of a linear equation the regression analysis. The regression coefficient reads from the unstandardized coefficients and the standardized coefficients. Under the unstandardized coefficient, the “B” value gives an indication of the constant value and the value of MIS processes. In order to have a 1% increase in customer loyalty, the Company has to increase the constant value by 0.005 while holding everything constant. Similarly, for there to be a 1% increase in customer loyalty, the Company has to reduce MIS processes by 0.005 while holding every other variable constant.

The standardized coefficients of the regression analysis give a value of -0.004. This value, also known as the beta value explains the direction of the correlation analysis. Therefore, MIS processes indicate a negative impact on customer loyalty.

Table 10: Model Summary (Customer Satisfaction and MIS Processes)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.088	.008	.005	.62385	.008	2.772	1	358	.097	1.737

Predictors: MIS Processes

Dependent Variable: Customer Satisfaction

The model summary of the regression analysis reveals two vital findings. The first is the value of R which explains the power of the exploratory variable. This value gives a rate of the factors of the independent variables applied in the study to measure the dependent variable(s). The independent variable is MIS processes, therefore MIS processes represents just 8.8% of all elements responsible for a significant impact on customer satisfaction.

Table 11: The regression ANOVA (Customer Satisfaction)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.079	1	1.079	2.772	.097b
	Residual	139.328	358	.389		
	Total	140.407	359			

Dependent Variable: Customer Satisfaction

Predictors: MIS Processes

The regression ANOVA explains the significance of the independent(s) variable on the dependent variable. The significant value of the regression ANOVA is 0.097. This result explains that MIS processes are insignificant in bringing about a notable influence on customer satisfaction.

Table 12: Regression Coefficient (Customer Satisfaction)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.002E-013	.033		.000	1.000	-.065	.065
	MIS Processes	.099	.059	.088	1.665	.097	-.018	.216

Dependent Variable: Customer Satisfaction

The regression coefficient interprets in the form of a linear equation the regression analysis. The unstandardized coefficient “B” value gives an indication of the constant value and that of MIS processes. This means that, in order to have a 1% increase in customer satisfaction, the Company has to increase the constant value by 0.005 while holding everything constant. Correspondingly, for there to be a 1% increase in customer satisfaction, the Company has to reduce MIS processes by 0.005 while holding every other variable constant.

The standardized coefficients of the regression analysis give a value of 0.088. This value, also known as the beta value explains the direction of the correlation analysis. Indicating that MIS processes negatively sway on customer satisfaction.

CONCLUSION

This research evaluated the information system processes and customer experience management of Etisalat Nigeria and how the management of information systems enhances customer loyalty and satisfaction. The study acknowledged the contribution of Davenport and Short (2003), stating a failure in one section of the organization implies a general failure for alternate parts; since they are intended to depend on each other. This seems to be the case as realized from this study. The authors have earlier stated that great administration of

information systems prompts great basic leadership and excellent decision-making within the organization; in the same way a poor management of information systems is likely to prompts poor basic leadership.

This study also considered the proposition of UStudy (2010), but fail to see how the quality of managerial decision-making depends directly on the quality of available information and the managers which the authors said should cultivate an environment that encourages the growth and viability sprouting of quality information.

Few limitations exit in this study. The very first limitation of the study is due to the fact that the scope of the study is a recognized brand with a far-reaching customer base. Therefore focusing on a single state in Nigeria is not necessarily enough to appreciate the role played by the company's Management Information Systems Processes. Also, the populace of Abuja characterized by their different demographic statistics as well as different personalities may divert the direction of the relationship between management information system processes with customer loyalty and customer satisfaction. Finally, the failure to look at the relationship between the two dependent variables and verify how customer satisfaction affects customers' loyalty is a major limitation. Hence, in our future research, we intend to critically examine this relationship.

ACKNOWLEDGEMENTS

The authors are grateful to everyone including organizations who contributed in every little way to the success of this research.

REFERENCES

- Abror, A., Patrisia, D., Engriani, Y., Evanita, S., Yasri, Y., & Dastgir, S. (2019). Service quality, religiosity, customer satisfaction, customer engagement and Islamic bank's customer loyalty. *Journal of Islamic Marketing*.
- Al-Zhrani, S. (2010). Management information systems role in decision-making during crises: case study. *Journal of Computer Science*, 6(11), pp. 1247-1251.
- Bhattacharya, C. B., & Sen, S. (2003). Consumer-company identification: a framework for understanding consumers' relationships with companies. *Journal of Marketing* 67(2), pp.76-88.
- Davenport, T. H., & Short, J. E. (2003). Information technology and business process redesign. *Operations management: critical perspectives on business and management*, 1, 97.
- Hsin-Hui, L., & Yi-Shun, W. (2005). An Examination of the Determinant of Customer Loyalty in Mobile Commerce Contexts. *Information and Management*, 43, 271-282
- Idoga, P. E., Toycan, M., Nadiri, H., & Çelebi, E. (2018). Factors affecting the successful adoption of e-health cloud based health system from healthcare consumers' perspective. *IEEE Access*, 6, 71216-71228.
- Idoga, P. E., Toycan, M., Nadiri, H., & Çelebi, E. (2019). Assessing factors militating against the acceptance and successful implementation of a cloud based health center from the healthcare professionals' perspective: a survey of hospitals in Benue state, northcentral Nigeria. *BMC medical informatics and decision making*, 19(1), 1-18.
- Komeily, A., & Srinivasan, R. (2015). GIS-based decision support system for smart project location. *In Computing in Civil Engineering 2015* (pp. 131-138).
- Kumar, P. K. (2006). Information System—Decision Making. *Indian MBA*. Retrieved October, 2, 2021.
- Rust, Roland T., Tim Ambler, Gregory S., Carpenter, V. Kumar, & Rajendra K. Srivastava (2004). Measuring Marketing Productivity: Current Knowledge and Future Directions. *Journal of Marketing*, 68 (October), pp.76-89.
- Straub, D. W. (1989). Validating instruments in MIS research. *MIS quarterly*, 147-169.
- Thakur, R. (2019). The moderating role of customer engagement experiences in customer satisfaction-loyalty relationship. *European Journal of Marketing*.
- United Nations Fund for Population Activities (2021). UNFPA in FCT, Abuja. (Nigeria.unfpa.org/abuja.html)
- UStudy.in. (2010). *MIS and decision making*. Retrieved October 2, 2010 from <http://www.ustudy.in/node/1009>
- Yang, K., Tu, J., & Chen, T. (2019). Homoscedasticity: an overlooked critical assumption for linear regression. *General psychiatry*, 32(5).